Thesis

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TOWARDS BRIDGING THE 'GENDER DIGITAL DIVIDE' IN UGANDA: A Study of University to Work Transition Patterns among ICT graduates

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Abstract

This dissertation examines the gender digital divide in the Information and Communication Technology (ICT) industry in Uganda by analysing admission and graduation dynamics among men and women in ICT degree programs at Makerere and Busitema Universities and the transition of ICT graduates from university to work with specific focus on Mobile Telecommunication Network- Uganda (MTN-Uganda) and Uganda Telecom Limited (UTL) companies. It explores the socio-cultural stereotypes and perceptions that influence the participation and progress of women professionals in the ICT industry and examines the diverse ways in which women in the ICT industry respond to these stereotypes and perceptions. A qualitative research design and methodology was employed to realise these objectives. The data which informed this study was obtained through detailed in-depth interviews and focus group discussions, analysis of admission, graduation and employment data, and official reports.

The study reveals that the way socio-cultural structures and institutions are set up — often in favour of men over women — as well as the differential construction of both women and men — inferior feminine vis-à-vis superior masculine — particularly, in a predominantly patriarchal Ugandan society, continue to shape and inform the uptake of ICTs in the country. The dissertation shows that more men than women are admitted into ICT degree programs at Makerere and Busitema universities. Gender 'appropriateness', role models, failure to attain minimum admission requirements, influence of parents and misconception about ICT work variously influence career choice among men and women.

Employment patterns among men and women in the ICT industry indicate that the top managerial and technical positions are largely dominated by men while women constitute many of employees at low level, less technical positions. Transition patterns also show that the numbers of women gradually reduce at each critical career transition point. Gender related socio-cultural stereotypes such as male scientist vis-à-vis technophobic woman, working man vis-à-vis domesticated woman, and dependent woman vis-à-vis independent man underlie these paradoxes. These disempowering' socially constructed labels continue to obstruct many of women from participating in the ICT industry. Finally, this thesis has revealed that a wide range of 'everyday' response mechanisms including juggling family and work responsibilities, subterfuge, negotiating, sacrificing career for family, as well adopting the 'culture of men in technology' are deployed by women to navigate and challenge the

existing socio-cultural stereotypes and constructions which accentuate the gender digital divide in Uganda.

Key Terms:

Information Communication Technology **(**ICT)

Gender

Digital divide

Transition Patterns

Social construction

Structuration

ICT Industry

Declaration

I declare that the thesis titled: **TOWARDS BRIDGING THE ICT GENDER DIVIDE IN UGANDA: A Study of University to Work Transition Patterns among ICT graduates** is my own work, that it has not been submitted for the award of any degree or examination in any other university and that all the sources that I have used or quoted have been indicated and acknowledged as complete references.

STUDENT

Priscilla Mwondha

DATE: 16 October 2017

Dedication

Dedicated to Eria, Elijah, baby Cyprian and my mother, Justice Faith Mwondha

Acknowledgement

I thank God Almighty for the health, wisdom and strength He has bestowed on me and for having brought me to this far. May the name of the Lord be glorified forever and ever, Amen.

I am highly indebted to my dear mother, Mrs Faith Mwondha, for the selfless sacrifices she has made to bring me up, and the wonderful love and support she has shown to me throughout my years of schooling. May God grant her a long life to enjoy the fruits of her labor. To all my sisters and brother, I say, thank you very much for your kind support. May the good Lord keep us united and in love always.

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LIST OF ABBREVIATIONS

ACHPR	African Charter on Human and Peoples' Rights
BIFA	Bachelor of Industrial and Fine Art
BLIS	Bachelor of Library and Information Science
CIC	Community Information Centre
CIPESA	Collaboration on International ICT Policy in East and Southern Africa
CE	Computer Engineering
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
CS	Computer Science
CIDA	Canadian International Development Agency
CoCIS	College of Computing and Information Science
DRC	Democratic Republic of Congo
EC	European Commission
ECA	Economic Commission for Africa
EGI	Electronic Government Infrastructure
EPRC	Economic Policy Research Centre
ECOSOC	Economic and Social Council
FCC	Federal Communications Commission
GAD	Gender and Development
GDI	Gender Development Index
GoU	Government of Uganda
GPS	Gender Productivity Survey
HDI	Human Development Index
HoD	Heads of Department
IS	Information Systems
ICT	Information and Communications Technology
ILO	International Labor Organization
IT	Information Technology
LAN	Local Area Network
MAN	Metropolitan Area Network
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health

MTNU	Mobile Telecommunications Network Uganda
MUK	Makerere University Kampala
MoWTC	Ministry of Works, Transport and Communications
NCHE	National Council for Higher Education
NGO	Non-Governmental Organisation
NBI	National Backbone Infrastructure
NRM	National Resistance Movement
RCDF	Rural Communication Development Fund
PUJAB	Public Universities Joint Admissions Board
SDGEA	Solemn Declaration on Gender Equality in Africa
SIDA	Swedish International Development Agency
SSA	Sub Saharan Africa
STEM	Science technology Engineering and Mathematics
SWE	Software Engineering
TE	Telecommunication Engineering
TUC	Trade Union Centre
UBOS	Uganda Bureau of Statistics
UCC	Uganda Communications Commission
UCW	Uganda Council of Women Uganda African Women's League
UICT	Uganda Institute of Information and Communications Technology
UIA	Uganda Investment Authority
UNDP	United Nations Development Program
UNIFEM	United Nations Development Fund for Women
UNESCO	United Nations Educational Scientific and Cultural Organization
UNHS	Uganda National Household Survey
UTL	Uganda Telecom Limited
WAD	Women and Development
WID	Women in Development
WTDC	World Telecommunication Development Conference
YWG	Young Wives Group

CHAPTER 1: INTRODUCTION

In 2014, ten of the world's leading Information and Communications Technology (ICT) companies published gender diversity reports which confirmed the view that women are underrepresented in the ICT industry. Google (2014) revealed that 30% of its employees are female and 70% are male. The same ratio was reported by Apple (Apple, 2014). When broken down into specified roles, technical jobs ratio stood at 80% for male and 20% for female. Facebook had a similar pattern with 31% female and 69% male, while jobs that were marked 'tech' registered 53% male and 47% female (Facebook, 2013). Meanwhile, Twitter registered 30% female and 70% male while jobs marked as tech registered 90% male and 10% female (Twitter,2014).

In an analogous manner, Yahoo registered a ratio of 32% female and 67% male (Yahoo, 2013). Moreover, LinkedIn registered 31% male and 61% female but for tech jobs the ratio of male to female was 83% male to 17% female (Linkedin, 2014). Pandora registered 50% male 49% female with tech jobs over 82% male (Pandora, 2015). Pinterest was 60% for male, 40% for female and over 80% male for tech jobs (Pinterest, 2014). Similarly, eBay had 42% female and 58 males and 76% for male and 24% for female for jobs marked as tech (ebay, 2014). The exception of the companies in which women constituted a larger proportion of employees was HP. For HP, 32.5% of the jobs were taken up by females, while 25.6% were taken up by males (HP, 2014). Important to note is that the disaggregated data particularly regarding tech jobs for HP was not available.

Similarly, a study done by the European Commission (EC) in 2013 showed that out of 1,000 graduates, only 29 female graduates have a computing or related degree (EC, 2013:35). The report also mentioned that of the 29 female graduates, only 4 go on to work in ICT-related

activities. The study also showed that women struggle to reach top roles in firms, revealing that only 19.2% of ICT workers reported to having a female superior compared with 45.2% of non-ICT workers (EC, 2013:38). The report also noted that women represented only 19.2% of entrepreneurs in the ICT sector compared to 53.9% in non-ICT sectors (EC, 2013:38).

These uneven and unbalanced trends are also evident in developing countries such as India where only 30% of employees in the ICT sector are women and only 20% are at Director Level (NASSCOM-Mercer, 2009:10). Similarly, in South Africa, it is indicated that 81.4% of the people engaged in core ICT work in the country are men with only 18.6% women (James et al, 2006). Interestingly, the converse applied to the end user component of the ICT sector where women constitute 74.5% with only 25.6% of the men involved in administrative support and secondary ICT activities (James et al, 2006:40). Further, the disproportionate involvement of women, as opposed to men, in core ICT activities is evident in Kenya as women are reported to make up only 15% of that country's ICT workforce (Jackson, 2012: para 1)[1]. This implies that men constitute 85% of Kenya's ICT workforce.

On a more micro level, a study of rural telecenters in Uganda revealed that although more women than men were clients at community multimedia/tele-centres, women sought elementary skills and secretarial training while the men engaged in core ICT activities. These discrepancies not only indicate that men out number women in ICT work but also vividly show how women are largely engaged in traditional low level use of ICTs and serve to reinforce the perception that ICT is a male dominated field (Madanda et al. 2009). Moreover, it was observed that more men than women were seen to be employed in the centers as

[1] http://www.itweb.co.za/index.php?option=com_content&view=article&id=52066 [Accessed September ,03 2016]

trainers or lab attendants. In addtion, women were generally absent from ownership, management and control of the private ICT business centers. This nowithstanding, the rural communication development fund also falls short in terms of gender considerations (Madanda et al, 2009).

The foregoing analysis and studies indicate that women continue to be adversely incorporated in the ICT industry, and as a result, they are underrepresented discriminated at workplaces in the ICT industry. The exclusion and discrimination of women happens in diverse and complex ways, often defying national equal opportunity legislations and policies. Moreover, discrimination often takes psychological and emotional forms that are not easy to recognise, single out and/or disaggregate. Either directly or directly, the above reports and studies call for the favourable incorporation and increased access to jobs in the ICT industry by women.

However, Abrams (1989) argues that increased access to jobs by itself neither creates the favourable space which women require nor results in conditions in which men and women are assured of equal treatment. The most fundamental issue here, according to Crompton and Sanderson (1990:34) is to provide equal opportunities through legislations and policies such that men and women with appropriate human capital are treated equally at recruitment. The drawback of this argument particularly in relation to this study is that gender segregation, exclusion and discrimination which emanates from gender related socio-cultural stereotypes is so widespread and pervasive in such a way that it arises long before and beyond the stage of recruitment into the industry. More importantly socio-cultural stereotypes are constructed and accentuated in homes and families, 'private spaces', which are out of direct reach of government legislations and policies. So, the legislations and policies especially those that begin at recruitment into the industry may not result in favourable incorporation of women

into the ICT industry. In the study titled *Gender Sorting and the Glass Ceiling in High Tech Firms,* Fernandez and Campero (2012) observed that women apply for low level jobs, as opposed to men, at recruitment. Employing data on people applying via the Internet to jobs at a medium sized high-tech firm, they examined the external supply of candidates at the point of application to the firm. Fernandez and Campero (2012) observed a 'glass ceiling' pattern at recruitment, where the proportion of female applicants in the candidate pool declines as one looks up the four levels of the organization's hierarchy. This finding contradicts the common line of thought that the glass ceiling reflects disparities in internal promotion in a company.

Of significance is that the diversity reports and studies further allude to the widening 'digital divide' which Hagittai (2003) has defined as the gap between the underprivileged members of society who do not have access to computers or the internet and the wealthy, middle-class who have access to these facilities. Liff et al (2004) define the 'digital divide' as the difference in uptake and effective use of ICTs between social groups and nations. Existing globally between developed and developing countries or nationally within a country, the digital divide manifests itself in different demographic characteristics such as gender, race, age and income or in various locations such as urban and rural (ITU, 2010). Thus, the gender digital divide which is the central focus of this study is just one dimension of the digital divide (Hafkin and Huyer, 2008).

In the context of this study, the gender digital divide refers to differential access and usage patterns of ICT and related services among biologically identified men and women but not the self-identified gender identity of an individual as understood in the field of gender studies (Hilbert, 2011). Some of the indicators of the gender digital divide, which is the subject of

this investigation, are gender disparities in admission to ICT related academic programs, graduation and employment in the ICT industry. Accordingly, an examination of the gender digital divide involves an investigation of the severity of gender disparities in ICT employment, why discrepancies occur, and an inquiry into how socio-cultural beliefs and stereotypes obstruct women from favourably participating in the ICT industry (Hafkin and Huyer, 2008).

Research on the gender digital divide has shown that women all over the world use technology less than men (Jackson et al, 2001) and although the 'gender divide' specifically in technology and related work is a longstanding concern, technology companies have until recently been reluctant to acknowledge the divide and many of the ICT companies strictly concealed gender disaggregated data (Hacker, 1990). However, recent developments indicate that there is a keen interest to positively change these dynamics. As indicated at the beginning of this chapter, leading technology companies are readjusting company policies by making gender disaggregated data public. These readjustments are part of the broader efforts to recruit and retain more women into the ICT industry, a situation which is reflective of change and a step in a new direction to address the gender digital divide.

Scholars such as Linn and Petersen (1985) and Voyer et al. (1995) have suggested that inherent differences in ability between men and women are responsible for the gender digital divide. Their findings indicate that boys outscore girls in tasks that require spatial skills. According to Glass et al (2013), this could explain the high turnover of women who work in Science, Technology, Engineering and Mathematics (STEM) when compared with men. Meanwhile, Gefen and Straub (1997) have pointed out that social and structural factors are the cause of the differences in access to and use of ICT between men and women. This argument is validated by Heilman and Okimoto (2007) who observe that women are

sometimes penalised for their success at tasks that are 'socially constructed' as 'masculine'. Their research findings suggested that women may be disliked for being competent in what is perceived to be traditionally male dominated roles.

1.1. Relevance of integrating gender concerns in ICT

The centrality of ICT in the development discourse in the contemporary period and for the future means that the exclusion of women bears grave consequences for women and society. The importance of the uptake of ICTs by women and the gravity of the consequences which emanate from their deprivation especially in this 'digital age' is explained by the International Telecommunications Union (ITU):

> ICTs are important tools that provide the women access to lifelong learning and training, to productive assets, and to credit. Neglecting to give women access to these tools not only deprives them and their families of income but reduces the skill level of nations human resource, limits national productivity, and bars a country from being competitive in the global market (International Telecommunication Union, 2003)

In addition, other reasons have been advanced to justify the relevance of gender discourses in the ICT field. Some scholars for example Risman (2004) and Adam et al (2004) argue that gender is one of the fundamental ways of organising and classifying our social experiences. It is vital in shaping organisational life and for this reason it is inconceivable that the interaction of users with information systems is not in some way shaped by the gendered spheres that people inhabit. It has also been observed that gender equality is not only about justice and equal opportunities but is a question of incorporation of both men and women in most of the social, economic and political activities in the country. One of the key lessons to take from this is that development could not only be sustainable but also be realised much faster and

more effectively when all people, irrespective of gender, are empowered (Poverty Monitoring and Analysis Unit (PMAU), 2007: 1).

However, Jorge (2001) argues that the evidence of exclusion of women lies in the facts and evidence available, observing that in most countries, women are under-represented in government, business, political and social institutions (Trauth et al, 2004). Further, globally men still hold most of the management and control positions in telecommunication companies and regulatory or policy making bodies. Regulatory decisions are made without any impact analysis and service licenses are handed to companies without equal opportunity policies and controlled mostly by men (Jorge, 2001). Mitter, (1999) further notes that women are conspicuously absent from decision making structures in information technology particularly in developing countries.

Women are also underrepresented in ICT research. Abrahamson et al (2016: 9) conducted an analysis of research and teaching positions at the Norwegian University of Science and Technology (NTNU) in three departments and found that women make up only 13.5% in the Faculty of Information Technology, Mathematics and Electrical Engineering (IME). In addition, women constitute only14% in the Department of Computer Science (CS) and 8.3 in the Department of Telematics. Further, an analysis of SBA Research, a research center for Information Technology based in Viena, Austria which brings together 25 companies, 4 universities, 1 university of applied sciences, 1 non-university research center and many international research partners to work on organisational and technical security, revealed that in the early days of the company, women were only employed in administrative positions and not research positions. However, as of 2016, the percentage of women in research positions increased to between 25% -27% (Nowak, 2016: 14). Likewise, Mattfeld and Van Aken (1965) note that only about 1% of professorships in sciences were held by women in the United States of America.

1.2. Problem statement

Research on the gender digital divide has shown that that few women are producers of information technology, whether as internet content providers, programmers, designers, inventors or fixers of computers (Wambui, 2002; Hafkin and Taggart, 2001). The International Labour Organization (ILO) indicates that gender inequality patterns that exist in society are being reproduced in the emerging information technology industry with women concentrated in end user low skill ICT jobs while the men are engaged in the technical side of ICT (ILO, 2001). Similarly, Huyer and Sikoska (2003) observe that even though Information Technology is a relatively new field, patterns of gendered division of labour are already emerging. These patterns can be traced right from the point of skills development to the highest positions in ICT companies and institutions.

However, scholars (Hafkin and Taggart, 2001; Huyer and Sikoska, 2003) note that there is a paucity of country-specific gender disaggregated data on ICT uptake. This has made it impossible to precisely determine the nature, extent and severity of the existing gender gap (Minges, 2003). This study therefore contributes towards filling the existing 'gender digital divide' knowledge gap in Uganda. It does so by disaggregating the admission and graduation rates into ICT related academic programmes at selected Ugandan universities, exploring the transitions of ICT graduates from university to work and the employment rates at selected ICT companies. It also unpacks the socio-cultural practices and perceptions that underpin these enrolment into ICT academic programs and employment in ICT companies, and response mechanisms employed by women in the ICT industry with specific reference to Uganda. The outcomes of this analysis highlight the nature, extent and processes by which the gender gap in the ICT industry comes to exist. Further, it sheds light on the roots of socio-cultural gender stereotypes shape and the ways in which they continue to inform the

involvement of men and women in the ICT industry including who is included and/or excluded from the ICT industry in Uganda.

1.3. General objective of study

Taking two telecommunications companies (MTN-Uganda and UTL), and two universities in Uganda (Makerere and Busitema Universities) as the research sites, this research seeks to examine the patterns or trends of admission and graduation for men and women in ICT degree programs, and to understand the recruitment, engagement and advancement of women and men in the ICT industry thereafter. The intention is to establish the nature of gender-related dynamics among ICT graduates and to examine the transition pathways of graduates from university to the work environment after graduation. The ratios of men to women and positions held by women and men employed in the selected telecommunications companies at various career levels will be scrutinized to understand the transition trajectory of graduates while highlighting gender relations and perceptions.

1.4. Specific research objectives

To achieve the general objective of the study, the following specific objectives were set.

- To examine the admission and graduation patterns for men and women in ICT related academic programs at Makerere and Busitema Universities in Uganda.
- To explore the transition patterns of ICT graduates of Makerere and Busitema Universities as they move from university into the ICT industry.
- To examine the factors that influence women and men to choose a career in the ICT industry
- To unpack the socio-cultural stereotypes and perceptions which facilitate and/or obstruct the progress of men and women in the ICT industry in Uganda.

- To understand how women have coped with, responded to and negotiated the socio-cultural stereotypes and perceptions which obstruct their progress in the ICT industry.

1.5. Specific research questions

To address the above objectives, the following questions are explored.

- What are the enrolment and graduation patterns for men and women in undergraduate ICT related programs at Makerere and Busitema Universities in Uganda?
- What are the transition patterns of ICT graduates of Makerere and Busitema Universities as they move from university into the ICT industry?
- What factors influence women and men to choose a career in the ICT industry?
- What socio-cultural stereotypes and perceptions facilitate and/or obstruct the progress of men and women in the ICT industry in Uganda?
- How have women coped with, responded to and negotiated the socio-cultural stereotypes and perceptions which obstruct their progress in the ICT industry?

1.6. Significance of Study and existing research gap

Scholars (Adam et al, 2004; Venkatesh and Morris, 2000) assert that qualitative and quantitative research which has been published in key journals within a ten-year period on gender and information systems was highly problematic as it is not only under theorised but also inadequately studied. Adam et al. (2004) further observe that work referenced in top Information Systems (IS) journals largely draws on behaviour and psychology literature and pays no attention to existing gender and technology literature. They further argue that: "Ignoring existing gender and technology literature and concentrating on psychology means that the entire process of technology adoption and usage appears more as a product of individual psychology obviating the need to consider the social structures within which individuals necessarily operate" (Adam et al., 2004:228). By plausibly theorising the

dynamics of the gender digital divide and paying close attention to gender and technology literature, this research can contribute towards filling this existing knowledge gap.

In addition, although there have been studies done in the field of Information Technologies (IT) including in Uganda (May., 2012; Madanda et al., 2009; Ssewanyana., 2007; Hafkin, 2002, UNDP, 2001) there is still a dearth of gender specific research focusing on the gender digital divide in ICT employment. Most of the available literature is limited in such a way that it focuses on scientific and technical issues. Some of the research considers socio-cultural aspects but overlooks the gender concerns specifically in ICT employment. Many of the studies consider the divide along connectivity lines which largely, is access to end user services. Very few of the studies consider skills development in ICT, which includes skills required for production and provision of ICT services and ICT employment. However, available literature indicates that social cultural stereotypes play a significant role in creating and sustaining the gender divide in ICT work (Horner, 1970; Frenkel 1990, Clayton et al, 2009, Kelan, 2010).

Although this is the case, the ways in which these stereotypes come to exist and the main actors who perpetuate the stereotypes have received very little attention, more so in African countries. This is an indication of the paucity of empirical studies on the gender divide in the ICT industry beyond connectivity or end use purposes of ICT. This study considers ICT as an opportunity for women to gain financial independence and economic freedom through formal employment in the vibrant and lucrative ICT industry. The study gives visibility to the nature and or severity of the gender digital divide in the ICT industry in Uganda, going beyond the widely accepted view that socio-cultural factors contribute to the exclusion of women from the ICT industry to investigating the processes through which social cultural stereotypes are activated by pointing out key players and how they 'foster' stereotypes that lead to the

eventual exclusion of women from the ICT industry. It also investigates how women ICT professionals individually counter, negotiate and challenge negative stereotypes to survive and thrive as professionals in the ICT industry.

This research thus provides a detailed analysis of gender dynamics and perceptions in ICT higher education and in the ICT labour market, and in this way, it: First, builds on the existing literature in the field of gender and ICT globally, in Africa and in Uganda. Second, contributes to scholarly debates and academic discourses around notions of women's contribution to the production of technology. By so doing, this research contributes to filling the existing research gap specifically around the concept of gender digital divide.

1.7. Scope of Study

This study is limited to two Universities and two telecommunications companies in Uganda. Uganda is an appropriate choice for this study because although the uptake of ICTs has been substantial over the years, like in many developing countries, there is still limited empirical evidence to show the dynamics and nuances which underpin the uptake of ICTS in the country (Ngwenyama et al, 2009). There is a dearth of empirical data to give insight into the various important aspects of the ICT sector beyond mobile penetration and use. It is important to note that one of the requirements for a vibrant and productive ICT sector is availability of skilled labour (O'Mahony et al, 2008). Consequently, one of the main changes that ICTs bring about is creation of jobs/employment. However much of the empirical data that is available about the ICT sector in Uganda focuses on end user statistics like the penetration and use mobile phones, computers and the internet among the population thereby ignoring the important aspect of job creation resulting from the introduction of ICTs and its effects on the development efforts specifically from a gender perspective (Huyer et al, 2002). This study therefore seeks to explore the production point of view but not end user

perspective and it will highlight the gender dynamics in ICT work Uganda from skills development, with a specific focus on Makerere University in urban Central Uganda (Kampala), and Busitema University in rural Eastern Uganda, and ICT employment, focusing two mobile telecommunication companies namely, Mobile Telecommunication Network Uganda (MTNU) and Uganda Telecommunication Limited (UTL).

MTNU was selected because it is one of the pioneer private mobile telecommunications companies in Uganda. It is also the biggest telecommunications company in Uganda with more than half of the mobile telecommunication market share. UTL is the oldest and partly state-owned telecommunications company in the country. Selection of two companies permitted a comparison between a purely private and partly state-owned company in terms of gender and related dynamics. At Makerere University, the study was included six ICT courses namely; one, Information Systems (IS), two, Computer Science (CS), three, Information Technology (IT), four, Computer Science (CS), five, Computer Engineering (CE) and six, Telecommunication Engineering. At Busitema University, the study included the Faculty of Computer Engineering and specifically the Bachelor of Computer Engineering program. The Bachelor of Computer Engineering is the only computer science related program in Busitema University main campus. Makerere University is the oldest established in 1922 and largest higher institution of learning in Uganda (Mutibwa, 1992:9) while Busitema University is a relatively newly set up higher institution of learning established in 2007 (Busitema University, 2016). It is also in rural Eastern Uganda. This provided an opportunity to compare an urban and rural university in terms of gender related dynamics.

1.8. Thesis Outline

Chapter One

Chapter one introduces the thesis. It provides the background and context of the study. In this chapter, literature about the gender digital divide is discussed to provide the foundation of the study by exploring the key themes of the study. In addition, the problem statement, general and specific objectives, research questions, significance of the research, and the structure of the thesis are laid out. Further, the importance of considering and integrating gender discourses in ICT is considered. The chapter is concluded with an outline of the thesis.

Chapter Two

Chapter two is the historical perspective of gender relations in Uganda from the pre-colonial, colonial and post-colonial periods. An analysis of a history of gender relations partly explains the gender dynamics in Uganda today and the dynamics in the in the ICT industry. Specifically, the chapter highlights a history in which women have been systematically and persistently oppressed and excluded both in and outside the home.

Chapter Three

Chapter three presents Uganda as a burgeoning information society. In this chapter, the journey of the country into the information age is traced and the current ICT status discussed to allow a clear understanding of the relevance of giving any consideration to the ICT industry of Uganda let alone gender dynamics. This chapter aims to show that although Uganda is a developing country, the ICT industry of the country is vibrant and worthy of study. This chapter reviews literature related to the ICT industry as well as science and technology in Uganda. Specifically, it presents the history of the telecommunication industry, and by so doing, situates Uganda in the information age today. Comparison of Uganda's ICT industry with that of other countries is made. A presentation of the history and current state of the ICT industry is important because it gives a clear context of the study.

Chapter Four

Included in chapter four is a discussion of two theoretical frameworks in which the study was conceptualised; social constructionism and structuration. First social constructionism is presented and then structuration theory is discussed second. The main arguments of the theories are presented. This is followed by a discussion of the theories in relation to gender issues. Finally, the application and critique of the theories is presented.

Chapter Five

In this chapter, a detailed discussion of the research design and methods is presented. This chapter illustrates the step-by-step choices made during the process of conducting research. In this chapter, the qualitative study design adopted is discussed, the selection of study institutions is explained, data collection methods are discussed, the characteristics of the study informants are presented, the reasons why the specific informants of the study were selected are advanced, a detailed explanation of the coding process is presented and ethical considerations undertaken during the research are also explained.

Chapter Six

This chapter presents findings for research objectives three and four. First, socio-cultural practices and perceptions which facilitate and/or constrain the progress of men and women in the ICT industry in Uganda are presented. These findings are about men and women who have made the transition into the work place and those who are responsible for making decisions in the work environment. Second, the ways in which women have coped with and responded to the socio-cultural practices and perceptions that obstruct their progress in the ICT industry are presented.

Chapter Seven

This chapter explores how stereotypes are activated and embodied by men and women alike even before admission or enrolment in to an ICT related degree program. The factors that

influence career choice among young men and women are examined in a bid to make sense of observed transition patterns at university level and thereafter. This is useful in determining the origin or foundation of existing transition patterns. In addition, this chapter shows how women in the ICT industry actively reinforce negative gender based stereotypes that lead to the exclusion of women.

Chapter Eight

Chapter eight presents the rates of admission and graduation for men and women in the various ICT programs at Makerere and Busitema Universities in Uganda. Opinions of Lecturers, Deans, Heads of Department (HoD) and university registrars' area also presented. Second, transition patterns of men and women graduates from academic programs at Makerere and Busitema Universities as they move from university into the ICT industry, from entry level through to top executive level are analysed. This chapter also highlights the findings from data on graduates employed in the selected telecommunication companies. This is done with the aim of establishing transition patterns of ICT graduates. In addition, stereotypes associated with the existing patterns are discussed.

Chapter Nine

Chapter nine is a synthesis of the entire thesis. The chapter makes a summary of the main arguments made in the study, draws out its unique contributions, identifies the limitations and maps the areas for further research. Further, the chapter provides policy and other implications of the study and finally, a conclusion of the study.

CHAPTER 2: HISTORIGRAPHY OF THE GENDER LANDSCAPE OF UGANDA

2.1. Introduction

The concept of gender in Uganda, like in many other developing countries particularly on the African continent, remains contentious. The contentious nature of gender and related concerns stems from the interplay between contemporary perceptions of gender, shaped by modernity on the one hand and traditional/cultural conceptions on the other hand (Mbire-Birungi, 1999; Bahl, 1997). The historical gendered dimensions are central in unpacking the ways in which socio-cultural norms, values and beliefs both directly and indirectly contributed to and continue to facilitate discrimination, subordination and exclusion of women along gender lines. Women, like men have dreams, visions and talents. They are innovative, resourceful and capable of contributing to the development of their families and communities, socially, economically and politically and to finding solutions to the challenges of the day. In Uganda, exclusion based on gender takes place in many 'spaces' now including the emerging ICT industry. The exclusion of women is a tremendous loss to the development process because when they are marginalised, not only are women denied of the opportunity to achieve their full potential as individuals, families, communities and the world are cheated of the useful contribution that women can make. Thus, a situation in which women are marginalised is problematic because it is an infringement on the basic human rights of women and it slows down and thwarts the development process (Hyde, 1993). The purpose of this chapter is to provide a detailed understanding of gender landscape in Uganda through time, that is, pre-colonial, colonial and post-independence periods. The specific aspects that are explored with a focus on women in comparison to men are the construction and evolution of gender in respect to economic participation, education attainment, political empowerment and socio-economic wellbeing.

2.2.1. Gender relations in pre-colonial Uganda

In Uganda, traditional societies in the pre-colonial period were characterised by a social and political order dominated by men with little to no representation of women. The gender related dynamics and experiences in pre-colonial Uganda mirrored those of many other countries across Africa where social protocol emphasised the inferiority of women and superiority of men (Adjetey, 1994). Spender (1980) speaks of a male dominated world in which male represents positive and female represents negative. Arising from this traditional differential treatment is that women in Uganda today, like in many other patriarchal societies across the continent, women generally continue to assume a subordinate position when contrasted with men (Siltanen and Stanworth, 1984).

2.2.2. Gender relations in colonial Uganda

The legacy of colonialism lives on and continues to shape as well as influence the social dynamics in many countries on the African continent including Uganda ((Mutibwa, 1992; Kabwegyere, 1974). According to Mamdani (1976), colonial governments suppressed and incorporated virtually independent decentralised polities into centralised administration and in this manner, they greatly transformed and reproduced the new sets of social relations in many societies in Africa. In this context, most of the current-day social dynamics in Africa can plausibly be conceptualised and understood through this historical context (Atkinson, 1989). A nuanced analysis of the contemporary issues, including those around gender, call for unpacking of this specific history which shaped and informed these dynamics (Odoi-Tanga, 2009).

Important here is that the position of women in pre-colonial Uganda was secondary to that of men as women were generally viewed as inferior to men. These dynamics did not change much in the colonial era. In fact, colonialism served to accentuate gender stereotypes and

discrimination against women, reinforcing the patriarchal society of the colonisers. As shown in the later part of this section and chapter, changes introduced in Uganda by the colonial government only resulted in a modified form of oppression for women. Therefore, regardless of the pre-colonial position of women, the colonial era in Uganda was fraught with changes detrimental to women. Embedded in the colonial state structures and policies, was a public-private ideological distinction that interlocked with gender (Staudt, 1986). Under this notion that was touted by Christian missionaries, men were public actors in the political process and economic breadwinners on whom women depended. Women played a supporting role to the men in the private domestic sphere (Staudt, 1986). To this end, resources were disproportionately distributed among men and women consequently generating and institutionalising greater dependency of women on men.

Since gender structures n colonial Uganda mirrored those of Britain, the colonial master, it is useful to reflect on the position of women in the United Kingdom in the early 1900s, the years in which the scramble, partition, colonisation and occupation of Africa intensified. Here too the position of many women in society was undermined by patriarchy. Women had a stereotypical role in society. By 1900, most women worked as domestic servants. It is important to note that the number of women who were teachers is somewhat misleading because the work of women as teachers was limited to junior or nursery schools. Secondary school teaching was a preserve for men. At that time, being an unmarried woman, or 'spinster' in the United Kingdom was unthinkable for women of all backgrounds given the prevailing social attitudes which viewed marriage and the 'home environment' as the only legitimate place for women. By not being married, a middle-class woman lived in shame and was prevented from working as this would have been out of the question. Unmarried women

were despised and looked at as not good enough to find husbands. Relatedly, a divorced woman was viewed and treated as an outcast (Hudson, 2011).

In reaction to the denial of equal voting rights for women in 1970, Queen Victoria is quoted to have said, “Let women be what God intended, a helpmate for man, but with totally different duties and vocations.” (Paterson, 2008). The embedded meaning and attitudes represented in

the words of Queen Victoria which were utilized for a long time to oppress women in the United Kingdom. However, by the early 1900s, women in the United Kingdom were making progress in advocating for their human rights and by the mid-1900s, the status of women in UK had improved. For instance, in 1903, Emmeline Pankhurst founded the Women's Social and Political Union (WSPU). In addition, the first woman took her seat in the House of Commons. Many women in Britain were gainfully employed by the 1950s, 60s and 70s. Family budget evidence suggests that around 30-40 per cent of women from working class families contributed significantly to household incomes in the mid-Victorian years (Hudson, 2011).

Of significance, is that similar ‘gender-sensitive’ processes were initiated in third world colonized countries with developed countries including Great Britain formulating specific interventions and policies purposely intended to support women in the colonies (Moser, 1993). Several gradual but progressive interventions aimed at the elevation of the positions of women in third world countries were initiated in the colonial period. The debates and discourses at the time centered on how to incorporate women in, and the ways in which women could subsequently contribute to, the development processes in third world countries

(Parpart, 1993). Incorporation of women in the development pathways of third world countries gained significance with the adoption of the 'welfare approach' (Moser, 1993).

The welfare approach to development of third world countries not only recognized women for their reproductive role as mothers, but also conceptualized 'nurturing' as their 'most key role in development' (Moser, 1993:57).

It was explicitly indicated that:

> *"... welfare is the earliest policy approach concerned with women in developing countries. Its purpose is to bring women into development as better mothers. Women are seen as passive beneficiaries of development. The reproductive role of women is recognized and policy seeks to meet practical gender needs through that role by top-down handouts of food aid, measures against malnutrition and family planning. It is non-challenging and therefore still widely popular"* (Moser, 1993:58, emphasis original).

Although the focus of the welfare approach to development was on elevation of the status of women, this strategy had critical implications for women in third world colonized countries including Uganda. First, it accentuated the marginal status of women in society through formal ascription and their recognition as only good at child bearing and nothing else from a development perspective. By focusing on nutritional education issues and aspects of home economics (Razavi and Miller, 1995:3), this approach deprived women of "economic opportunities and status" (Parpart, 1993). Implicitly, the welfare approach was only concerned with the provision of practical gender needs, for instance health centers and care, food, family planning services that cement the motherhood and/or reproductive position of women in society. If the actual interest of colonial governments was to elevate the positions of women particularly in rural areas then the focus should have been the strategic gender

needs. Strategic gender needs are the intangible interventions that are key in challenging the subordinate status and subsequent elevation of the positions of women in society. Provision of strategic gender needs—for instance, women control over their bodies including choice over child bearing, legal rights to own, access and utilize productive land and related property, access to credit, equality in employment conditions including wages—challenges the status quo between men and women and ultimately enables women to achieve greater gender quality (Moser, 1993:39).

Second, it reinforced the already existing socio-cultural stereotypes prevalent in most developing countries that women are merely fit to 'work in the private space (home) particularly taking care of children, the elderly and sick. According to Moser (1993:95), focusing on women's work in the home was not only 'reductionist' but served "to reinforce social planning as soft-edged, and of lesser importance than the hard-edged areas of economic and physical planning", areas that were a preserve of men.

Third, the approach formally increased in the burden shouldered by women thereby stifling as opposed to promotion of their wellbeing. This is particularly because the actual focus was on the socio-economic aspects that not only inhibit the independence and freedom of women but also confines them 'domestic spaces' where they cannot exercise their agency. Fourth, Moser (ibid) identifies three assumptions made by the proponents of the welfare approach to development. "First, that women are passive recipients of development, rather than participants in the development process. Secondly, that motherhood is the most key role for women in society. Thirdly, that child-rearing is the most effective role for women in all aspects of economic development. Instead of promoting gender quality and elevation of the positions of women in third world countries, the three aspects highlighted by Moser denote the way colonial governments on the contrary promoted gender inequality at 'home' and in

the colonies. These were vividly evident in all policies of the colonial economy whether that be political, economic or social. In the next section, I examine the ways in which the colonial policies regarding education stifled the progress of Ugandan women through the promotion of gender stereotypes and served the interests of, and elevated the positions of men.

2.2.2.1. Colonial education and the 'position' of women in Uganda

The education provided in Uganda by the colonial government promoted traditional gender stereotypes, served the interests of, and elevated the positions of men. First, more opportunities for education and skills development were provided to boys. Second, the subjects taught in schools were laden with gender ideology that promoted the ideas of female domesticity, characteristic of the Victorian era (Staudt, 1986). The subjects taught in schools that were exclusively for girls were not useful in the job market and for wage employment but important in serving the interests of men especially in the household (Momsen and Kainnaird, 1993). Women in Uganda were also trained to mimic the modern woman of the Victorian era (Staudt, 1986). African girls in Uganda were taught to aspire to the tastes, aspirations and lifestyle of modern English women even if colonial notions of domesticity were of little value to rural women (Ranchod- Nilson, 1992).

Meanwhile, the position of the colonial government on education for girls was well documented and reiterated in several annual government reports. For instance, the 1927 report describes how courses for brides were much appreciated by the prospective husbands. Moreover, the 1929 annual education report indicated that special schools at Nkokonjeru and Buloba were established to promote domestic science for the daughters of chiefs (Annual Colonial Report, 1929).

The 1934 colonial report mentions initiatives geared towards training girls for the vocations of housewifery and motherhood. This report suggested the introduction of Diploma level housewifery courses. The Colonial Annual Report of 1935 states that girls should be trained to be efficient housewives and mothers and that those who did not marry off immediately would be child nurses, needlewomen or school matrons (Education Annual Report, 1935). These reports clearly highlight how the colonial government policies accentuated the marginal and disempowered position of women and the way these processes were entrenched through education.

Given this context, it is not surprising that less money was spent on the education of girls as opposed to boys. In 1921, for example 1025 pounds was set aside as colonial government contribution towards missionary managed education efforts for boys as opposed to only 100 pounds for girls (Annual Report, 1921). In a comparable manner, 9,700 pounds was spent on the education of girls in 1932 compared to 22, 950 pounds allotted to the education of boys (Annual Report, 1932). In addition, 13, 290 pounds were spent on education of girls in 1937 compared to 23, 984 pounds on boys (Musisi, 1992; Annual Reports of Colony, 1934). The actions of the Christian missionaries indicate, first, that preference was given to men. Second, that women were trained to take on specific tasks in the domestic sphere.

In 1905, two years after the first boys' boarding school was set up, the first boarding school for girls was also established; Gayaza Girls Boarding School, which in the words of Musisi (1992) was the "epitome of domesticity". The school was opened in January 1905 with 4 students and by July 1905, it had 43 students (ibid). The main mission of the girl's school, as expressed in education policy of the colonial government was to train good house wives and keen cultivators who later made good submissive Christian wives as Christian religion was

part and parcel of the school curriculum (Christian Missionary Records: 1912:433). For the young girls in the school the image of the accomplished traditional Muganda[2] woman to which they were to aspire was that of a successful manager of a plantain grove and an expert cook.

An examination of the school curriculum reveals that the time allotted for practical domestic lessons and religious education far outweighed the time that was allocated for academic work (Musisi, 1992). The girls woke up at 5.30 A.M every morning to dig in the plantation for almost two and a half hours as this was the custom of women in Uganda. At 8.00 A.M in the morning, school started with a prayer and a bible reading which went on up to 9.15 A.M. At 10.00 A.M the girls went to the kitchen to peel plantain for their midday meal. Morning classes resumed at 11.00 A.M with a bible lesson and then a geography or English lesson which ended at 11.45 A.M (ibid). Moreover, the missionary Head Mistresses at Gayaza during her mission in Uganda is recorded to have vowed to do her best in teaching housewifery just as it was taught in England (Uganda Church Review, 1930). Girls were not given a chance to stay in school for as long as boys and higher education was for a long time exclusively reserved for boys. For instance, even though the highest institution of learning in the country, Makerere College, was established in 1922, it only begun accepting women in 1945, over 20 years after its establishment (McBain, 2012), and 67 years after the University of Oxford established its first women's college.

In retrospect, formal education functioned in a complex and contradictory manner. It liberated women from subordination inherent in their roles in traditional society by introducing them to 'new' careers yet it limited them to subordinate roles in the newly emerged social structure

[2] A member of the Baganda people of the kingdom of Buganda, now forming part of Uganda

(Kwesiga, 2002). Hyde (1993) has argued elsewhere that Western type education created a new dilemma for women in Africa *and evidently in Uganda* (emphasis mine) putting them in a position where both their presence and absence in education would serve as a disadvantage to them. Formal education sustained and served to deepen gender specific class formation in which the men were superior and privileged and women inferior and less privileged (Mamdani, 1976).

To further exclude women, a political system in which participation was based on educational qualification and land ownership was adopted (Morris and Read, 1966). This indirectly and discreetly excluded women. Morris and Read (1966) explain that African residents of an electoral district were entitled to vote if they could read and write in their own language or were the owners of freehold or Mailo[3] land or had occupied land for the previous two years or had been in regular paid employment or had an income of 100 pounds a year or property worth 400 pounds. Many women did not have any of these requirements meaning that only men who could fulfill them were entitled to voting privileges.

Before examining the gender dynamics in post-independence Uganda, an important caveat is necessary here to the effect that post-colonial government inherited a largely skewed and 'gender-blind' economy. All gender related aspects in the immediate post-independence period were run based on the colonial policies. Nonetheless, in the later years as shown in the subsequent section, the gender discourse in Uganda underwent a gradual but progressive shift, moving from the welfare approach which largely emphasized the domestication of women to such a time when some women started to assume positions of authority and

[3]The land that was allocated to the Kabaka, the royal family and the chiefs in Buganda Kingdom of Uganda was Parcelled out in square plots which measured one square mile. This gave rise to the word Mailo, which literally meant square mile. Thus 'Mailo refers to freehold land that was given to the Kabaka of Buganda, chiefs and other officials as per the 1900 Buganda land agreement signed between the King of Buganda and British colonial administrators.

responsibility. Borrowing from their counterparts in developed countries, notions of empowerment and emancipation started to be evident among Ugandan women. Because of this, the discourse in Uganda was double-edged with the elite Ugandan women emphasizing notions of women participation in development (WID), while the welfare approach was still prevalent in among rural women.

2.2.3. Gender dynamics in post-independence period: 1962-1986

In 1962, Uganda was declared independent and Kabaka Mutesa was made the first non-executive President of Uganda deputised by Dr Apollo Milton Obote of the Uganda People's Congress Political Party (UPC) who was the first Prime Minister of Uganda with executive powers. Gender concerns were not prioritised during the period immediately after independence. Early Post-independence governments in Uganda introduced limited changes in respect to gender given that no attention was paid to gender issues. Women continued to be undermined in the social and economic arena including politics, education and at home. It is however important to mention that by this time, women had begun to openly express their dissatisfaction with in their position in society. This is evident in formation of women groups geared towards advocating for their fair treatment of women and rejection of their adverse social, economic and political status (Tripp, 2012). These included the formation of activist groups like the Young Wives Group (YWG) a subsidiary of Young Women Christian Association (YWCA), Uganda Council of Women (UCW), and the Uganda African Women's League (UAWL) (Tamale. 1999; Tripp, 2012). Although women started to express the need for change, the exclusionary and discriminatory policies continued to be re-affirmed. It is clear that post-independence governments inherited the "colonial tailored' gender discriminatory policies particularly in education. In 1963, a year after independence, the 1963 Castle Education commission was established to examine among others, the content and structure of education in Uganda (Castle Report, 1963). The commission noted that most girls

received only the first three years of formal education. For instance, although 28, 080 girls registered for Primary one (1) in 1957, only 11,678 were registered in Primary six (VI). In 1963, girls made up 39.4% of enrolments in primary one but this figure reduced to only 24.1% in primary six (VI). Some of the reasons advanced for the discrepancy included early marriage, home duties and the low status of women inherent in the Ugandan society (Gateley, 1971). Akello (1990) reports situations where mothers withdrew their daughters from school because educated women were generally viewed as conceited, argumentative and it was believed that this made them bad wives.

The Commission recommended among other interventions that there be an increase in schools for girls. In addition, it recommended the appointment of a senior female officer at the ministry of education to oversee the special needs of girls' education and that all primary schools be mixed gender (Musisi, 1992). This meant that girls and boys would learn together and not in separate schools. The commission had the opportunity to break away from gender focused exclusion that prevailed in the education system but it instead emphasised the need to train girls and boys differently in a way that continued to exclude girls because in addition, the commission's report further argued that in a developing society, boys' education and girls' education would always demand different treatment, in the report, it was explained that it is generally true to say that boys prepare for one career and girls prepare for two careers (Castle Report, 1963).This implies that girl's secondary education should be both general to satisfy the criteria for any educated person and vocational to lay the foundation of a useful career in the home

On this basis, the report recommended scrutiny of education curriculum for girls and for boys as education has different objectives for either gender as most women will eventually become

wives and house wives in the rural areas. This commissions report was to guide Uganda's education policy for more than 10 years but was not fully prepared to alter the fundamental direction of women's education (Castle Report, 1963). Implications of the report continue to affect the choices of women in education and work and their access to the same to date (Musisi, 1992

Nevertheless, now, women in Uganda were in touch with the global feminist movement and this was demonstrated when Uganda Women Council sent a delegation of representatives to the 1963 International Council of Women Conference in Washington, D.C. (Tamale, 1999). In 1964, Uganda was also represented at the all Africa Women's Conference held in Monrovia, Liberia. Meanwhile back home, the Uganda Women Council was a subject of ridicule and men in government commented that it was an organisation that did nothing more than allow women to show off latest fashion trends although this did not deter the women (Tamale, 1999).

However, in 1966, a ban was placed on all Non-Government Organisations (NGOs) and groups including the women's organizations. The period that followed was marred by political instability and military turmoil and consequently the women's movement did not register any significant achievement. The declaration of the decade of women in 1975 through 1985 meant very little progress in the context of women's rights movement in Uganda. For instance, there were only 2 women out of a total of 92 Members of Parliament in the first post-independence parliament of Uganda (Tamale, 1999).

In January 1971, when Dr Apollo Milton Obote was overthrown by Idi Amin through a coup, while attending a Commonwealth Conference in Singapore. From then on, Uganda

descended into political economic and social turmoil that lasted more than a decade. Central to this study is that during the era of President Idi Amin, women were relegated to traditional roles. Amin publicly undermined women and was once quoted to have told his ministers in a cabinet meeting "The duty of the woman is house woman, he knows how to keep house very well."[4]

According to President Amin, women could make the most suitable hotel managers because to him, hotel management was an extension of home management as hotel management entailed cleaning, cooking and entertaining and as such, was not different from home management, the natural role of women. He bragged about having 4 women hotel managers in the country and 2 assistant hotel managers who were women. His thoughts were an indication of the state of gender issues in Uganda throughout his 9-year dictatorship. He is also quoted to have said: "Women must get up quickly in the morning at about 5 o'clock they are ready in Nakasero (market) preparing ready to sell vegetable and everything in the shop"[5]. This further showed that President Idi Amin did not any thoughtful consideration for women beyond their domestic duties. Since his government was a dictatorship, his thoughts are reflective of the treatment of women during his regime where women were once again steered towards performing feminized domestic roles in the work place. Moreover, the voices of women were 'silenced by military violence' during the 9-year reign of Idi Amin (Decker, 2014). During his rule women were prohibited from wearing min skirts or dresses. They were required by law to wear maxi dresses locally referred to as Amin nvaako[6] in order not to

[4] A video clip of President Idi Amin containing the information can be found here. https://www.facebook.com/evans.halimah/videos/10203095205516386/?pnref=story [Accessed April 8, 2016]

[5] Details are available at: https://www.facebook.com/evans.halimah/videos/10203095205516386/?pnref=story (Accessed January 10, 2016).

[6] Amin nvaako is a Luganda for leave me alone Amin. In protest to the ban of the mini skirt, women began wear very long dresses and skirts that swept the ground to ensure that they were never disturbed by authorities over the length of their outfits

expose what was referred to as their 'private parts'. Harsh punishment was always vetted out to women who dared not to comply with the law.

Although Idi Amin was and continues to be labeled a 'bad' leader and dictator politically, he ought to be credited for the fact that he appointed some women as Hotel Managers and allowed them to assume leadership positions out of the 'domestic sphere which was a remarkable step in the empowerment of women (Muggaga, 2016). Other sources have also praised Amin for appointing the first woman, Princess Bagaya, as Minister in the Uganda government (New vision, 2013). Amin appointed Princess Bagaya as the first woman Minister in charge of the Ministry of Foreign Affairs in 1971 (New Vision, 2013). However, critics argue that the appointment of some women as Managers and another in a Ministerial position amounts to 'tokenism' because these appointments did not come with full authority. Besides, the administrators who occupied other positions that were over and above those occupied by women were men. The lack of commitment to plausibly give full authority to and elevate the positions of Ugandan women was vividly illuminated by the banning of activities of NGOs including women organisations. In the next section, I examine the progressive shift of women-related debates and discourses in Uganda from wellbeing (welfare) to Women in Development (WID) to Gender and Development (GAD). The transition in debates emanated from the rejection of the reductionist, disempowering and narrow view of women's contribution to development to only motherhood, caregiving and wives (Razavi and Miller, 1995). It was also informed by the fact that development was not taking place as easily as the proponents of the welfare approach had anticipated (Parpart, 1993).

2.2.4. Shifting Gender Discourses: From Welfare to Women in Development (WID)

Based on the welfare approach of the 1950s to the early 1970s, it was clear that Ugandan women were 'adversely incorporated' (du, Toit, 2004) or excluded from the development processes of the country right from the colonial period to the early post-independence period. A similar trend was witnessed in other Third World countries where women did not plausibly benefit from the welfare approach to development even when development was intended to elevate their positions in society. In other words, the development discourse served to disempower, entrench more suffering and peripheral potions of women since their triple role of reproduction, nurturing and providing for the sick and elderly was 'formally' recognised (Moser, 1993; Mikkelsen, 2005).

However, the conceptual discourse of how women contributed to and benefited from development as well as their positions elevated in society shifted particularly in the 1970s (Parpart, 1993; Razavi and Miller, 1995). The key turning points were the 1975 World Conference of the International Women's Year, and the declaration of the period 1976 to 1985 as the United Nations' Decade for Women (Moser 1995). The latter declaration "played a crucial part in highlighting the important but often previously invisible role of women in the social and economic development of Third World countries and communities, and the particular 'plight' of low-income women" (Moser 1995:2). The focus of scholarly debates and discussions to policy interventions especially in Third World countries including Uganda was on the broader problems that affect women in totality as opposed to the previous welfare-focussed approach which was limited in scope and character. Motherhood and care giving to children, elderly and the sick were not the most important development contributions by women to society. Instead, the narrative was that women immensely contribute to diverse development processes, hence the term Women in Development (WID).

Coined in the 1970s, the WID approach differed from the welfare approach in that it specifically focused on the "integration of women into global processes of economic, political, and social growth and change" (Rathgeber, 1990: 489). The proponents of WID argued that women were excluded from development processes (Muyoyeta, 2007) even when they are a valuable "untapped resource who can provide an economic contribution to development" (Moser, 1995:2). Were (1985:5) has for instance argued that rapid development of the African continent heavily depends "upon the effective participation of its women in developmental processes through access to appropriate technology, skills, education, resources and opportunities. Thus, this was the time for women not to be "seen as passive recipients of welfare programmes but rather as active contributors to economic development" (Razavi and Miller, 1995:4).

Significantly influenced by the writing of Easter Boserup titled 'Women's Role in Economic Development', the key argument for the WID discourse was that women should be integrated in the development trajectories of developing countries. Further, increased social injustices and various forms of inequality witnessed by women especially in Third World countries required a new debate that could reverse some of the social ills and consider women as active participants in the development processes (Razavi and Miller, 1995). It was important to "recognize and account for women's roles in economic development. Only then … [Boserup] argued, would development occur in the Third World" (Parpart, 1993:448). A number of critical interventions including equality through improved access to education; equal employment opportunities and strategic gender needs for instance land and credit; equality in political and social participation; and increased health and welfare services are required to

plausibly incorporate, realize social justice and gender equity for women more so in developing countries (Parpart, 1993; Razavi and Miller, 1995).

However, limited gains were registered under the WID approach because: First, it seemed to accept the existing socio-cultural structures and institutions instead of asking the broader questions of why women do not fully participate in the development processes (Rathgeber, 1990). Second, WID was limited in conceptualization as it focused on only women. Third, the methodology of simply adding women in development, or what other scholars have dubbed "adding-women-and-stir" (see Moser, 1995:87) without full empowerment, responsibility and integration in development resulted in dismal progress. Fourth, WID "never challenged gender hierarchies. It ignored the possibility that women's development might require fundamental social change" particularly the socio-cultural practices, customs and stereotypes that accentuate the subordination of women (Parpart, 1993:449). The lived experiences of Third World women were ignored with much of the effort particularly by feminists from the West focused on 'modernizing women in their world countries (ibid). These drawbacks resulted in a new discourse dubbed women and development (WAD).

2.2.5. From Women in Development to Gender and Development (GAD)

In the later part of the 1970s, the discourses and debates around women transited from WID to women and development (WAD) (Were, 1985; Muyoyeta, 2007). The WAD approach to development emanated out of the WID critique that women have and continue to be part of the social, economic and political development processes through production and reproduction (Rathgeber, 1990). Women have been instrumental in fostering development, positively or otherwise, at household and community levels (Muyoyeta, 2007). The only drawback is that the national systems and socio-cultural structures under which women operate have disadvantaged and accentuated inequality and their marginal status in society.

Although important, women's work in the domestic sphere is often unrecognised in many societies in developing countries including Uganda. Yet, even when women's productive work is recognised, it is often under-rewarded compared to that undertaken by men. More disturbing even at national level is that women's work whether in or sometimes out of the home is unrecognised as 'work' and therefore excluded from national statistics. It is these 'disempowering' dynamics, structural rigidities and underlying unequal processes therein that have increased the peripheral position of women in development. Thus, the underlying idea of integrating women in the development processes under the WID approach is limited and incorrect in that it appears to ignore the key contributions women have made from time immemorial (Muyoyeta, 2007).

However, proponents of the WAD approach to women involvement in development trajectories were criticised for assuming that the positions of women would improve when social structures and systems under which women operate become more equitable (Rathgeber, 1990). WAD simply reduced the numerous and convoluted problems encountered by women on a daily basis to unfavourable and gender-insensitive structures. Moreover, WAD "underplays the role of patriarchy in undermining women's development and does not adequately address the question of social relations between men and women and their impact on development" (Muyoyeta, 2007:7). Further, the WAD approach focuses only on the productive side of women and ignores their reproductive side (Rathgeber, 1990). Akin to WID, WAD is lopsided as it focuses on one aspect of women, production.

Based on the development experiences of women particularly in developing countries, there was a further transition in debates around women in the 1980s from WAD to gender and development (GAD) (Rathgeber, 1990). The transition in women related discourses to GAD

was influenced by the idea that women do not live in isolation in society. The milestones achieved or failures realised by women are an outcome of their societal interaction with other members of society particularly men. According to (Moser, 1995):3), the major issue as to why WID and WAD approaches were unsuccessful in dealing with the problems which women grappled with in society is that women issues were often conceptualised "in terms of their *sex*—namely, their biological differences from men—rather than in terms of their *gender*—that is, the social relationship between men and women, in which women have been systematically subordinated".

The forgoing argument alludes to and advocates for an engagement with the multiplex of socially constructed differences and stereotypes between men and women which obstruct women from plausibly participating in the development processes. It is also key to acknowledge that socially constructed differences between men and women, and the ensuing stereotypes either directly or indirectly result in the subordination of women and determine their ultimate occupation of the peripheral status in society. As Moser (1995: 3) rightly suggests, a specific "focus on gender rather than women makes it critical to look not only at the category 'women'—since that is only half the story—but at women in relation to men, and the way in which relations between these categories are socially constructed." Compared to the welfare, WID and WAD approaches whose exclusive focus was on women, GAD focuses on both men and women. In relation to this study, GAD is concerned with on women but the "social construction of gender and the assignment of specific roles, responsibilities, and expectations to women and to men" (Rathgeber, 1990:494). It aims at formulation of interventions, policy or otherwise, that ensure that both men and women equally participate and benefit from development processes (Muyoyeta, 2007).

In Uganda, the response of the government to gender issues from the 1980s to the present period has been diverse and complex, and at times with a lot of contradictions. There have been accelerated attempts to plausibly incorporate Ugandan women in the broader development discourses of the country were revived from 1986 onwards with the coming into power of the National Resistance Movement (NRM) government headed by President Yoweri Museveni. During this period, there were multiple shifts in policy interventions, actions and discourses around the contribution of women in the country's development pathway. The shift was from the welfare approach emphasised in the colonial and first post-independence governments particularly the focus on reproduction, caring for the sick and the elderly to questions of how women including those in rural areas could actually participate in the country's development process. Informed by similar processes that were taking place elsewhere in the developed and developing world (Moser, 1995; Mikkelsen, 2005; Muyoyeta, 2007), Uganda adopted and incorporated the gender discourses in its development interventions. But since that the "distinction between WID and GAD is far from clear, as gender interests, like women themselves, are constantly changing and adapting in response to new opportunities, information, and environments" (Brown, 2006:57) the approach to women involvement in development has also changed with time. This was epitomized by the appointment of a woman Vice President and having a woman Speaker of Parliament as indicated in the sections that follows. Noteworthy is that although numerous milestones were registered with regard to the integration of women in the country, there are many areas where inequality still exists including education, employment, land ownership and access to credit.

2.2.6. Gender dynamics in Uganda (1986 to 2015)

The gender landscape in Uganda has been changing in a positive direction with inclusion of women in decision-making positions. The positive change is particularly attributed to efforts of the ruling NRM government which assumed power in 1986. Access to education by

women was still limited as by 1989 only 11 out of the 52-government aided technical schools offered facilities for girls. Moreover, of the 11 schools that offered facilities for girls, 9 offered tailoring courses while two offered electrical installation courses. Evidently, women were still being steered towards a domestic career and now away from science and technology based on the training that they were receiving (Kwesiga, 2002).

In the recent past, the Government of Uganda (GoU) has exhibited strong commitment towards reducing gender inequalities using affirmative action policies for girls and women in politics and education coupled with operationalizing of laws to protect the rights of women (Tamale, 1999; Tripp, 2012; Byanyima, 2000; GoU, 1997). Uganda's first National Gender Policy (NGP) approved in 1997 and updated in 2007 provides a legitimate point of reference for addressing gender inequalities at all levels of government and by all stakeholders. For instance, each district in Uganda has a specific political position reserved to a woman who represents women of that district in the parliament of the Republic of Uganda.

Moreover, women freely compete with men for other elective positions in the country. Uganda also had the first female vice president in Africa and the speaker of the current 9th Parliament of the Republic of Uganda is a woman. As of 2014, 35.0% of parliamentary seats are held by women (UNDP, 2014). Furthermore, women can own property including land by law and girls are taught the same subjects as boys in school (GoU, 1995; Michel, 1995). 22.9% of adult women have reached at least a secondary level of education compared to 33.5% of their male counterparts (UNDP, 2014).

Regarding policy formulation, Uganda's Performance seems to be impressive as indicated in the enumerated milestones. Removing the legal barriers that prevent women from

participating more directly in monetized activities has significant implications for improving family welfare (Dollar and Gatti 1999). However, a close examination reveals that while laws that ensure protection of women have been passed, laws that have proved to be inherently discriminatory against women have been sanctioned. For example, the Divorce Act which permits a man to file for divorce solely on the grounds of adultery but makes this unacceptable for a woman and requires her to have other grounds in addition to adultery to file for divorce (Mbire, 1999).

Also, notable among discriminatory state laws is the 2014 anti- pornography Act which bars anyone from wearing clothing that exposes their private parts in public (GoU, 2014). It has been viewed as a direct attack on the personhood and autonomy of women because the passing of the law was met with vigilante acts of undressing women by street mobs, police officers stopping women on the street and ordering them to return home and change clothes and a judicial officer summarily detaining two women in her court room to 3-hour imprisonment for wearing miniskirts (Jingo, 2014).

Meanwhile, the government was at pains to claim that the law does not impose a dress code and that it is gender neutral dismissing the upsurge of attacks on women as a misinterpretation of the law by the public (Senteza, 2014). This raises the question of why the mobs only targeted women and why the police and the judiciary was caught up in this "misinterpretation" with the public but according to Oloka (2014), more disturbing and difficult to understand is how such a discriminatory law escaped the attention of the many women parliamentarians. Notions of the subtle nature of African feminism and the remark that privileged women who make it to the country's legislature are the wives, daughter and sisters of the men in power and are far removed from the realities of ordinary women could partly explain this (Mbire, 1999, Edwalds and Stocker, 1995). The notion that gender is not monolithic is highlighted in these events.

Important to acknowledge is that patriarchy is not something practiced by only men and therefore is not a situation of men against women or women against men. Women too practice patriarchy. For instance, in a study done in rural in Uganda it was found out that more women than men thought that it was acceptable for a man to beat his wife if she did not fulfil some her marital duties or went against the wishes of a man. According to the study, 16% of men and 28% of women thought beating was justified when a woman refused to have sex with her husband. Moreover, 22% of men 27% of women considered wife beating justified when a woman used contraception without the permission of her husband (Koenig et al, 2003). Older women in most African society are the custodians of oppressive laws as explained by Thomas et al (1988) in the case of Female Genital Mutilation where elderly women forced young girls to undergo this brutal ritual circumcision.

In addition, the government is seen to be slow at making some laws that promise greater freedom for women. For example, the Domestic Relations bill has been tabled for more than 30 years but has not been passed to date. Debating the bill is often postponed with the reason that it is not urgently needed (Mukasa, 2014). If the bill is passed, it will recognise and criminalise marital rape. It will also reduce domestic violence which according to the Human Rights Watch reports affects approximately 40% of women in Uganda (Human Rights Watch, 2005).

Efforts to reduce gender inequality in the country are still embroiled with challenges (Boyd, 1997:192; Boyd, 1989). Affirmative action policies have been seen to be more of tokenism driven by political agendas and to win the support of the international donors (Glickman, 1992, 185). As Byanyima (1992; 140) suggests: “The NRM leadership was fully aware of the extent of women’s oppression and in principle it opposed sex discrimination. However, in practice the leadership did not openly speak against male domination”. The government’s

preference for men and exclusion of women was evidenced in the post 1996 election cabinet appointments in which only six of the sixty-two members of cabinet were women (Byanyima, 1992).

The affirmative action policies have also been criticized as a 'top-down cosmetic window dressings' meaning that it has not caused major impacts for the majority but only a few elite women especially in politics (Tamale, 2000). They are mechanical and take no consideration of the underlying social causes of the issue they are designed to address. They do not in any way foster the interests of ordinary women (Tamale, 2000). Moreover, within affirmative action domain, women are allowed and encouraged to participate in politics for as long as they do not pause a threat to the men. When women begin to compete with men for positions, men in politics always have tradition and culture as ready weapons to draw on in keeping the women in check whenever it is convenient (ibid). In addition, the media is dominated by men who always paint women leaders negatively. Women leaders are constantly subjected to sexual harassment to which they respond with disregard and generally accept as the nature of men (Tamale, 2000).

2.2.7. Gender, Marriage and Science and Technology

The numbers of Ugandan students who received scholarships to study abroad in the period from 1981 to 1990 show how the gender trajectory in Uganda is 'bumpy as women continue to be excluded and occupy peripheral positions compared to men. In the Arts field of study at postgraduate level, women made up 35% and 16% in the science field. In the undergraduate group of sponsored students in the same year, women constituted 25% and 14% in the arts and sciences field respectively. This shows that women continued to be trained in the 'less manual' arts subjects while the men are trained to assume manual jobs. In total, women only made up 19% of the total awardees (MoED, 1991). Young women and girls were discouraged

from aspiring to technical vocations. While technical education in Uganda is generally neglected, for many girls, it has always been simply out of the question. The representation of women in science and technology fields has continued to be low in the contemporary period, as indicated in Table 1. Even after implementation of policies aimed at achieving gender equality; men constitute the majority in science and technology subjects while women constitute the majority particularly in the Arts subjects.

Table 1: 2000/2001 Makerere University Enrolment

Courses	**Male**	**%Male**	**Female**	**% Female**
Law	135	43	180	57
Library and Information Science	27	46	32	54
Bachelor of Fine Art (Bifa)	51	47	58	53
Adult and continuing education	44	71	18	29
Technology	342	79	93	21
Science	663	74	228	26
Medicine	376	70	161	30

Source: Kwesiga (2002**)**

The consistent institutionalised exclusion of women including in science and technology has become internalised and accepted by men and women alike and today they continue to fuel it. In a study of Ugandan men and women regarding preferences in the level of education of their ideal spouse indicates, most Ugandan women prefer for their husbands to be more educated while the men prefer less educated women for wives (Kwesiga, 2002). Table 2, shows that only 25% of men saw it as ideal for their partner to have attained university education while 94.1% of women preferred a spouse with a university education (Kwesiga, 2002).

Table 2: Preferred levels of education of partner

Preferred Education level	Male	Female
No formal education	00	00
Primary education	3.2	00
O'level education	30.7	00
A' level education	41.0	5.9
University education	25.0	94.1

Source: Kwesiga (2002)

2.3.8. Ugandan women and the labour Market[7]

Two in three employed women in Uganda are self-employed and four out of every five women in Uganda work in the agriculture (Department for International Development and Irish Aid, 2014). The 2008 Gender and Productivity Survey (GPS), reports that 42% of women in the labour force are unpaid family workers receiving no income despite contributing the largest proportion of agricultural labour (EPRC, 2009). This is indicative of discrimination of women in the labour market. Gender discrimination in the labour market is a worldwide phenomenon (Castells, 1998, MacGaffey, 1991, Dice Inc, 2005). Discrimination takes on various forms including no payment for work done, lower wages for women for same work done as men, labour segmentation, limited access to opportunities and lack of access to credit services. According to Hafkin and Targart (2001), women particularly in sub-Saharan Africa are engaged in agriculture and produce about 80% of the. Many women work two times as much as men, often 15-18 hours a day, but earn only one tenth of what their male counterparts earn. Employment only guarantees partial protection for women, thereby leaving them vulnerable o exploitation. Most of these constraints that women face in the labour market are a direct result of a patriarchal setting of society which perceives and treats women as inferior to men.

[7]The data that has been used in this section was obtained from a study of the status of women in Uganda conducted by Department for International Development and Irish Aid in 2014

Although the employment law in Uganda mandates paid or unpaid maternity leave, paid or unpaid paternity leave, equal pay for work of equal value, it prohibits employers to ask about family status in a job interview. However, the law does not provide for a ban on gender discrimination in hiring, does not penalize or prevent dismissal of pregnant women and does not require employers to provide break time for nursing mothers (World Bank, 2013). Thus, as women engage in work, they continue to be confronted by many legal, economic and social constraints. The section that follows discusses the challenges that women encounter as they participate in the labour market.

2.2. Conclusion

This chapter has indicated that unequal gender relations that characterise the Ugandan society are embedded in history. The oppressive socio-cultural- norms and values were constructed, carried forward and sustained through discriminatory and exclusionary formal education first provided by Christian missionaries and later adopted by the colonial government (Kwesiga, 2002; Musisi, 1992). Values that encourage discrimination and oppression of women were further perpetuated by post-independence governments (Castle Education Commission, 1963). The consequences of the historically situated cultural and traditional gender norms and values which encourage exclusion and oppression of women continue to be experienced and observed in the Ugandan society despite the presence of a gender equality and equal opportunity campaign that has run for more than 20 years (Mbire, 1999). The next chapter examines Uganda's position in the global digital age, the Information Communication Technology (ICT) uptake and pathway.

CHAPTER 3: SITUATING UGANDA IN THE GLOBAL INFORMATION SOCIETY

3.1. Introduction

The mass production of Information and Communication Technologies (ICTs) and their widespread usage has inevitably turned them into a critical issue of policy concern in the present-day world (Ulrich et al, 2005). ICTs play an increasingly pivotal role particularly in the development trajectories of societies all over the world, including Uganda. The International Telecommunication Union (ITU, 2012: 3) equates ICTs to industrial machines during the industrial revolution by asserting that:

> ICTs represent to today's world what industrial machines represented during the industrial revolution; they have revolutionized ways of working, transformed the economy, had an irreversible impact on the way people live, and have shaped a new 'information society.

The central nature of ICTs has created a situation in which they have become vital social, economic and political tools for people. This is particularly so for people in the developing world where ICTs can reduce poverty (Sahay and Avgerou, 2002). May et al (2011) provide evidence of perceived benefits of using ICT by the poor and marginalized people by demonstrating that changes in access to digital forms of ICT are strongly associated with changes in financial poverty status. Elsewhere, Sachs (2004) suggests that investment in ICTs can be instrumental in dealing with the poverty trap in which Africa perpetually finds itself by specifically attracting foreign direct investment. Diga (2007) furthers this view by elaborating the ways in which mobile phone technology is employed to mitigate unpredictable shocks that accentuate poverty in rural Uganda.

The international community has recognized that ICTs close the gap between developed and developing countries, facilitate economic and social development, are a central pillar for the building a global knowledge society and provide countries with the opportunity to free themselves from the tyranny of geography (The Missing Link Report, 1984; World Telecommunications Development Conference, 1994; Florianopolis Declaration, 2000).

Similarly, Brewer et al (2005) argue that technology is considered one of the greatest enablers for improved quality of life a alongside good governance. The purpose of this chapter is to locate the position of Uganda in the global information society. The chapter starts with a brief discussion of the origins and foundations of ICT policy at a global level. Thereafter, it points out the policy strategy milestones in the ICT sector realised on the African continent, discusses the concept of 'information society' and presents ICT pathway in Uganda from the pre-colonial era to the present-day period (2016). Lastly, main initiatives put in place to address the challenges in the ICT sector in Uganda are discussed.

3.2. Global and Pan-African ICT landscape

The 1980s witnessed an increase in debates and discourses around the relevance of ICTs to development. One of the noteworthy results of these debates was the creation of numerous strategic national processes in the global north aimed at mainstreaming ICTs in social, economic and political development strategies of individual nation states (Kintu and Elder, 2005; ITU, 2012). Notable among such national initiatives are the Information Infrastructure Task Force in the United States of America (USA) formed in 1993 and the Telecom Council in Japan. As a result, countries in the global south started to query their own positions in light of the information society (Czerniewicz and Ngugi, 2007). Consequently, with the assistance of United Nations Economic Commission for Africa (UNECA), the Information Technology Union (ITU), the United Nations Educational, Scientific and Cultural Organisation

(UNESCO), the International Development Research Council (IDRC) and Bellanet Secretariat, the African Information Society (AIS) was established (UNECA, 2008).

The formation of the AIS was preceded by the 1995 UNECA meeting of African Ministers responsible for Economic and Social Development which not only endorsed but also developed a detailed strategic plan in form of the African Information Society Initiative (AISI), an Action Framework to Build Africa's 'Information Highway' (UNECA, 2008). The plan motivated African governments to either speed up or start developing their respective national ICT polices to reflect overall global development priorities. AISI has served as a point of reference to African countries in laying the necessary foundations and building blocks of the Information Society. Three quarters of UNECA's 53member States have national e-strategies that complement their development efforts as well as harnessing their ICT sectors to play a greater role in their economies (UNECA, 2008). This is done through the National Information and Communication Infrastructure (NICI) Plans and Strategies (UNECA, 2008). As a result, the ICT sector on the African continent has grown 40% from 1998 to 2008 and the World Bank predicts that Africa will become the next major hub in technological innovation (World Bank, 2013).

Meanwhile, concerted global efforts have been made to speed up the evolution of the information society. These include the 2003 Geneva Action Plan of the World Summit on the Information Society (WSIS) (ITU, 2003). The objectives of the Plan of Action are to build an inclusive Information Society, put the potential of knowledge and ICTs at the service of development. In addition, the action plan promotes the use of information and knowledge for the achievement of internationally agreed development goals, including those contained in the Millennium Declaration as well as address new challenges of the Information Society, at the national, regional and international levels. Relatedly, the 2005 WSIS Tunis Commitments

reaffirm commitment of nations to building a conducive national environment for ICTs to flourish and that access and most importantly meaningful use by all is realised (ITU, 2005)

3.3. What is the Information Society?

Webster (2003) argues that although people in the developed world such as North America, Japan and Western Europe have for long perceived themselves to live in the information society, the term "information society" is problematic because it is ambiguous. Webster argues that the concept information society is inadequate and unhelpful considering the rapid developments in the ICT industry. In the opinion of Webster (2003:1338), this suggests, at the least, that a good deal of policy today is premised on somewhat shaky foundations. Yet Sarrocco (2002:1) asserts that ever since the 1980s, 'information society' has been one of the key terms used to describe today's world. Whether welcome or undesired, the information society is here, and it is therefore essential to clearly define its fundamental characteristics and principles.

According to William (1996), the information society is typically seen as natural development of European liberal tradition or American technology modernity while some commentators view the advance of the information society as a new phenomenon (William, 1996; Webster, 2006). What is clear though is that the term 'information society' has been accepted and legitimized as evidenced by its adoption at top international policy forums (ITU, 2005). William (1996) describes an information society as 'a society in which the quality of life as well as prospects for social change and economic development depends increasingly upon information and its exploitation'. In such a society, living standards, patterns of work and leisure, the education system and market place are markedly influenced by advances in information and knowledge as evidenced in an increasing array of information intensive products and services, communicated through a wide range of media, many of them

electronic in nature" (William, 1996:3). Meanwhile, Webster (2006:2) defines the information society as one that is characterised by "pervasive media, burgeoning information occupations and the development of the internet…an era of information flows, of virtual relationships and break neck change".

Further, Moore (1997) identifies three main characteristics of the information society. First, information is used as an economic resource. Organizations make greater use of information to increase efficiency and productivity and this benefits the country's overall economy. Second, in an information society it is possible to identify greater use of information among the public. People use information more intensively in their activities as consumers to inform the choice between assorted products, explore their entitlements to public services and take greater control over their own lives. Third, the development of an information sector within the economy. Moore (1997) advances the argument that the function of the information sector is to satisfy the general demand for information facilities and services. In an information society, a significant part of the sector is concerned with the technological infrastructure including networks of telecommunications and computers. In nearly all information societies, this information sector is growing much faster than the overall economy.

Relatedly, Sarrocco (2002) defines what she refers to as the elements and principles of the information society as universal service and universal access, equal opportunity, content diversity, freedom of expression and freedom of access. The foregoing elements and principles of the information society are aimed at providing reliable, affordable and secure access to ICT by all the citizens of the world. The elements and principles are discussed in greater detail below.

3.4. Uganda's progress towards the information society

Uganda has been making significant strides in the ICT industry over the years. The journey of Uganda towards becoming an information society is observable in political commitment and liberalisation of the economy (Kintu et al., 2005). The progress registered in the ICT industry is particularly attributed to the ICT policy reform processes undertaken in 1996 as part of the World Bank and IMF initiated macroeconomic reforms in the context of neoliberalism and structural adjustment (World Bank, 2007).

Having acknowledged the potential of ICT industry in fostering economic and social development, the government undertook policy and structural reforms which shaped the current ICT sector. The aim of the reforms was to facilitate universal access to ICT services (ITU, 2003). However, the current ICT landscape has also been heavily influenced by Uganda's colonial and post-colonial histories of communication. Therefore, unpacking access and use of ICT in these past periods is beneficial as the historical perspective provides a nuanced understanding of the current landscape.

3.5. The ICT trajectory of Uganda: 1895-1962

In pre-colonial Uganda, villages and neighbourhoods were the most important zones of communication (Kyeremeh, 2005). Indigenous media of communication including drums, horns, woodblocks, bells and gongs were employed to send messages to the rest of the community members (Wilson, 2008). Communication was particularly by word of mouth and trade was only carried on with immediate neighbours. This arrangement of communication went on until the advent of colonialism.

In 1895, shortly after Uganda was declared a British protectorate, Reverand Miller, a missionary who owned the only typewriter in the country began to produce stamps for postal services (Businge, 2007). He produced the stamps at the request of British administrator, George Wilson. Official records indicate that on 14th March 1895, Rev. Miller produced the stamps on his typewriter by changing the ribbon in the typewriter from black to violet (Businge, 2007). The stamps came into use on 20th March 1895. Rev. Miller also took the responsibility of managing payments of postal dues. The stamps were valued in cowrie shells and at that time 200 cowrie shells equalled a rupee (Businge, 2007). With these events, the first postal service in Uganda was created.

However, with the passage of time, the British colonial administration needed an effective way to transport letters, parcels and packages throughout the protectorate and the newly acquired colonies. For this reason, a faster and alternative means of communication facilitated by relay runners, also called 'human telephone lines', was invented (Nkwi and de Bruijn, 2014: 212). Messengers on foot run in relays from village to village delivering messages, envelopes and larger parcels for the British colonial administrators and missionaries (Nkwi and de Bruijn, 2014). Records at Posta Uganda indicate that the normal running time from Kampala to Fort Portal, an equivalent of 317 kilometres was 60 hours or two and half days (Businge, 2007).

This form of communication was riddled with many challenges because many 'postal runners' died on these errands from a range of hazards that included attacks by wild animals, drowning in rivers and swamps, and floods (Businge, 2007). This shows that the price of communication was high. Nonetheless, the system of forwarding mails by 'relays of carriers' proved to be efficient in meeting the needs of the colonial government and the missionaries.

It is credited for greatly improving time efficiency in delivering messages by the British colonial government. According to the 1905-1906 Protectorate annual report, the time spent sending mail from Mombasa to Gondokoro, a trading station on the east side of the White Nile in southern Sudan was 14 days. From Entebbe to Gondokoro it took the relay carriers 10 days. From Entebbe to Nimule in South Sudan, 350 miles by road, the relay runners took between 61 to 62 days. The Protectorate Annual Report stated that arrangements were being made for a series of relayed runner services which would bring the most distant out station within 12 days of the headquarters as against one month formerly required to make the journey (Protectorate Annual Report, 1906).

In 1900, Uganda and East Africa postal services were amalgamated. This meant merging the communication service of Uganda to that of Kenya. Tanganyika only became part of this amalgamation in 1933. At the time, the East Africa high Commission head quartered in Kenya became responsible for communication services in the whole of East Africa, which is, Uganda, Kenya and Tanzania. Amalgamation of postal services made coordination easier and more effective. By 1907, 458 miles of telegraph line with 7 offices had been established. A protectorate annual report stated that telephone lines had been put up in Kampala and Entebbe (The Annual Report, 1907).

In 1913-1914, the number of telegraph lines had grown from 458 to 1,041 miles with 22 postal and telegraph services. Telephone exchanges in the towns of Entebbe, Kampala and Jinja were established but these were confined to official use only. The report makes mention of plans to admit the public as subscribers in 1915. There were 25 telegraph stations and 29 maintenance stations and telephone exchanges for public use that were opened at Entebbe, Kampala and Jinja (Annual Colonial Report, 1920). By 1920, there were 1,554 telegraph

miles and all administrative centres and provinces were connected to a telegraph office except for the Northern Province. The northern region was not connected because it was a supplier of cheap labour on plantations that were established in the south of the country (Mamdani, 1976. More than 50 years after independence, evidence points to fact that Uganda has not been able to successfully address these regional infrastructure disparities with northern Uganda reporting the least use of ICTs in the country (World Bank, 2007).

3.5.1. ICT development in the post-independence period: 1962-1985

At independence in 1962, the first post-independence government of Uganda inherited a national postal service that served only the capital of the southern region and neglected most of the rest of the country. Moreover, the period between 1962 and 1984 was characterised by political instability and economic decline. Physical infrastructure was destroyed and as a result, social services were poor and the communications sector had been affected by these events. The postal service was characterised by underperformance such that by 1993, Kampala had 62% of all installed telephone lines but nationwide, only 34% of that capacity was in use. In addition to being outmoded, the company's equipment was also poorly maintained (Shinyekwa, 2013).

Despite degeneration of the communication sector, Uganda was making some progress in the ICT sector as it received its first computer in 1967. Described as a ponderous mainframe, the computer was acquired by the government to manage the public servant payroll better as it had proved to be challenging after an increase in the number of public servants particularly in the post-independence period. A heavy metallic box-like object which functioned through punch cards was operated by women. It had no keyboard, mouse or central processing unit. Stationed at the Ministry of Finance under the supervision of the government chief statistician, this computer was mainly used for addition and subtraction (Imaka, 2010). The

first computers in Uganda were used mainly for addition and subtraction. They were simple and so they were associated with the perceived simple nature of women. In questioning, why there are few women ICT professionals, one could ably argue that as computer technology became more advanced and sophisticated, it evolved to be associated with the perceived sophisticated nature of men, leading to the exclusion of women.

With the progression of the digital era, Uganda saw the arrival the arrival of a second similar computer in 1968 which was taken to the Department of Mathematics at Makerere University. While there, this computer remained a preserve for students of mathematics many of whom became Uganda's first computer scientists (Imaka, 2010). In the mid 1980's Uganda received its first desktop computer which was purchased by Makerere University to handle the University's pay roll (ibid). India was the first developing country to receive a digital computer in 1956. It was stationed at the Indian Institute of Statistics for scientific calculation work.

3.5.2. Post liberation war period: 1986- 2015

By 1986, there was only one Telecommunications Company; The Uganda Posts and Telecommunications Limited (UPTL). By the post liberation war period, UPTL had been run down due to poor administration which was evident in billing inefficiencies. This meant that much of the communication traffic went unrecorded. In 1998, for instance, 75 million minutes were billed in by UPTL but 40% was lost as provision for overwhelming debt and a further 34% was lost to audit adjustments. The company was not making any profits. In the same year, UPTL reported 4.4 million minutes of incoming calls from the USA, while Federal Communications Commission recorded a total of 10.6 million minutes from USA carriers (ITU, 2001). Moreover, UPTL was solely owned by the government and its services were a preserve of top government officials. Records show that in 1986, there were about

40,000 telephones in Uganda with 35, 000 of the telephones concentrated in and around the capital city (Czerniewicz and Ngugi, 2007; UCC 2007). Even with massive rehabilitation funded by the World Bank and other international donor agencies, communication services only improved in the towns of Kampala, Jinja and Entebbe thereby leaving out the other parts of the country. The management of telecommunication infrastructure continued to be poor and as a result the UTL continued to make huge losses. Internet was only introduced to Uganda in the 1990s and the first internet connection was made at Makerere University in 1993 (Ndawula, 2007). At this time, access to the internet was low as the vast majority of Ugandans neither had the knowledge nor the resources to make use of it. Meanwhile, in the United States of America (USA), the first commercialized modems were introduced by the American Telephone and Telegraph Company in 1958 (American Telephone and Telegraph company, 2004).

3.5.2.1. Use of New Media Technology in Uganda

New media technology services have been increasing over the years. The number of fixed telephone lines rose from 46,000 in 1996 to 71, 272 in 2004. Mobile phone subscriptions increased from 3,500 in 1996 to 987, 456in 2006 and an estimated 8,554, 864 in 2008 (Czerniewicz and Ngugi, 2007).FM radio stations increased from 14 in 1996 to 129 in 2006 and television stations from 4 in 1996 to 25 in 2006 in the same period (UCC, 2009; Czerniewicz and Ngugi, 2007).

3.5.3. The telecommunications sub-sector and the mobile phone

In September 2012 Uganda was connected to sub marine cables when SEACOM established two points of presence in Kampala. This has led to more efficient service delivery in the sector (UCC, 2013). As of 2015, the ICT sector in Uganda consists of the

telecommunications, postal and broadcast sectors, with the telecommunications sub sector and the mobile phone constituting the greater part.

The mobile phone is the most salient symbol of ICT in Uganda. Like in most of the developing world and in Africa specifically, the mobile phone has changed the way in which poor people interact and communicate with each other as it has addressed issues that no other ICT device has been able to. As Diga (2007) points out, the mobile phone is often times a sacrifice that is afforded at the cost basic needs like food because of its perceived benefits. In 1998, the cost of a new subscriber connection stood at 3000 Uganda shillings approximately US$ 1.5 while the cost of a handset stands at 30, 000 Uganda shillings or US$ 12. Airtime goes for a cost of 351 shillings per minute which translates into USD 0.17 per minute of making a local call (FCC, 1998). Affording a mobile phone can be a huge sacrifice for families living below the poverty line. Nevertheless, Uganda has moved from approximately 250,000 available fixed telephone lines pre-2003 to over 17 million available mobile telephone lines by the second quarter of 2012. As of 2013, there were 8, 50,200 mobile internet subscribers compared to 84,558 on fixed internet subscription (UCC, 2014).

Available information shows that by 2014, Uganda had 8 operating telecommunication companies and this increase was attributed to 99% telephone network coverage and a tele-density of over 45% (CIPESA, 2014). The introduction of smart phones has made it possible for many Ugandans to access the internet and about half of the population accessing internet in Uganda currently, first accessed it on a phone (Chabossou et al, 2008). The population of people who have access to banking services rose from 70% to 85% in 2013 primarily due to mobile money banking penetration (De Lanerolle et al, 2014).

3.5.4. ICT Skills Development in Uganda

ICT skills are essential in the effective access and use of ICTs. To build a credible pool of ICT professionals, the Ministry of Education, Technology and Sports has taken several steps including introducing computer studies as one of the compulsory subjects in secondary schools all over Uganda. Introduction of computer studies is aimed at ensuring that students acquire basic computer literacy before they join university (MoES, 2012). Further, a project to construct computer labs in secondary schools all over the country was announced in 2013 by the Ministry of Education and Sports. It is envisaged that the construction of computer labs in schools will allow youth to access to computer technology at an early age (Kasooha, 2013).

In addition, facilities to provide ICT training have been established. In 2004, the Faculty of Computing and Information Technology (CIT) which houses the National Software incubation centre was established at Makerere University. This training centre is divided into four academic units which are Computer Science, Information Technology, Information Systems and Networks. Several top technology companies such as Google and IBM have been involved with incubation (Baryamureeba, 2007). As of October 2006, CIT had a total of 5560 students 5000 undergraduate and 560 postgraduate students including 54 PhD students. There were other students undertaking short courses. By 2008 it was estimated that CIT would have about 10,000 diploma and degree students. The facility accommodates over 12,000 students at any one time and students follow an internationally recognized curriculum (Baryamureeba, 2007).

The College of Computer Informatics and Technology (CIT) at Makerere University offers a wide range of programmes from PhD, Masters, Postgraduate Diplomas, Bachelor Programmes, undergraduate diploma to certificates in computing and ICT related fields. In its firm commitment to address the needs of society, CIT conducts research in the Computing

and ICT areas such as Information Systems, Information Technology, Computer Science, Software Engineering, Computer Engineering, Data Communications and Computer Networks and ICT for Sustainable Development. In 2008, Makerere University faculty of Computing and Information Technology launched the first National Software Incubation Centre (NSIC) in East Africa. The $8m facility has attracted several top technology companies like Microsoft, Google, IBM and Nokia (CoSIS, 2013).

In 2012, an IT student at the Makerere University developed several applications that he sold to Nokia. His most popular one was the Wordbook which he sold to Nokia for 1.25 dollars per download. By 2012, the application had been downloaded over 300,000 times. He owns two ICT companies both focusing on mobile and website development and employed 15 people by 2012 (CoSIS, 2012). In 2014, a group of students from Makerere University created a smart phone application that could be used to diagnose malaria. If used, this innovation is more effective than the current method of diagnosis which involves using a needle to draw blood that is then tested for the presence of malaria parasites (CoSIS, 2016). ` Achievements such as this are an indication that the youth of Uganda have a contribution to make to the ICT sector on the national and international level if they are given opportunity and guided into a position to take advantage of available opportunities.

The determination of young people in Uganda is reflected in his words of one of Uganda's most promising computer scientists: "I am working extremely hard, trying to develop more applications especially games for the Android and Nokia market so that I can hit my target of earning One million dollars before I am 23. Am sure I will make it" (CoSIS, 2012). This also shows that the youth aspire to benefit from jobs created by ICT. In addition, several ICT training institutes have been set up at Nkozi, Kyambogo, and Busitema Universities. It is estimated that over 2000 ICT professionals have been trained (UCC, 2007). According to

UCC (2014), the ICT sector employs 6, 062 people directly and 343,886 people indirectly (UCC, 2014). These numbers have been on a steady increase.

The combination of new ICT policies and initiatives implemented by the government has created some order in the ICT industry. However, the country grapples with numerous challenges like replication of services by the different government bodies, there is an un-clear understanding of the responsibilities of some institutions. The ICT sector is inundated by national numerous players whose areas of jurisdiction are clearly demarcated on paper but not in action or practice. For instance, the Uganda Institute of Information and Communication Technology, an institute for ICT skills training is run by the Uganda Communications Council (UCC) which is the regulatory body (Tentena, 2015). Also, the declining investment in the in the sector does not match the government's said commitment to the ICT industry (ITU, 2013). While private investment in the sector increased from US$78 million in 2004 to US$150 million in 2007, the government allocated US$ 6.4 million to ICT sector in 2012/2013, which is 0.13% of the national budget. This was a decline from the US$12 million which was allocated in 2011 (ITU, 2013).

Farell (2007) further points out the challenges faced by the ICT industry in Uganda including poorly developed ICT infrastructure, inadequate skill supply, high bandwidth costs, an unreliable supply of electricity, and a general lack of resources to meet a broad spectrum of needs. Due to these and related problems, the most recent NRI ranking shows Uganda's preparedness to effectively utilise ICT is wanting. In 2014 Uganda was placed at 115 out of 148 economies (Forum for Economic Development, 2014) falling among the laggards. This is an indication that more needs to be done to achieve a desirable level of ICT readiness a fact that is further reflected in the ICT Development Index ranking of 130 out of 157 nations in 2013. Figures show that 1.5% of Ugandans have phone subscriptions, 47% have mobile

phone subscriptions, 2.2% of households have access to a computer, 0.9% of households have access to internet, 106 900 individuals have access to fixed internet, 4 196 113 individuals use wireless internet, adult literacy which is the measure of the ability to use nee technologies stands at 73% and gross secondary enrolment stands at 23%.

In addition, access and use of ICT in Uganda is highly skewed between men and women as well as between rural and urban populations (Amuriat and Okello, 2005). In Uganda men's awareness and usage of ICTs is nearly three time that of women (Research ICT Africa, 2006). The shortage of up to date infrastructure and electricity makes use and access by rural citizens difficult. Further expansion of ICTs in Uganda has been limited by multiple structural challenges, particularly by the lack of an extensive fiber-optic network and a limited electrical grid. In a national survey, less than 23% of respondents said their homes were connected to the main electrical grid, while nearly 73% said their homes have no electricity (InterMedia Knowledge Centre, AudienceScapes, 2008). Other development organizations cite Ugandan access to electricity as less than 10% (UCC, 2010). This could explain why the battery powered radio is the most commonly used communication device (InterMedia Knowledge Centre, AudienceScapes, 2008).

3.5.5. Key initiatives to improve the ICT industry in Uganda

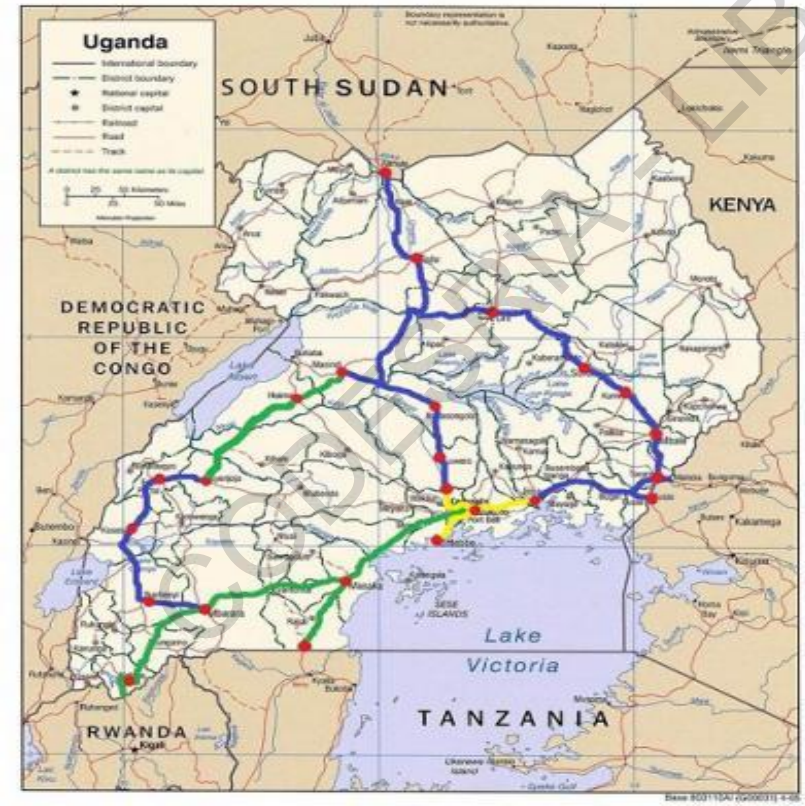
The long-term vision of the Government of Uganda (GoU) regarding ICTs is to become a globally competitive and prosperous nation with a high quality of life where people have access to information everywhere and in the shortest time possible (NDP, 2013). The overall key objective of the national ICT strategy is to promote development and utilization of ICTs such that quantifiable impacts are achieved throughout the country (Uganda National ICT policy Framework, 2003). However, problems of inadequate communication infrastructure including acute shortage of electricity as well as the absence of a National Backbone

Infrastructure continue to stand in the way of access for all. To offset these obstacles, the government has embarked on two major projects to in the ICT industry. These include the construction of the National Backbone infrastructure and the Communications Development (MoICT, 2015).

3.5.6. National Backbone Infrastructure Project (NBI)

Figure 1 shows the stages of the NBI fibre optic cable that have been laid. Phase IV would extend the cable to northern Uganda up to the border with Southern Sudan

Figure 1: Map of Uganda showing the progress of laying the fibre optic cable to facilitate the NBI



Source: National Information Technology Authority Uganda (2014).
KEY: Phase I (Yellow) Phase II and IV (Blue) Phase III (Green).

The national backbone infrastructure for ICT has great benefits for ICT improvement in Uganda (NITA, 2014). However, questions have been raised about the poor implementation of the project. For instance, several international and national experts commented that the

fibre optic cable that was laid was not suitable for national backbone infrastructure construction (Vision Reporter, 2010). They explained that Uganda had the laid G652 type whereas it should have used G655 for the kind of data that Uganda will need to transmit.

3.5.7. Gains in the ICT industry in Uganda

Over the past 21 years, Uganda has experienced an unprecedented increase in information intensive products and services which have in turn given rise to the current ICT environment and begun its evolution into an information society (UIA, 2015). The Uganda Investment Authority (UIA) indicates that the Uganda ICT market is growing at a cumulative annual growth rate of 25% (UIA 2010). The ICT sector has registered significant growth and become an important part of the economy. Between 2007 and 2009, over $1bn was invested in this sector and the ICT sector contribution to GDP increased to 6.2% in 2012 from 2.5% in 2006 (UCC, 2012).

In addition, the value of posts and telecommunication services grew by 30.3 per cent in the 2009/2010 fiscal year and accounted for 3.3 per cent of GDP. These growth changes have had a profound effect on the Ugandan economy by making the ICT sector an important part of the economy. The ICT sector is now regarded as a vital pillar for social-economic development (National Development Plan, 2010). The export of ICT services has also taken off and has started to generate foreign exchange. Services exported include data processing and customer support. With virtually no earnings in 2001, the sector now earns over US $ 10 million per annum in revenue for the country (UIA, 2007). The industry attracted an excess of US $73 million in 2006 and direct employment of the sector stands at 6000 while approximately 350,000 people are indirectly employed by it. (IST Africa Consortium, 2010-2013). Figure 7 shows increase in tax revenue earned from the communication sector from 2010 to 2014 in excise, value added tax (VAT) and Pay as you earn tax (PAYE). The sector

brought in over 98 billion in 2010 and over 170 billion in 2014, over 94 billion in 2010 and over 129 billion shillings in 2014, over 22 billion shillings in 2010 and over 43 billion shillings in 2014(UCC, 2014).

3.6. Conclusion

This chapter has shown that the achievements of Uganda in ICT are impressive. There is overwhelming evidence of the increasing numbers of people who can access new technologies including telephones, computers and the internet. Government commitment to increasing access to and use of ICT services in Uganda is seen in the implementation of policies and initiatives that focus on promoting universal access of ICTs. However, it is also observable that the ICT achievements fall short of achieving the elements and principles of the information society including universal access because of many factors including inadequate infrastructure. Moreover, only a small portion of the population has access to electricity which is a vital requirement for powering the use of ICTs. Also noticeable is that the skewed distribution of ICT infrastructure does not happen in isolation but is fuelled by imbalance in the distribution of other social infrastructure including most prominently electricity and education. Infrastructure is concentrated in and around the capital city, Kampala, with rural areas systematically underserved. This trend has ensured that many of Ugandans remain excluded in the ICT evolution.

This chapter further illuminates the fact that ICTs are not an end in themselves and that there are necessary pre-existing conditions for ICTs to bring forth desired impacts. Necessary conditions include among others efficient well-planned infrastructure, skills needed to use ICT for all sections of the population including women and men, rural and urban as this allows universal access. Universal access should go beyond end user purposes to include

access in producing and providing ICT services and products. Given that ICTs are an emerging sector in Uganda, they continue to provide job opportunities which people should be able to access irrespective of gender and social economic status. This is important because individual economic freedom is the key to sustainable development. The chapter also highlights that women and men are disproportionately represented in ICT jobs globally. Women are seen to take on low level, less technical and less paid jobs. This has serious adverse implications for women and for the development of entire country particularly in job creation and curbing unemployment.

CHAPTER 4: THEORETICAL ORIENTATION

4.1. Introduction

This chapter examines the theoretical orientations on which the study is anchored. For this study, two theories were employed, namely: social constructionism and structuration. According to Pieterse (2001:2), a theory is a critique, revision and summing up of past knowledge in the form of general preposition, fusion of diverse views and partial knowledge in general frameworks of explanations. Theories are also sets of ideas or chain of explanations that describe why society is set-up in a specific manner, that is, real world situations in terms of structure and functioning.

A combination of the two theories, social constructionism and structuration was deemed suitable for this kind of study because each appropriately complements the other. In the case of this study, social constructionism was selected because it provides a plausible basis for explaining how and why women and men are differently 'conceptualised' in society and consequently allotted varying tasks/assignments based on 'socially constructed gender related 'labels' and stereotypes. Meanwhile, the structuration theory is central in exposing why and how gender-specific social structures consisting of cultural rules, norms, beliefs and societal expectations in present-day societies are maintained and continue to sanction existing gender related stereotypes — social structures do not condemn but approve — the stereotyping, labelling and allotment of varying assignments to men and women in society. At the same time, structuration explains the ways in which individuals exercise their inherent agency to challenge and navigate the existing social structures and the status quo. The next section examines the social construction theory in greater detail.

4.2. Social Constructionism

The social constructionism theory is attributed to the writings of Karl Manheim as indicated in the scholarly works of Berger and Luckmann (1966), Burr (1995), Hacking (1999) and Gergen (2009). However, Berger and Luckmann (1966) through their work: *Society as a Human Construction*, are credited for introducing social constructionism to mainstream social theory. Hacking's book titled *The Social Construction of What*? (1999) argues, "a great deal (or all) of our lived experiences and of the world we inhabit, is…socially constructed" (Hacking, 1999:6). We "create our sense of and meanings about, our social surroundings and ourselves in our conversations and interactions with those around us" (Cunliffe, 2008:123). The social construction perspective not only takes a critical analysis to the often taken-for-granted 'every-day' events in society but also argues that what is regarded as reality or knowledge emanates from the constant interaction process and claims that people's understanding of social phenomena is shaped and informed by culture and history (Burr, 2003). Reality or what Cunliffe (2008:123) calls "good knowledge, is that which accurately and objectively captures and represents the processes, systems and laws underlying the way the world works, which, … can be used to improve the way things are done".

The key issue and underlying proposition from a social construction stand-point is that what ultimately becomes accepted as social reality or truth is constructed and sustained by the constant interactive processes that members of the community are constantly engaged in (Gergen, 2009). People are socialized in the world, and for that matter, they "interpret meanings of events and/or others' subjectivities, and in doing so ... [they] we take on the identity of others and therefore … [their] our own place and identity (internalization)" (Cunliffe, 2008:125). The central driving force under the social construction theory is language as this is employed to craft and nest the diverse vantage points that members of the

community could have on a specific issue (Burr, 1995; Gergen, 2009; Epstein, 1978). The process of 'sieving' the diverse ideas and debates takes over and hence 'reality' is constructed. Therefore, the communication processes which go on every day in our societies construct the realities of the world in which we live (Gergen, 2009; Yi, 1999).

The social construction theory has been variously employed in several studies and disciplines in a bid to provide explanations for and/or explain events in society. For instance, Cunliffe (2008) examined the implications of the social construction theory for knowledge and learning. Meanwhile DeLamater and Hyde (1998) studied human sexuality in the context of social constructionism and essentialism, and Epstein (1998) explored Gay politics, ethnic identity and the limits of social constructionism.

Although the social construction theory has been widely utilised by several scholars and studies, it has many shortcomings and has been criticised in many ways. The first drawback is its open-endedness in the sense that there is no limit to what can be socially constructed, and because of this dilemma, quantification of the" relative contribution of extra-discursive processes" is difficult (Cromby and Nightingale, 1999). Another compelling critique which Cromby and Nightingale highlight is that all apparent truths can be challenged because: First, there are counter narratives or opposing views to virtually all 'realities' (Cromby and Nightingale, 1999). Second, "there is no fixed, universally shared understanding of reality—but how people shape meaning between themselves in responsive dialogue" (Cunliffe, 2008:128). Three, every individual has an imagination and/or 'picture' of the 'real' world and meanings that emanate from and are transformed through social action are "subject to differential interpretations" (Benford, 1997:410). This argument is amplified by Cromby who argues that "nothing ever *has to be* taken as merely, obviously, objectively, unconstructedly true (Cromby, 1999:9, emphasis original). For these reasons, Cromby and Nightigale (1999:9, emphasis original) argues that "*None of these things* [around us] *are any the less real for*

being socially constructed although the dominance of the processes of construction, as compared to other influences, may vary from one to the other.

In addition, the social construction theory has been criticized for its "incapacity to assert anything at all given its claims on the nature of language, objects, reality, and the like" (Stam, 2001: 292). In *Social constructionism and medical knowledge: a reply to M.R.Bury,* Nicolson and McLaughlin (1987:108) also point out the gaps and loopholes which some critics have identified in the social construction theory. First is that this theory is inconsistent and for that reason it suffers from "logical contradiction and ideological ambiguity". Second is ignorance of the "extent to which external physical reality imposes itself upon human knowledge" and the lack of a "convincing account of how knowledge engages and instrumentally operates with that physical reality". Third is that the central assertion of the theory that knowledge is socially constructed. The drawback of this assertion is that it imposes limitation on the "credibility of the sociology of knowledge" generated, as Nicolson and McLaughlin (1987:108) assert.

However, Benford (1997) argues even though language is important in the 'construction of reality', human action, although "striped" from the social construction discourse, is central in the production of social realty and/or truth. "Human beings do these things (construct reality) through a number of ways including "co-acting" and "human action" (Benford (1997:418). The peripherisation of human agency and subsequent centralization of language is a serious drawback to the theory (Benford, 1997:418). The next section focuses on social construction of gender, that is, the processes through which relationships between men and women are socially constructed among individuals and society.

4.2.1. Social construction of gender

Gender is different from sex. Whereas sex is based on specific biological attributes (male or female) thereby signifying that it is fixed, gender is a socially constructed concept in the context that differences between women and men in society are created by human beings/individuals as opposed to being naturally determined (Adam et al, 2004). Butler (1990) asserts that the categories, 'man' and 'woman', are not naturally determined but are a social and cultural attribute which could, if possible, be named differently. Even though some proverbs and folk tales, termed as linguistic sexism by Pauwels (2003), present perceptions of gender as fixed and stable, Rothblatt (1995) in his book *The Apartheid of Sex* indicates that gender is not a fixed but fluid term and goes on to argue that the roles of men and women are solely defined based on social attitudes and not genetics, genitals or biology. Given the fluidity of the notion of gender, West and Zimmerman (1987) indicate that it is a product of socio-cultural 'engineering'.

Lorber and Farrell (1991) have argued, "Although some societies are homogeneous regarding race, ethnicity, and sometimes even economic status, no society ignores gender. This view is further supported by the works of Lorber and Farrell (1991:8) who observe that the social differentiation and "division of the social world into women and men is so deeply ingrained that from the moment of birth, when the sex assignment of a new born is made, parents, doctors, midwives and all those around the infant, "do gender"— starting with the name". Even names are divided into feminine and masculine categories. This understanding of gender also shows that gender 'is a cultural construction [which is not] … determined entirely or primarily by bodily form or biological function' (Leap, 2008:402) 'Doing gender' does not only mean the identification, construction and socialization of one as a man or woman by others but also by oneself.

The social 'engineering' of gender and gender boundaries takes the form of labelling, naming and stereotyping of men and women in differing ways based on social and cultural practices and perceptions (West and Zimmerman, 1987). It is through the simple acts of 'labelling, describing and stereotyping one another that gender experiences are produced, reproduced and accentuated (Eckert and McConnell-Ginet, 2003). This argument is furthered by the idea that there is no specific 'identity mark' that a child is born with to indicate that one is either man or woman (Butler, 1990; Lorber and Farrell, 1991; Moser, 2005). Thus, several scholars (Butler, 1990; Berger and Luckmann, 1966) have argued that one is not born but rather becomes either a man or woman through the socio-cultural construction processes.

According to Leap (2008:402) gender 'is negotiated and contested through the production and circulation of life stories, personal anecdotes, gossip and other narratives, legal statements, ritual oratory, words of advice and practical caution, jokes, songs and other forms of expressive language as well as through word borrowing, modifications to existing vocabulary and new word formations (Laep, 2008: 402). Based on this conceptualisation, other critiques argue that even the category women is not only a superficial label (Gergen, 2009) but a product of social 'engineering' because there is no mark of distinctiveness which dictates that a person who is labelled a woman should necessarily be female (Butler, 1990:11).

The gender identity construction process usually entails the processes of 'othering' on the part of the dominant group, masculine; a view Pieterse (1997:371) echoes when he argues that "identities are constructed in relation to others rather than given. The concept of 'othering' originated from the processes of social differentiation especially the 'master-slave' relationship which existed in the colonial period (Jensen, 2011: 63). This concept is centred on the definition of oneself in relation to the rest of the group. In this context, the colonial

administrators often defined themselves (superior and more intelligent) in relation to the local (inferior and less intelligent) people whom they ruled. So, the process of 'othering' which is centred on the understanding of ones 'self' and the 'other' (Beauvoir, 1997) is also about understanding who we are and who we are not (Pullen and Simpson, 2009).

In the *'The Second Sex'*, Beauvoir (1997) describes how men are regarded as the 'norm' and women as the 'other'. The aim of the process of 'othering' between men and women is to 'distance and dehumanise' the other (woman) and this justifies the social exclusion and discrimination processes that take place in society (Bron, 2015: 72). When people are reduced to the 'other', there are no limits to the wrongs that can be committed against them including discrimination (Drakulic, 1992). The construction of a man with noble and desirable qualities and the 'other', 'woman', with the opposite qualities and in ways that tend towards dehumanization justifies the oppression, social exclusion and discrimination of women.

Language is central in communicating and negotiating the meanings of the world in which we live (Crump et al., 2007). From a feminist interpretation, language has defined the world in a masculine image. Bem and Bem (1973) and Hamilton (1988) explored the impact of masculine words such as man to represent both male and female. On the other hand, specific words are used in a way that lays emphasis on the reproductive and nurturing 'duties' of women. For instance, the use of the word "mother land", to refer to one's country of origin and the construction of a country as feminine.

After construction of man and woman, society goes on to determine and culture 'dictates' the gender roles and responsibilities which are socially acceptable based on gender. Culture accordingly dictates the expected behaviour from a man or woman. In this way, socially constructed cultural attributes begin to inform the social, economic and political aspects of

societies, including defining what is perceived as appropriate or inappropriate behaviour depending on an individual's assigned gender. In the Ugandan context, socio-cultural practices dictate that young girls are taught to behave in a way, for instance, not to climb trees, help with housework and help their mothers in the kitchen, fetch water and firewood, to sit on a mat or floor and always kneel down while greeting men and elders. Young girls are discouraged from going out to play. Girls are also taught to be quiet and never loud. In directly the opposite way, the opposite gender (man) which is socially constructed in a different and superior manner. Culture dictates that young boys run errands for parents, go to the market place with their fathers, herd cattle and go out to play and climb trees. Boys are never required to kneel when they greet elders or to sit on a mat or floor. In addition, the boys are expected to speak up and speak for the girls.

Further, socially constructed stereotypes define one's entitlements and types of tasks assigned based on the 'endorsement' of culture and tradition. The labelling and stereotyping is then 'imported into workplaces in the sense that there are clearly defined demarcations between tasks allocated to men and women. What is often characterised as 'manual work' is allotted to men, while 'light work' such as secretarial, nursing, child-minding and knitting, are reserved for women (Lorber and Farrell, 1991; West and Zimmerman, 1987). The designation of what socio-cultural attributes classify as 'light feminine tasks' to women emanates from the societal construction of women as a feminine and the weaker category compared to men who are socially constructed directly in the opposite way, that is, as 'strong and "masculine' (Yuval, 1997). This classification of tasks which is undertaken by men and women both directly and indirectly results in the 'feminization' and 'masculinization' of work in various industries including ICT (Pullen and Simpson, 2009, Haugen, 1998).

The assignment of varying gender statuses and the different entitlements that come a long with this assignment mean that gender is a social, economic and political tool or a weapon for "adverse incorporation" (du Toit, 2004:987) of those who are unfavourably constructed. In other words, gender becomes a ticket that entitles some categories of people (often men) and denies others (often women). Closely related to adverse incorporation is the concept of social exclusion which denotes not according marginalised groups, women in this case, the opportunity to be part of the mainstream activities of society (Trauth and Howcroft, 2006). The concepts of Adverse Incorporation and Social Exclusion (AISE) have been employed to understand the underlying causal processes that reproduce varying social orders such gender digital divide or differential uptake of ICT between men and women (Hickey and Du Toit, 2013). In the case of Uganda, for instance, women have not been able to compete favourably with men on a number of forums including politics, education and work largely due to the unfavourable manner in which they have been socio-culturally constructed (Tamale, 1999). That is, negatively stereotyped and this particularly arises from the gender identity construction processes.

The construction of gender boundaries through the processes of labelling and stereotyping of men as masculine and superior to women, who are constructed as feminine and inferior, based on social and cultural practices including religion, determine the unfavourable stratification and power distribution in society (Butler, 2002). The historical social construction of women in Uganda as inferior to men has been responsible for their social, economic and political exclusion of women in homes, schools and at places of work. Consequently, many women are persistently oppressed and marginalised in many, if not all, aspects of life. Moreover Klasen (2002) and Tamale (2004) make the assertion that gender relations in any society have a significant bearing on its social, economic and political progress. This makes gender relations a key area of development concern.

4.2.2. 'Policing' gender in Uganda

The phrase 'policing gender' used here denotes the way individuals in homes and the wider society enforce the socio-cultural stereotypes (Mahood, 2005). Parents in homes administer 'household' gender-specific rules; elders in the broader clans implement cultural norms and practices of the respective clans, while the wider community puts the practices 'agreed' on by members of the wider community into force. In most communities in Uganda, older women are the custodians of social cultural norms and do much of the 'gender policing'. For instance, among the Baganda, soon new-born babies are bathed in a concoction of herbs locally known as ekyogero[8] usually collected by elderly women from bushes and forests. Bathing in these herbs, is believed to bring good fortune to the babies. It is important to note that the concoction is gender specific. That of the baby girls includes herbs that are believed to bring beauty and desirability in the eyes of future suitors. The herbs also bring the good fortune of receiving gifts, particularly from future suitors and husbands. The concoction for the baby boys includes herbs that are believed to bring the good fortune of wealth and likability among the women so that the boys would have wealth and many wives in the future. Today, these herbs are dried and packaged and sold in high end super markets and pharmacies. Older women dictate and police the sitting posture of young women and general conduct of the girls. As stewards of mostly oppressive customs, elderly women constantly caution young women to kneel while addressing men and elders, help their mothers in the instead of going out to girls, never to climb or play football but always keep tidy as ladies. Young women are also advised to keep quiet or speak softly if they must. Often there are grave consequences if the girls go against the rules.

[8] Ekyogero is a popular cultural bath in many communities in Uganda for newborn babies consisting of various herbs. The use of ekyogero is widespread in Uganda, but it is more common among tribes from central, western and south-western Uganda.

Central to the indoctrination of girls and young women into their role as subordinates of men specifically their husband was the institution of the Ssenga[9]. The responsibility of the Ssenga was to ensure that young girls became well versed in appropriate 'feminine behavior and roles which included proper ways a good girl should sit, walk, conduct herself, respect elders, prepare food. The young girls were taught from an early age that their life's calling was to please and serve men and their childhood and years of puberty were dedicated to grooming them for that calling.

Among the Baganda and some other tribes, at puberty teenage girls would be instructed in the ritual of visiting the bush[10]. Moreover, as soon as a girl started menstruating, the Ssenga began preparing her for marriage (Tamale, 2005). The basic message from the Ssenga as Tamale (2005: 27) puts it is: "Be a nice humble wife but turn into Malaya (prostitute) in your bedroom". As such, the focus of the message of the Ssenga was on erotic skills, sexual paraphernalia and aphrodisiacs in the form of herbal perfumes, sensual oils, and sexual waist beads (obutiti). All this was done to ensure the pleasure and entertainment of future husbands.

Teenage girls were cautioned never to argue with a man, not to question a man especially about his whereabouts and to behave in ways that would keep them in good standing with their husbands. In cases where a young wife was found to be lacking in humility or bed room etiquette she was sent back to her Ssenga in disgrace for proper training (Tamale, 2005). However, the message of the Ssenga included some positive messages. For instance, the Ssenga encouraged her nieces to engage in home industry such as weaving or pottery to avoid

[9] A paternal aunt, usually selected among many based on exemplary behavior, for the special role of socializing her nieces in the art of becoming "good" and subservient wives. The Ssenga was and is still held in high esteem by all around her including her brother, brother's wife, nieces and nephews. She is accorded the same respect as one's father in law. Ssenga also features among the indigenous religions of the Baganda. Among the 28 gods (balubaale) of Buganda, venerated by the Baganda was Nagaddya, also known as Ssenga of Buganda. She was responsible for marriage and harvests and no King ever married without visiting her shrine (Tamale, 2005:16)

[10] A process which involved a procedure of elongating or stretching her inner labia for the perceived sexual pleasure of a man (Tamale, 2005:17)

total dependence on their husbands. Domestic violence was intolerable among the Baganda and the Ssenga also made it clear that a woman did not have to tolerate an abusive husband and that she had the right to *kunoba* or leave him. It is important to note that today, the traditional institution of the Ssenga has transformed into a new liberalised form, shifting its discourse from the private to the public sphere (Tamale, 2005). The commercial Ssenga business is a lucrative one as young 'modern' women turn to hiring commercial Ssenga's for lessons in marriage and sexual matters.

In the context of this study, it is in the homes, broader family and clan settings that men are advised to be masculine and study 'masculine' courses and women are advised to be feminine and enrol for 'feminine' courses that not only resonate with the gender roles they will assume in future as providers or housewives but also because they go hand in hand with the manner in which they are socially constructed and expected to behave. In addition to the construction of women as feminine and men as masculine, technology has been constructed as masculine. This has important implications for the theme of this thesis. This is mainly because the construction of technology as masculine indirectly distances women from technology, aligns men with technology and makes technology a "man thing"

4. 2.3. 'Masculinisation' of technology

A long with the masculinisation of men and feminisation of women is the 'masculinisation of technology. This means that society often constructs technology as 'masculine' which directly and indirectly signifies that it fits the traits and work-ethics of men and not those of women. In Uganda —which is also the case in many countries on the African continent— society constructs technology as a 'sophisticated field, and because of this, it requires a naturally 'intelligent', 'strong' and 'ambitious' person. Juxtaposed and derived from the socio-cultural construction of men and women, these attributes seem to plausibly match the

qualities of men who are largely seen to display such character, while women who are constructed in directly the opposite way. That is, feminine, weak, 'not intelligent' 'simple', and 'lacking in ambition, qualities that are not associated with technology. Wilson (1997) argues that the culture in computing is emphasised with masculine images such as competition, sports and violence and is strengthened by a discourse that is full of phrases with masculine connotation such as 'killing a job', 'tool kits', 'work benches', 'drives' and 'engines'. This could apply to ICT in general and in the context of the ICT industry in Uganda.

The differential social construction of men and women and the perceptions that comes with it starts right from homes. In Uganda, parents and caretakers buy dolls for girls and machine-like toys for boys. The socialisation of children in this way makes women and men to accept the socially constructed differences as true and real. Accepting such constructions is particularly detrimental for women because it conditions women to accept that it is normal for them to be disinterested in technology and ultimately the careers associated with it. Many women unconsciously and indirectly begin to stay away from technology. This view resonates with the observation made by Varma and Hahn (2007) that the general picture of a Computer Scientist or Computer Engineer is a white male nerd/hacker, super smart and geek whose socialization is limited to talking about computers all the time. He has no other identity other than being a computer expert. The fact the computer scientist is perceived to be a man excludes young women, making them unable to relate with work in the ICT industry.

4.3. Structuration Theory

The structuration theory emerged from scholarly debates and discourses which try to explain how and why particular societal events and patterns are ordered in a specific manner

(Giddens, 1984). Conceptualised by Anthony Giddens in 1984, the structuration theory is constructed around two key concepts: first is structure, and second is agency. The term structure denotes unwritten socio-cultural rules, norms and customs shape and inform the conduct of individuals in public and private 'spaces' including homes. Rules, norms and customs, Giddens (1984:17) argues, are not written but exist in people's memory—what he called "memory traces"—and these orient "the conduct of knowledgeable human agents." People who subscribe to particular social structures for example clans and tribal entities are fashioned to conduct and behave in a particular manner based on the unwritten rules and customs of their respective clans and tribes. When an individual or groups of people who subscribe to a clan or tribal rules, customs and practices behave in a particular manner, this results in "some kind of patterning of social relations or social phenomena" (Giddens, 1984:16).

Meanwhile, agency denotes the capacity to act and do things differently particularly those aspects that contravene the existing societal, clan or tribal rules, norm and practices, or the dos' and don'ts' of a particular social group. It also means being "able to deploy (chronically, in the flow of daily life) a range of casual powers, including that of influencing those [powers] deployed by others" (Giddens, 1984:14). A person with agency is one who challenges the existing status quo and as a result makes a difference in what is regarded as normal or pre-existing state of affairs or course of events. In other words, agency implies deployment of individual or collective powers to act or do what could be regarded by a particular social group as 'abnormal', irrational or extra-ordinary simply because the 'abnormal' or extra-ordinary things challenge and transform the present 'normal' circumstances.

The central argument therefore is that *social structures* in the form of unwritten rules, norms and customs both directly and indirectly determine the actions and conduct of individuals. In a comparable manner, individuals utilise their agency to transform the existing social structures—rules, norms, and customs. What this means is that people's inherent agency is utilized to transform the existing status quo, and due course produce new forms of structures which in turn, through interaction of structure and agency are subject to reproduction or change. Thus the 'back and forth' interaction between societal structures and agency of individuals is what Giddens (1984) dubbed *structuration*. The key theoretical message in Giddens structuration theory which is useful in the analysis of social events is that social phenomena—including society dos' and don'ts' or what is regarded as right or wrong—is not an outcome of only social structure or agency of individuals. Social phenomena emanate from the continuous interaction of both structure and agency (Rose and Jones, 2008).

4.3.1. Structuration and Gender: A scholarly perspective

Anthony Giddens under the structuration theory identifies three dimensions of social structure which could aptly apply to this study: first, signification; second, domination; and third, legitimation. The three 'social structure' attributes can plausibly demonstrate the theory of structuration by focusing on the Ugandan traditional society setting particularly the conduct of women and men in the home and sitting arrangement during a 'village' meeting. In the Ugandan traditional society setting, the social structure—socio-cultural rules, norms and customs—demand that a 'proper' woman kneels down while greeting men or sits down, on the ground, during a village greeting. The act of kneeling before men who are often standing or seated on a chair, and that of sitting down by women in a village meeting shows: First, the structure of domination of men over women particularly drawn from societal rules, norms and customs. Two, the structure of legitimation that dictate that women must kneel down while greeting men or sit down during meetings. Three, kneeling or siting down is

drawn from the structure of signification because society must see women as 'proper' in the eyes of the public.

However, most women particularly those born and raised in urban areas no longer kneel before men and many women sit at the same table with men during meetings. While people who believe in the socio-cultural practices and accept the structures (rules and norms) may refer to such a category of women as rebellious, ill-mannered and uncultured, such women would simply be exercising their agency. This a classic illustration of structuration at play. That is, "the transformative capacity of human agency that makes change possible" (den Hond et al. 2012:239) and the way "socially constructed structures both enable and constrain human agency" (Coad and Herbert, 2009:1). It also means that individuals are products of the society into which they are born, socialised and constructed, and thus their actions, choices and decisions are shaped by societal norms and values. At the same time, it illustrates how society is an outcome of individuals as they have the capacity to challenge, change, produce and reproduce the norms, values and rules of societies in which they are born, socialised and constructed.

What is clear here is that structuration is important as it provides key insights and makes substantial contributions to the understanding of the complexities in society, including gender and ICT dynamics in both developing and developed countries. Moos and Dear (1986:232) argue that conceptualisation of problems in society from a structure and agency dimension is important as it provides a 'unique perspective in the study of social phenomena'. From an Information Communication Technology perspective, (Rose and Scheepers (2001:217) argue, the structuration theory provides a plausible framework for understanding the societal and "personal contexts without which the technology would be meaningless". That is,

structuration theory helps us to have a clear understanding of how societal 'events' and personal traits facilitate or inhibit access to and use of technology.

In the context of this study the structuration theory provides a suitable framework within which to understand the gender related dynamics in the ICT industry including in admission, graduation and employment of ICT graduates because the theory explains how customs, norms and beliefs that impede the adoption of ICT by one category (women) while facilitating the other (men) are reproduced and reinforced over time as well as how they are challenged at times. To this effect, the theory explains how some women manage to exercise their agency by mobilising a rich repertoire of 'everyday forms of resistance' (Scott, 1986) thereby succeeding at their work as ICT professionals and building successful careers in the ICT industry.

With reference to the broader Uganda, the structuration theory explains why societal rules dictate that for a woman to be considered as 'good and deserving of respect', she must be seen to take care of her family. It also validates why having a career outside of the home is desired but not required of women especially in most traditional, and among some people modern, Ugandan societies. The complexities and power relations embedded in social structures and agency compel many women to give up their dreams of building a career outside the home in order to build and take care of a family. Others limit their choices to 'feminine' occupations as defined by society. The women who give up their careers for family or limit their choices to feminine specialization maintain and reproduce oppressive social structures.

As Coad and Herbert (2009) point out that structures facilitate and impede sections of society from attaining their 'aspirations', not all women in Uganda are passive recipients of the socially constructed unspoken stereotypes. Some women actively pursue careers in the ICT

industry and other occupations that have been labelled 'masculine'. For instance, many women are computer engineers while others take on leadership roles that society constructs as 'masculine' and therefore reserved for men. Today (in 2016), there are several women who occupy top leadership positions in government and in business. They are Judges, CEOs of large multinationals, and ministers. This category of women fully exercises individual agency by challenging societal social structures to assume roles that have been traditionally defined as 'masculine' and reserved for men. According to Blum and Goodman (1994), structural factors account for almost half of the variance in the percentage of women managers in organizations. Emanating from the home, social and cultural rigidities are replicated in the education sector and the work environment in such a way that they influence many women to study particular arts and humanities courses that are considered simple and less intellectually demanding and to undertake specific types of work (Tamale, 1999). At the same time, men are also conditioned to take on specific science and technical courses which are considered intellectually demanding and proceed to do work which is different from that taken on by women.

Although the structuration theory is useful in many respects including explaining the causes of social problems and dynamics embedded therein, scholars such as Rose and Scheepers (2001) have criticised the structuration theory for being inadequate and non-compelling. They, for instance, argue that actions of individuals in society are entirely informed and dictated by the social structures or otherwise, and for that matter, this conceptualisation 'weakens the initial analytical power of 'structure' and 'agency'. For Giddens' structuration theory to 'retain and strengthen' its "analytical power", and "in order [for it] to account for why things are 'so and not otherwise,' it is necessary [that it] … maintain[s] the analytical distinction between the 'parts' of society and its 'people" (Rose and Scheepers, 2001:221; see also den Hond et al. 2012). The theory, in addition to not providing a clear explanation of the

transformations which take place with time for instance how a country like Norway has been able to significantly increase the number of women studying ICT academic programs, it merely explains that 'social divides' are produced and reproduced in society, that is, the ways in which the gender digital divide is produced and reproduced over time (Rose and Scheepers, 2001). This means that the theory lacks clear and concise explanations to some of the events in society. Moos and Dear (1986:232) while referring to Giddens (1983) further warn those who use the structuration theory, like any other theoretical orientation, that it is not a "magical key that unlocks the mysteries of empirical research", denoting that the theory must be appropriately used by researchers and that it is not a panacea to the theoretical problems encountered by researchers.

In a review of the 'Structuration Theory', Spaargaren and Mommaas (2006: 1219; see also Coad and Herbert, 2009) indicate that although the theory has made a significant theoretical contribution in sociology and other disciplines for many years, it has also been criticised for being "too general and formal in character and that ... [the] ontology results in major difficulties when being applied in situated analyses". In addition, the theory has been criticised for not paying attention to and or "naïve neglect of the big structures, for its dismissive treatment of the causal macro-forces that effectively limit the micro-freedom of choice of the individual to 'act otherwise' and to 'make a difference' to the world" (Spaargaren and Mommaas, 2006:1220). This argument is carried forward in the works of Coad and Herbert (2009:2) who argue that the theory should provide "an elaboration of meso-level analysis in addition to explaining the "relationships between agents, and the importance [and/or influence] of external pressures" in influencing the structure and composition of social structures including character and actions of individuals therein. Despite the critiques, the theory provides key insights and is central in unpacking the ICT and gender dynamics Uganda particularly in the ICT industry.

4.3.2. Application of Structuration theory in ICT and gender related studies

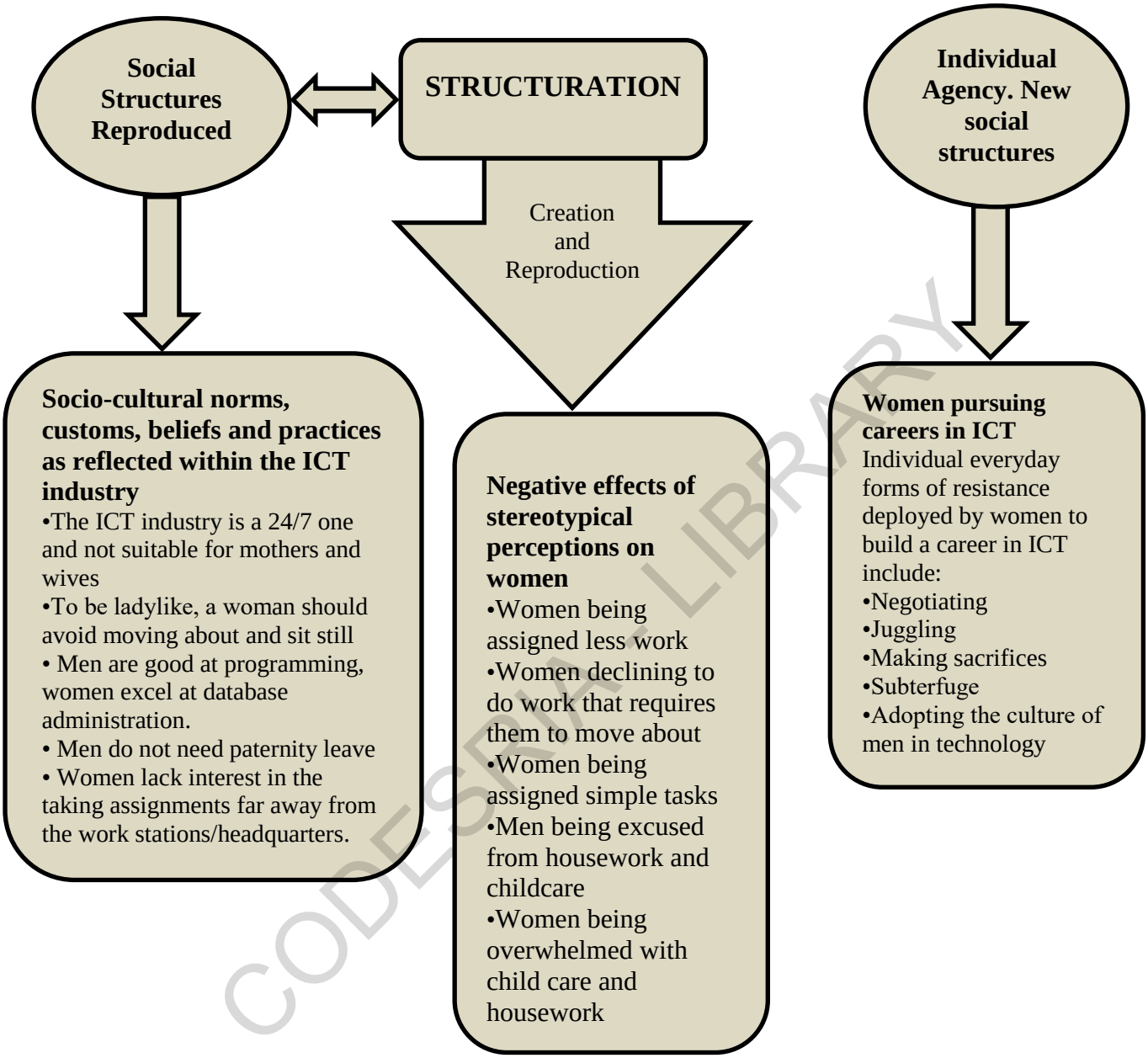
Structuration theory has been employed to study both ICT and gender. Several scholars (Walsham, 2002; De and Ratan, 2009; Akpan-Obong, 2010; Von Hellens, et al., 2004) have for instance employed structuration to examine the uptake of ICTs in societies and organizations. Similarly, in the study titled *Men and Women of Corporations*, Kanter (1977) found out that structures played a significant role in the way people were treated. After observing power relations among male and female colleagues, Kanter (1977) concluded that treatment in any situation did not depend on inflexible characteristics of individuals but rather their numbers. She further found out that low numbers of women in the organization made it easy for the men to dominate them. Moreover, she argued that this situation was a system that required outside intervention to remedy and emphasised that these systems are created by social composition of society.

Similarly, Barley (1986) applied structuration theory to technological change in healthcare in the study of the introduction of Computer Tomography (CT) scanners in two hospitals in the United States of America. Using the script (a recurrent and observable pattern of social action which embodies and reflects social structures) as his unit of analysis, Barley (1986) demonstrated that the introduction of the new technology was an occasion for restructuring the social order in the hospitals but hastened to add that this restructuring was not guaranteed. In his study, it was observed that the introduction of scanners produced two different outcomes in the two hospitals he studied. This is an indication that social order can affect the uptake of ICTs. In the context of this study therefore, introduction of ICTs in Uganda can be an opportunity to change social structures and an avenue for the restructuring gender dynamics in society. However, ICTs could instead reinforce the existing gender structure if women and men do not exercise their agency as they embrace technology and gender related social structures remain unchanged. The resultant processes which reproduce the gender

inequalities in the ICT sector are what Von Hellens et al. (2004:109) refer to as 'gendering of IT work'.

Scholars such as Arun and Arun (2002) argue that the impact of ICTs on development significantly depends on the existing economic, social and cultural fabric into which it is introduced. Heidegger (1977) and Ong (1982) present technology as inherently "social" as social processes create the conditions for evolution of technology. As Heim (1987) notes, modern society and technology are so bound together that it is impossible to sort out what causes which. Hence there is a complex interaction between technology and users (Poole et al, 1994). Given that this research seeks to find answers to the processes which contribute to the unequal representation of women and men graduates in the ICT industry in Uganda, the structuration theory is thus deemed to be an appropriate framework within which to conceptualise this study. This theory and the underlying principles therein are central in exposing the way already existing structures persistently determine gender related dynamics thereby maintaining the status quo in which women occupy a marginal position in the ICT industry. It provides a suitable framework to explain how and why social structures influence the ratios and levels of participation of women and men in the ICT labour market and how participants challenge and/or re-enforce existing social structures by showing how and why social structures are reproduced as well as how they are at times challenged through individual agency.

Figure 2: Structuration Theory in Action



Source: Authors own construction (2017)

Figure 2 shows how the interaction of societal structures and agency of individuals shapes and informs the social system which favours men over women with specific reference to the ICT industry in Uganda. The social structures to the right of the figure denote the unwritten social customs, beliefs and practices which guide the behaviour of individuals. To the

women, social structures are restrictive and condition women to behave in 'inferior' ways that steer them away from ICT. On the contrary, social structures empower men and in some ways and give them rights and freedoms to engage with ICT. Men are encouraged to go out and work for long hours because a 'good' man is expected to be the sole bread winner of his family while women are confined in the home because to be considered as a 'good' woman, one should be a home maker. This means that a respectable woman is the one who spends her time taking care of children and the household and therefore cannot go out to work for long hours. Social structures define women as modest and without ambition and therefore not able to appreciate or understand sophisticated machines. Conversely, social structures construct men as sophisticated and characterised by great ambition so they can use their unlimited freedom to go out and interact with sophisticated technology

The central arrow indicates that the interaction between social structures in the ICT industry and the agency of individuals creates and reproduces a social system where certain category of people, particularly women who are unfavorably constructed, are accorded specific responsibilities that impede many from taking part in the ICT industry. Social structures overburden women with family responsibilities of caring for the home and child minding and prohibit them from taking on tasks outside the home. As a result, many women loose interest or must make a sacrifice of their career. As a result, women do not generally fully commit to their work in the ICT industry and many end leave before they have a chance to attain top positions in companies or before they get to end of their careers, a scenario which some scholars (Castano et al, 2011; Etzkowitz, 2011) have dubbed as 'the leaky pipeline'.

Individual agency to the right of figure indicates that although social structures impede many women from enrolling for ICT courses and continue to obstruct them during their studies and in the ICT industry, many women still navigate these challenges. They deploy a diversity of coping and adaptation mechanisms or 'everyday forms of resistance' (Scott, 1986) to succeed

in what is constructed as a 'masculine' ICT industry. The mechanisms include negotiating, juggling, making sacrifices, ignoring the socially constructed stereotypes and adopting the 'culture of men in technology'. Figure 2**,** in an illustrative manner, not only shows the ways in which social structures and inherent individual agency determine the choices made by individuals in society, but also provides a summary of the contribution of this thesis to theory. The figure describes how the interplay between structure and agency determines gender related dynamics in the ICT industry in Uganda. It shows how structures in terms of rules and expectations of society are produced and reproduced over time by individuals in society. It also shows how individuals sometimes challenge rules and expectations of society to form new 'social' structures.

4.4. Conclusion

This chapter has explained the two key theories, social constructionism and structuration, on which this study is anchored. The central argument under social constructionism is that what is regarded as 'real' and 'true' more so in the context of gender is a social construct which particularly emanates from the social construction processes. The differences between men and women particularly in patriarchal societies are not a true reflection of realty but arise from the social construction processes. Social structures thereafter maintain and validate the socially constructed differences and impose 'dos' and 'don'ts' which guide the conduct of men and women in society. Structuration examines the production, reproduction and sustenance of social structures and the rules which govern the conduct of individuals therein. In addition, through individual agency, social structures are challenged and sometimes, changed. What this means in relation to this study is that the enrolment in ICT related courses by both men and women is significantly determined on the manner in which the two categories of people are socially constructed and the stereotypes which come with this social

construction. These dynamics, as indicated in the subsequent chapters of this thesis, are still widespread in both rural and urban spaces in Uganda. Having examined the theoretical underpinnings on which this study is anchored, the next chapter explains the research design and methodology that was employed.

CHAPTER 5: RESEARCH DESIGN AND METHODS

5.1: Introduction

This chapter illustrates the step-by-step choices made by researchers during the process of conducting research. Silverman (2005:99 defines research design and methodology as choices we make about cases to study, methods of data gathering and other forms of data analysis, in planning and executing a research study. This chapter presents a detailed explanation of, and accounts for the research strategy that was adapted by the study, the methods that were employed in the research, including an explanation of how and why those specific methods were deemed appropriate for this nature of research. At the same time, the research procedure, study areas, target population and how the informants were selected is also presented. The methods of data analysis and presentation are also included. Inclusion of this section in the thesis is based on the suggestion advanced by Lincoln and Guba (1985) that the research design should elicit all the procedures on how research is conducted, including, the write-up process.

5.2 Qualitative Research Design and Method

The qualitative research design and method that was adapted by this study was determined by the nature of the research problem and research questions which this research sought to answer, as well as the theoretical orientation used. This research examines the gender-related dynamics including patterns of admission and graduation, transitions from university to work, socio-cultural practices and perceptions, as well as coping and response mechanisms to socio-cultural practices and perceptions that obstruct and/or facilitate the progress of graduates in the ICT industry. A qualitative research design and method was considered appropriate to achieve these objectives as opposed to the quantitative approach.

Scholars (Kitchin and Tate, 2000; Limb and Dwyer, 2001, Marshall and Rossman, 1989; Silverman, 1985) support the use of qualitative research design and method by asserting that it is suitable for use in social inquiries that are exploratory and descriptive in nature. This qualitative study was also supported by quasi statistics which are presented in the form of descriptive statistics. 'Quasi statistics' is a term that was coined by qualitative researcher Howard Becker to refer to simple counts of things to make statements such as "some", "usually", "most" more precise and understood better (Becker, 1970). For instance, simple numerical results that can be readily derived from data are obtained and used to support a claim that a particular phenomenon is rare in a given population. Maxwell (2004) advances "quasi statistics" as one of the ways in which validity threats can be counteracted in qualitative research. Other scholars argue that although numbers are quantitative, a multi-strategy approach can be useful in instances where the information cannot be obtained or presented in a qualitative manner (Nantege, 2007). The specific quantitative information presented includes ratios of admission, graduation and employment of male and female graduates in the in selected degree programs at the selected universities, numbers of university staff on the selected programs and numbers of employees at study companies. The use of the numbers therefore does not necessarily mean that this study is both qualitative and quantitative.

A qualitative approach is commended for being useful in detailed studies which intend to unpack particular scenarios, social problems in communities, settings and organizations (Patton 1987; Silverman, 1985). At the same time, the qualitative approach allows the researcher to explore the lived social realities of informants and to undertake a comprehensive analysis of a particular issue, gender dynamics in the ICT industry in this case. The method involves uncovering complexities from the informants' view-points and

providing deeper insights into a particular problem (Bryman, 2004). With this approach, the researcher studies a particular issue and gives informants the opportunity to express their own understanding of the problem under inquiry in their own terms (Limb and Dwyer, 2001). It is specifically through dialogue that the researcher "can become aware of the perceptions, feelings and attitudes of others and interpret their meanings and intent" (Crotty, 1998:75). Qualitative research has been widely used in gender research.

Adoto (2010) identifies gender-related studies that have employed qualitative methods including conditional Cash Transfer program evaluations, socio-cultural norms and how they affect program reception and outcomes and women uptake of health services. Based on these studies, Adoto (2010) argues that qualitative methods are effective at capturing the gender issues entrenched therein because they allow the researcher to probe and conduct follow-ups. In addition, getting candid information that constitutes rich research data often requires time, building of trust, rapport and use of triangulation, activities that are only possible through the use of qualitative research permits. Qualitative research also allows for the discovery of unanticipated issues and provides for the opportunity to solicit for local solutions to problems.

According to Flick et al (2009: 3)

> Qualitative research claims to describe life worlds 'from the inside out', from the point of view of the people who participate. By so doing it seeks to contribute to a better understanding of social realities and to draw attention to processes, meaning patterns and structural features. Those remain closed to non-participants, but are also, as a rule, not consciously known by actors caught up in their unquestioned daily routine. Qualitative research, with its precise and 'thick' descriptions, does not simply

depict reality, nor does it practice exoticism for its own sake. It rather makes use of the unusual or the deviant and unexpected as a source of insight and a mirror whose reflection makes the unknown perceptible in the known, and the known perceptible in the unknown, thereby opening up further possibilities for (self-) recognition

As such, qualitative research allows for a more nuanced inquiry and deeper insights into a concept under investigation. The research questions that were answered in the research are:

- What are the patterns of admission and graduation for men and women graduates in six ICT related programs at Makerere University and the Bachelor of Computer Engineering degree program at Busitema University?
- What are the transition patterns of men and women graduates in six ICT related programs at Makerere University and the Bachelor of Computer Engineering degree program at Bisitema University as they move from university into the ICT industry?
- What factors influence career choices made by men and women in the ICT industry and what are the socio-cultural practices and perceptions which facilitate and/or obstruct the progress of men and women in the ICT industry in Uganda?
- Which socio-cultural stereotypes and perceptions facilitate and/or obstruct the progress of men and women in the ICT industry in Uganda?
- How have women coped with and responded to the socio-cultural practices and perceptions that obstruct and/or facilitate their progress in the ICT industry? Based on the fact that qualitative research design and methodology utilises descriptive, exploratory and open ended appraches, it plausibly solicited answers to these research questions.

Given that the qualitative research design and methodology utilises descriptive, exploratory

and open ended approaches, it plausly provided answers to these research questions. Answering these questions contributes to knowledge in five major ways: one, provide insights into the extent and nature of the gender digital divide in Uganda particularly in ICT employment. Two, provide a nuanced understanding of how the rooted historical and traditional socio-cultural stereotypes systematically and discreetly continue to exclude women from the ICT industry in Uganda and perhaps other developing countries specifically on the African continent even in the contemporary period. Three, contributes towards research that shows the masculinisation of science and technology and ICT in particular. Four, contribute to a dimension of the digital divide which has not received substantial attention in Uganda. Five, contribute to existing debates and discourses around gender, ICT, STEM education, education in general and the ICT labor market.

5.3. Selection of Study Institutions

There are 5 public Universities universities and tertiary institutions in Uganda(at the moment National Council for Higher Education (NCHE)(NCHE, 2013) and 4 major mobile telecommunications companies (UIA, 2011). The study focused on two universities and two telecommunication companies in Uganda. The selected universities are Makerere univeristy[11] and Busitema University[12] and the telecomunication companies are Mobile Telecom Network

[11] Established IN 1922 as a technical school, renamed Uganda Technical school in January 1922, opened doors to 14 day students to study Carpentry, Building and Mechanics, The school soon began to offer other courses such as Medical care, Agriculture and Teacher training Expanded over the years to become a center for higher education in East Africa in 1935, In 1937, the college started to develop into an institution education offering post school certificate courses, in 1949 it became a University college affiliated with the University College of London offering courses leading to general degrees of its mother institution, with the establishment of the University of East Africa in 1963, the special relationship with the University of London came to a close and degrees of the University of London were instituted. On 01-July-1970, Makerere became and independent National University of the republic of Uganda. Today the University offers not only day but also evening and external study programmes to a student body of about 30,000 undergraduates and 3000 post graduates including foreign students. The University has since July 2011 became a collegiate university consisting of 8 colleges and w schools operating as semi-autonomous units of the university (New Vision, 2012). The information is available online at: http://www.newvision.co.ug/new_vision/news/1303930/makerere-university-admits-21-students-list [Accessed July 6 2016]

[12] Busitema University was founded in 2007. It is one of the eight public universities and degree-awarding institutions in the country. Initially, Busitema University started with two operational campuses; Busitema

(MTNU) and Uganda Telecom Limited (UTL). Both univeraities were purposively selected. Makerere University was chosen because it offers several degree programes that are related to computer studies. It is also the largest University in Uganda and runs the largest ICT skills training school in the country, that is, the College of Computer Informatics and Technology (CIT). Busitema University was selected because it also offers a degree program in computer engineering and it is located in rural Uganda. The objective of selecting an urban and rural university was to get diverse views of students and lecturers in both rural and urban places. This makes the study representative in terms of geographical coverage.

Makerere University Kampala (MUK) is Uganda's largest and second-oldest higher institution of learning. The university was first established as a technical school in 1922 (NCHE, 2013). On the other hand, Busitema University is relatively small and recently established by Statutory Instrument No. 22, 2007, enacted by Parliament on 10th May 2007. The University graduated its first cohort in 2010. Noteworthy is that the Vice Chancellor of Busitema is a woman and that despite Makerere being the oldest university, it has never had a woman Vice chancellor in all its years of existance (NCHE, 2013).

The choice of mobile telecommunication companies was because Mobile telecom companies make up a significant part of the ICT industry in Uganda (UIA, 2007). Mobile phones hold 34% of penetration rates compared to 0.8% and 11% fixed phone and internet. At the same time Mobile Telecom Network Uganda (MTNU) and Uganda Telecom Limited (UTL) MTNU Uganda are some of the largest and oldest telecommunications companies in the

Campus focusing on Engineering and Technology disciplines and Nagongera Campus with a focus on Science and Education. As of 2016, Busitema University has six operational campuses and one study center in Tororo town focusing on short and skill-based training courses. The University has also grown from two faculties and three academic programmes to six faculties and 40 academic programmes across various specializations (Busitema University, 2016)

country respectively. MTNU holds over 50% of market share and UTL is the oldest telecommunications company in the country with over 45% of market share (UIA, 2007)

5.4. Data collection methods

The research data for this study was collected in various ways. These included detailed in-depth interview, focus group discussions, retrieval of admission and graduation and employment records, and review of reports and articles. The three methods complemented each other in what can be termed as methodological triangulation. Triangulation proved to be useful in numerous ways. First, it was important as the methods of data collection complemented each other thereby avoiding loss of invaluable information. Two, it enhanced the validity and reliability of the data as weaknesses of one method were counteracted by the strength of the other. Three, the use of a variety of data collection methods was central in corroboration and cross-validation of the information obtained from various sources.

5.4.1. Detailed in-depth interview

Detailed in-depth Interviews were instrumental in understanding the perceptions of the informant as regards to the ICT industry. Choice of the interview method was because they allow "thorough examination of experiences, feelings or opinions that closed questions could never hope to capture" (Kitchin and Tate, 2000:213; see also Valentine, 2001 and Silverman 1985) and providing a "framework within which respondents can express their own understanding in their own terms" (Patton, 1987: 115). Equally, Patton (2002) argues that interviews provide the opportunity to learn and capture the complexities based on people's perceptions and experiences.

A flexible interview guide under which the major points to be explored during the interview sessions was formulated. This was important in directing the interview sessions and keeping

the study focused to important issues under investigation. It also provided direction for further probing of unclear answers. The guides were pretested to examine their appropriateness to generation of relevant data and appropriate readjustments were done before the start of data collection. The need for pre-testing the data collection instruments is emphasised by Kitchin and Tate (2000). The interviews were conducted in English because both the researcher and the respondents had a good command of English, and because English is the medium of instruction in Uganda's higher education system. This was also done to avoid translation and loss of information during the translation process, given that there are over 17 languages in Uganda. Therefore, the use of English was helpful in providing a common language understood by all informants

5.4.2. Focus Group Discussion

Focus Group Discussions were conducted with the ICT students at Makerere and Busitema universities in academic years 1, 2, 3 and 4 because of the need capture the lived realities which may not have been revealed during detailed in-depth interview sessions, Focus Group Discussions were considered necessary because they are well suited for collecting data on perceptions and opinions related to gender (Carey, 1994). Several scholars (Limb & Dwyer, 2001; Kitchin and Tate, 2000; Valentine, 2001; May, 1997) argue that unequal power relations emanating from gender, education, age and class differences which often exist during Focus Group Discussions have an impact on the manner in which interviews sessions are conducted and determine the nature of data obtained. These differences in power hierarchy were counteracted by ensuring the use of a participatory and empowering data collection method. Moreover, the information from Focus Group Discussions corroborated, clarified and cross validated the information obtained from individual in-depth interview sessions.

The categories of informants who participated in the Focus Group Discussions are the students in academic years 1, 2, 3 and 4. These students were drawn from the various computer related programs at Makerere and Busitema universities. Lists of students were obtained from registrars of each university. Each list of students constituted a stratum from which five students were purposively selected for participation in Focus Group Discussions. Six Focus Group Discussions were conducted with each group comprising of five students.

Noteworthy is that interviews and Focus Group Discussions were recorded to avoid distractions that come from constant switching between note taking and interviewing. The permission to record was sought from the study informants beforehand. All informants did not object to being recorded, although I always had a pen to take note of important points that stood out in the interview. All informants were informed of the intentions for taking note whatever transpired during the interview session.

5.7.3. Retrieval of admission, graduation and employee records

Admission and graduation records for students on six programs run at Makerere University, that is, Information systems, Information Technology, Computer Science, computer engineering, software engineering and Telecommunication engineering was obtained from the Academic Registrar. For Busitema University, admission and graduation records were obtained from the Academic Registrar of Busitema University. In addition, employment records were obtained from management of UTL. Efforts to obtain employment records from MTNU were not successful. As a result, I obtained secondary data that had been published in 2013. After examining admission, graduation and employment data from Makerere and Busitema Universities and workers at MTN-Uganda (MTNU) and UTL, transition patterns were constructed.

5.7.4. Review of reports and articles

Given that this was an explorative study aimed at understanding gender perceptions, official statements from the government of Uganda, policy documents, and resolutions of parliament were also obtained. These provided invaluable information in addition to cross-validation and corroboration of the issues raised during interview and focus group discussion sessions. In the same vein, media reports, articles and company as well as University student records were invaluable in providing insights into the ICT industry.

5.5. Study population and its characteristics

The informants who were interviewed included two Heads of Departments (1 from MUK and 1 from BU), two deans (1 from MUK and 1 from BU) and two Academic Registrars (1 from MUK and 1 from BU). Twelve lecturers (10 from MUK and 6 from BU) on the selected programs were selected, of which 7 were women and 9 were men. In the same way, six managers of MTN and UTL, two men and one woman from MTNU as well two men and one woman UTL. The intention was to interview an equal number of women and men but I managed to interview one woman and two men from each company. The intention of having men and women in the sample was to ensure that that the views of both genders are presented and gender related dynamics are captured.

In terms of specializations, the respondents included Computer Programmers, Systems Administrators, Internet Support Provisioning Engineers, Access Network Engineers, and Business Support Engineers and Data Entry Clerks given that they completed degrees in Information Technology, Telecom Engineering and Computer Science. I conducted in depth interviews with 8 employees of UTL and 6 of MTNU. At the same time, two government officials from the National Information and Technology Authority Uganda (NITAU) were interviewed. Their inclusion was because they are directly involved in ICT policy making and

implementation. They also have a good understanding of the ICT labour market. The total number of informants who were interviewed including those in focus group discussions was 74.

Table 3: Number of FDGs conducted and sex composition

Focus group discussion	Composition
1	Women only
2	Men only
3	Women only
4	Men only
5	Mixed: men and women
6	Mixed: Men and women

Source: Author (2016).

5.6. Selection of study informants

The study informants were largely purposively selected. This method of selection of informants is also known as 'selective' or 'judgemental selection procedure' as it allows the researcher to select the study population with particular characteristics (Patton, 1990). The deans, Heads of Department (HODs), Academic Registrars and Lecturers of the Bachelor of Computer Engineering program at Makerere and Busitema universities were purposively selected and consequently interviewed. The reason for selecting these informants was because they are leaders in the selected universities and teach on the Bachelor of Computer Engineering program. Thus, they have an in-depth understanding of the dynamics and complexities in the ICT field regarding admission, graduation and employment.

The managers and supervisors in the selected telecommunications companies were purposively selected for interviews. Their inclusion in the research was based on the underlying idea that they have knowledge of the ICT labour market and related dynamics. These categories of people contribute to decision making and influence the career paths of ICT professionals, directly or indirectly. For that matter, their participation in this research was very important in highlighting the employment-related gender issues. Therefore, their viewpoints on gender related dynamics in the ICT industry were useful.

Students in academic years 1, 2, 3, 4 at Makerere and Busitema universities were selected in a purposive manner where the criterion was that they are enrolled in an ICT related course. A list of students admitted in the selected program was obtained from the Academic Registrars of both universities. Selecting students from each year ensured that a realistic representation of the study population is achieved. Each list of students admitted in academic years constituted strata from which five students were purposively selected for participation in focus group discussions. This means that a total of 30 students participated in 6 focus group discussions. From each focus group discussion, two students were purposively selected for participation in individual in-depth interviews. During the purposive selection process, equal opportunity was given to each gender to ensure that the views of both men and women were collected. The employees of MTNU and UTL who took part in the study were also purposively selected for interviews with 8 from UTL and 6 in MTNU.

5.7. Coding and Data Analysis

The qualitative data which informed this study was inductively analyzed using grounded theory approach. According to Strauss and corbin (1998), grounded theory is designed one, to guide researchers in producing theory that is conceptually dense from collected qualitative data and two, to study peoples experience with a process and create a theory of how that

process works. Three, grounded theory allows for an analysis and understanding of patterns of action and interaction between and among social units. Utilization of the grounded theory approach to do data analysis and theory generation allowed the deeper understanding of the process through which men and women transit from university to ICT work and the dynamics therein and facilitated the understanding of patterns of action and interaction between men and women in the ICT industry of Uganda.

Qualitative information gathered from individual in depth interviews and Focus group discussions was recorded using a voice recorder. Although with their full permission, the voice recorder carefully placed out of direct sight informants create a relaxed environment where informants could freely express themselves without worrying about being recorded. While the interview and recording processes were going on, I also took notes of all the information.

Subsequently, I transcribed all the recorded information. Important to note and in line with the grounded theory, the data analysis began soon after the first interview. This was important in keeping track of the emerging themes in the subsequent interviews and focus group discussions. Therefore, the generation of analytical themes started as soon as the first interview was concluded. More importantly, it provided insightful guidelines for the subsequent enquiries. I transcribed and further analysed data every evening after fieldwork and throughout the data collection period. Every evening, I compared collected data with the notes in the fieldwork book to ensure that all the data was captured when I could still clearly remember everything that transpired during the day.

After collection of the data, I familiarised myself with the transcripts and later cross-validated the transcripts with the handwritten notes to ensure that every detail was captured. This was realised by going through the data over again while editing. I also harmonised the recorded

information with that in the notebook. Thereafter, the data was subjected to a 'line-by-line' analysis. I compared and harmonised all the information collected from various sources—interviews and focus group discussion— and informants—Managers, Lecturers, Students and ICT professionals. The emerging themes were key in providing insights into the theory embedded in the data.

5.8. Open and Selective Coding

Under the grounded theory approach to data analysis, it is important to that theory is generated only from the data collected and not from other sources like text books or researcher opinions. This means that the theory is grounded in the data collected from the study. The next data analysis stage entailed a critical synthesis of the transcribed data as this was possibly through open and selective coding and rearrangement of the coded data according to the research questions.

5.8.1. Open coding

Open coding was important in bringing out the contextual content in the transcribed data. Through the process of open coding I could identify the key concepts in the data, define and develop analytical categories based on the research objectives. The open coding processes revealed many analytical categories including stereotypes which society attaches to men and women and their position in ICT industry, and responses women deploy to navigate the challenges and impediments that they encounter in the ICT industry.

5.8.2. Selective coding

After generation the analytical categories from the open coding process, I went on to selectively code the data based on the generated themes. The analytical categories generated under open coding constituted the core themes under which the sub-themes generated under the selective coding processes were placed. The underlying idea was to develop a coherent

and systematic narrative from the data which plausibly explain the gender and ICT dynamics in Uganda. In the context of this study, selective coding revealed that the cross cutting theme through data was the mostly subtle reference to stereotypes. In some instances, however the stereotypes were overt. The way the selective coding process was done is exemplified in the transcribed data below where an informant explained the reasons why she chose to pursue a career in Software Engineering.

> I chose to study the Bachelor of Software Engineering program because I felt that it suited me as a lady. I scored enough points to get me into the Electrical Engineering program but you know it is not ladylike to wear dirty overalls or jeans as a lady. I like the Software Engineering program because I can just sit at my work station and do my work. I don't need to move around carrying heavy or dirty things. I can be a lady. That is why I chose this program.[13]

The above quote vividly reveals the theme of self-censorship as the analytical sub-theme. As I listened to my informants and read through that specific transcript, I also picked up the subtle reference to stereotypes. In the quote above, the desire for the young woman to be 'ladylike' strongly stood out as a stereotype and therefore a sub-theme. In contrast, the two quotes below show the contrast in level of confidence of men and women in relation to subjects that are socially constructed as 'masculine' as an analytical sub-theme, details of which are provided in chapters 5, 6 and 7.

In a comparable way the two quotes below, the first, of a man and the second of a woman, show the different experiences of men and women. I present these under the sub-theme of role models as a factor that variously influences the choice of a career in in ICT among men and women.

[13] Focus Group Discussion, 22-year-old woman, student, Makerere University, 2014

> I love maths and physics and I am passionate about them. I do not have a role model in this field but I have always loved engineering. I was drawn to telecom engineering because to me ICT is trendy, new and exciting. There are all sorts of new things happing in the field and I wanted to be a part of that.[14]

Another informant expressed that:

> I did not have a woman teaching me while I was at university. When I was retained to teach programming, after graduating second in my class, I wished I had seen a woman teach me just so that I could know how to do it. I had never imagined it possible for me to stand in front of a class and teach programming.[15]

5.8.3. Analysis of admission, graduation and employment records

This section details the actual methodology of obtaining the transition patterns. Important to note is that is section presents admission and graduation gender disaggregate data course-by-course. The overall of admission, graduation and employment patterns are presented in chapter 7 of this thesis. In order to provide insights into the depth of the gender digital divide, the first part of this section analyses the percentage ratios of women and men admitted into six ICT related degree programs at Makerere University on national merit[16], for a period of 5 academic years, that is; 2010/2011, 2011/2012, 2012/2013, 2013/2014, and 2014/2015. Graduation rates of the same programs over a period of 5 years are also examined. The degree programs that are considered here include; The Bachelor's degrees in Computer

[14]Focus Group Discussion, 24-year-old man, 2014, Engineer, UTL
[15]Interview, 27-year woman, Lecturer Busitema University, 2014.
[16]National merit is admission to a public university on a government bursary to cater for tuition fees, and on campus accommodation. The bursary also caters for meals and recipients are given a stipend to be spent on living costs. National merit scholarships are highly competitive.

Science, Computer Engineering, Telecom Engineering, Information Technology, Information Systems, and Software Engineering.

The section also provides an analysis of admission and graduation data of one degree program in Busitema University— the Bachelor of Computer Engineering degree over a period of five academic years including 2010/2011, 2011/2012, 2012/2013, 2013/2014 and 2014/2015. Innovation is a significant part of ICTs today. Furthermore, the ratios of Lecturers, Heads of Departments and Deans of ICT related academic programs are also examined with the aim of interrogating the level of gender diversity and representation about those who teach and make decisions in ICT programs.

Lastly, the percentage ratios of men and women in various positions at MTNU and UTL are presented and examined. For UTL, ratios were considered at the following levels Off-roll staff level, Junior Officers, Assistant Managers, Heads of Department as well as top Chief Officers. For MTNU, ratios were considered in the categories of Intermediate skilled, highly skilled technical, professional, executive and managerial. The trajectory formed by the percentage numbers of men and women at each level from admission into university to graduation, and the employment in the ICT companies is what I characterise as 'transition patterns'.

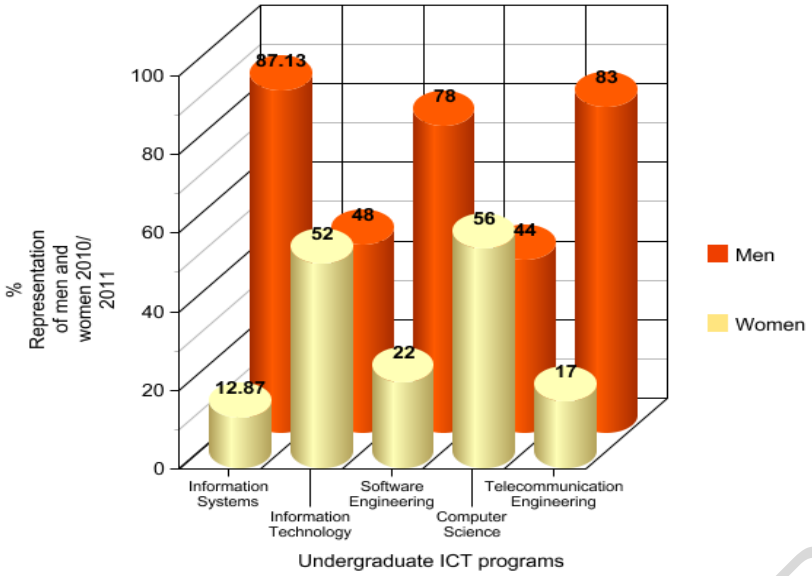
The percentages were obtained by making a count of men and women in the class and then dividing the number of men by that of women and multiplying by 100. To obtain the percentage of women the number of women was divided by the number of men and multiplied by 100. The percentage representation of men and women from each year of admission, graduation and each stage of employment were summed up to generate the final single graph showing transition patterns. For confidentiality purposes, the lists with the names of students could not be included in the thesis.

5.8.3.1. Admission

An examination of admission ratios from 2010/2011–2014/2015 revealed an apparent difference in participation along gender lines from the onset. The difference is evident in the overall consistently lower ratios of women when compared to those of men. Men typically made up most of students in all the six ICT programs. In the 2010-2011 academic years, men made up over 80% of students in some ICT academic programs. For instance, as indicated in graph 1**,** men constituted up 87.13% of all enrolled students in the Information Systems class while women made up 12.87%. In the software engineering course, men accounted for 78% of all enrolled students vis-à-vis women who constituted 22%. The same pattern was observed in the Telecommunication engineering course where men recorded 83% against 17% for women. Important to note, is that women were well under 30% on three out of six academic programs, of which 30% is the national minimum target representation for affirmative action.

Although men made up the larger percentage of students in the majority of classes, it was interesting to note that there were exceptions where women made up a majority of students on some academic programs. For instance, as graph 1 shows, in academic year 2010/2011 women made up 52% in the information systems class while men made up 48%, and 56% for women against 44% men in the Computer Science program.

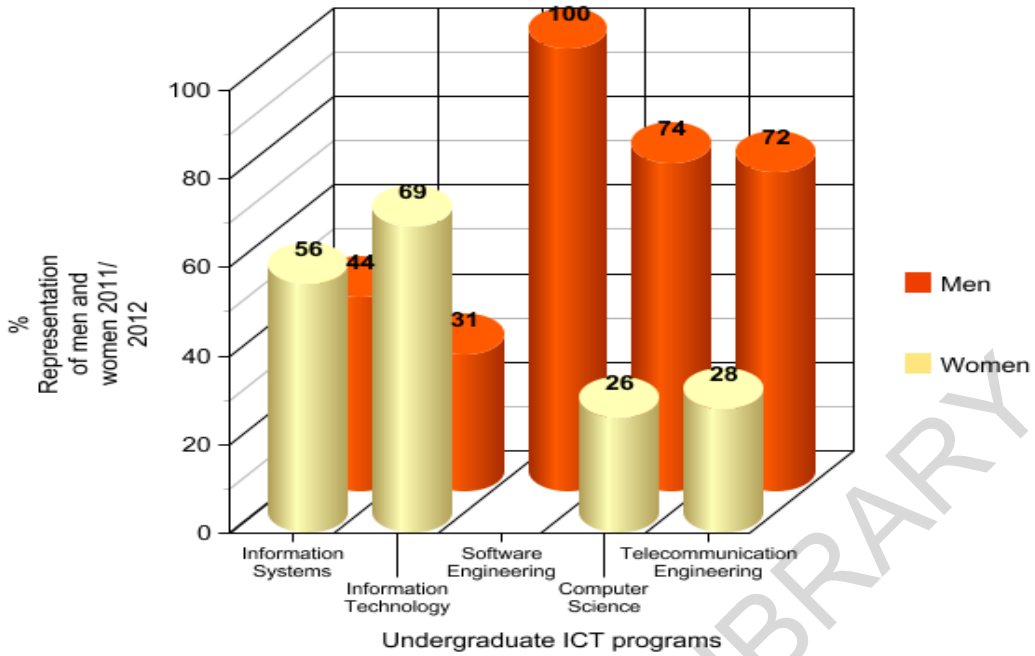
Graph 1: Percentage ratios of men and women admitted for ICT programs at Makerere University 2010/2011



Source: Secondary Data, Makerere University

The same trend was observed in admission patterns in 2011/2012 academic year, as indicated in graph 2, where more men than women were admitted to ICT related programs on national merit. In the Bachelor of software engineering program, all the students who were admitted were men who accounted for 100% of the class. In the computer science program, men accounted for 74% against 26% for women, and the same trend is observed in the Bachelor of Telecommunication Engineering where the men constituted 72% while the women were 28%. Exceptions were seen in the Information technology program where women accounted for 69% and men made up 31% of admitted students. What is noteworthy here is that in instances where women made up the majority of students, the percentage of men did not fall below 30%.

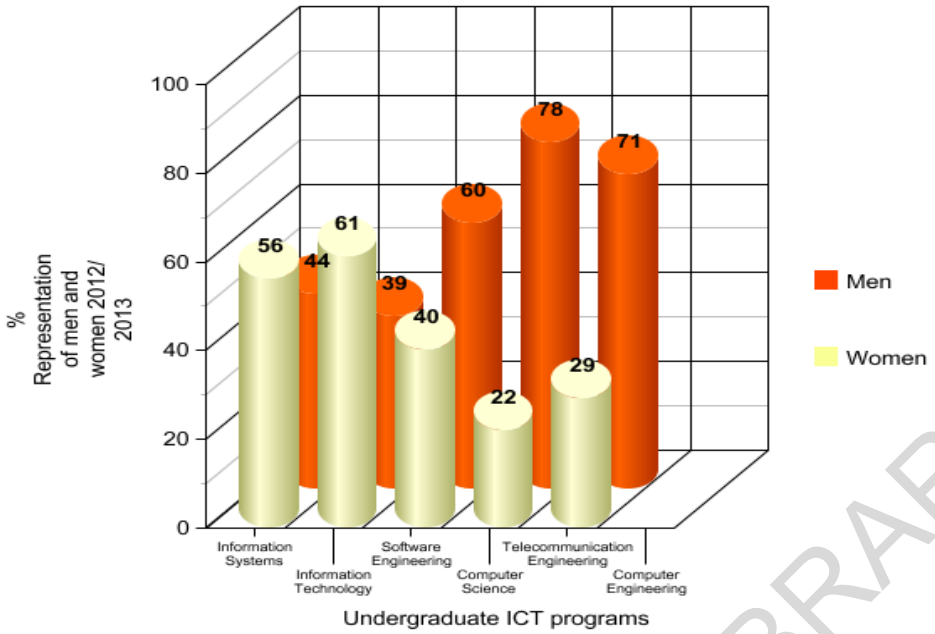
Graph 2: Percentage ratios of men and women admitted for ICT programs at Makerere University 2011/2012



Source: Secondary Data, Makerere University

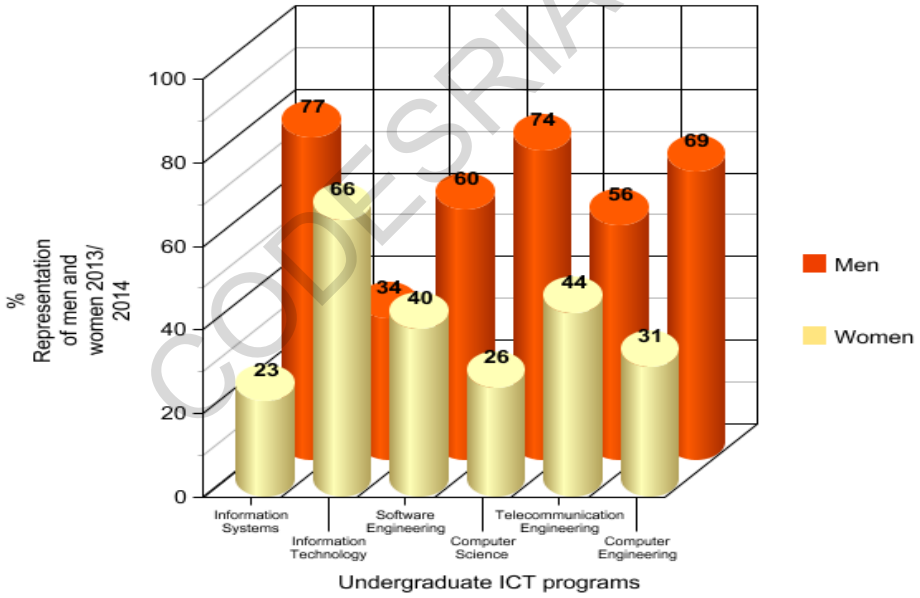
In academic year in 2012/2013, the percentage of men admitted was higher than that of women in the majority of programs. A similar trend is observed for the Bachelor of Software Engineering program where men accounted for 60% against 40% for women. The same applied to Telecommunication engineering where made accounted for 71% while women made up 29% of the class. Noteworthy is that the percentage of women admitted in the Bachelor of Information Technology was higher than that of men for a third consecutive year (52% for academic year 2010-2011, increasing to 69 in 2011-2012, 61% against 39% for men in 2012/2013 and 66% representation for women against 34% for women in 2013/14 as seen in see graph 4 below. However, there were exceptions in which the number of women exceeded that of men. As graph 3 indicates, more men (44%) than women (56%) were admitted for the Bachelor of Information Systems program.

Graph 3: Percentage ratios of men and women admitted for ICT programs at Makerere University 2012/2013



Source: Secondary Data, Makerere University

Graph 4: Percentage ratios of men and women admitted for ICT programs at Makerere University 2013/2014

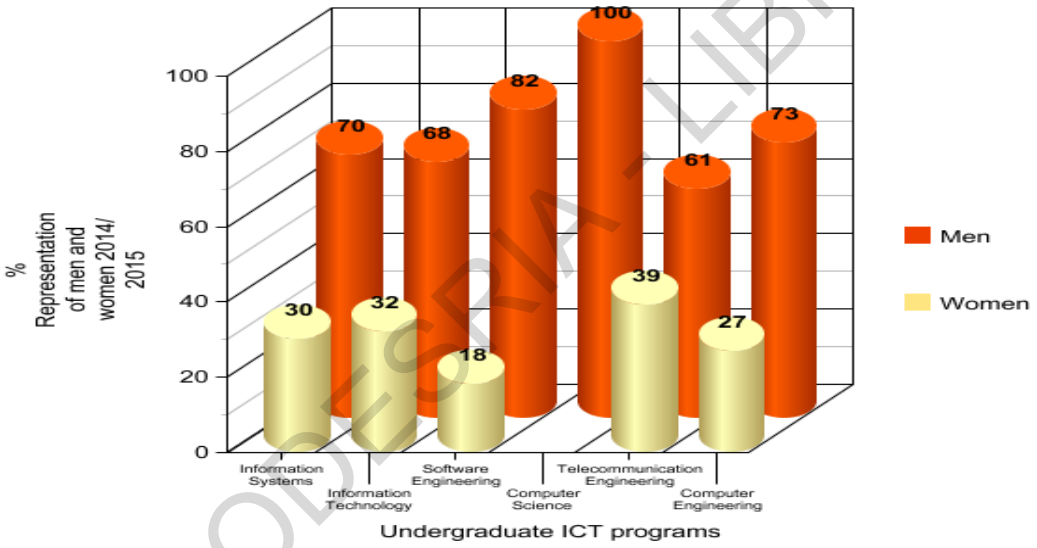


Source: Secondary Data, Makerere University

In academic year 2013/2014, men continued to dominate the enrolment in ICT related academic programs as shown in graph 4. Despite that, more women were admitted to the Information Technology program for the third consecutive year. That is 2010-2011, 2011-

2012 and 2013-2014. Increased enrolment of women was attributed to the fact that it is less technical and more managerial in nature. It was also explained that the maths content of the program was low, compared to other programs. The same explanation was advanced to explain the increase in percentage ratio of women on the Bachelor of Information Systems program in academic years 2010- 2011 (12.87%), 2011-2012 (56%), 2012-2013 (56%). This seemed to reproduce and reinforce the stereotype that women can only manage less challenging tasks in the ICT industry. Further, **graph 5** below still shows the dominance of men in the ICT academic programs.

Graph 5: Percentage ratios of men and women admitted for ICT programs at Makerere University 2014/2015

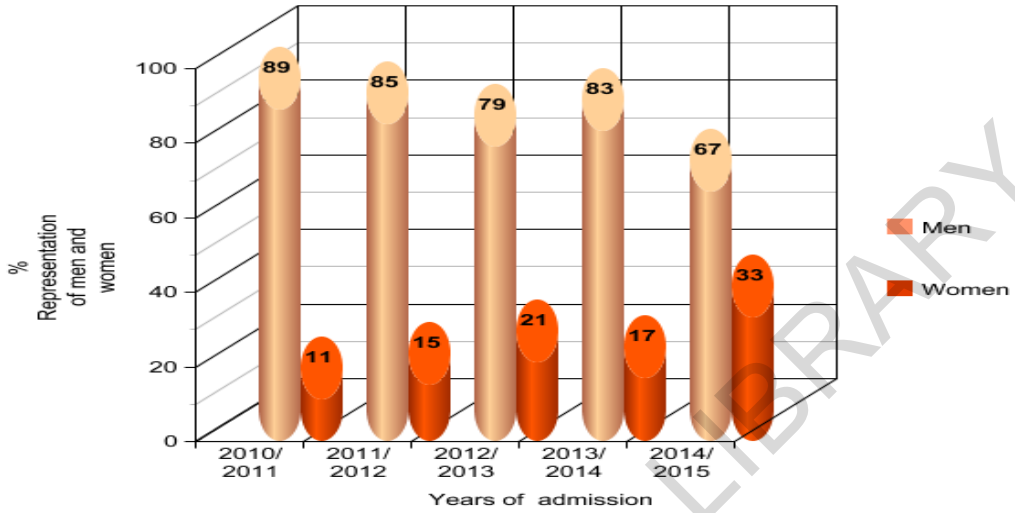


Source: Secondary Data, Makerere University

At Busitema University, as indicated in **graph 6,** the number of women admitted in the Bachelor of Computer Engineering program is on a steady increase registering 11% in the academic year 2010-2011, 15% in 2011/2012, 21% in 2012-2013, 17% in 2013-2014 and 33% in 2014/2015. Despite this, the women admitted into the Bachelor of Computer Engineering program have perennially been fewer than the men for the recorded four-year period with men making up 89% in academic year 2011/2012, 85% in 2011/2012, 79% in

2012-2013, 83% in2013-2014 and 67% in 2014/2015. In no year did the percentage of women come up higher or even equal to that of men, in fact, women constituted below 30% in four out of five academic years considered.

Graph 6: Percentage admission ratios of men and women in the Bachelor of Computer Engineering Program at Busitema University 2010/2011-2014/2015

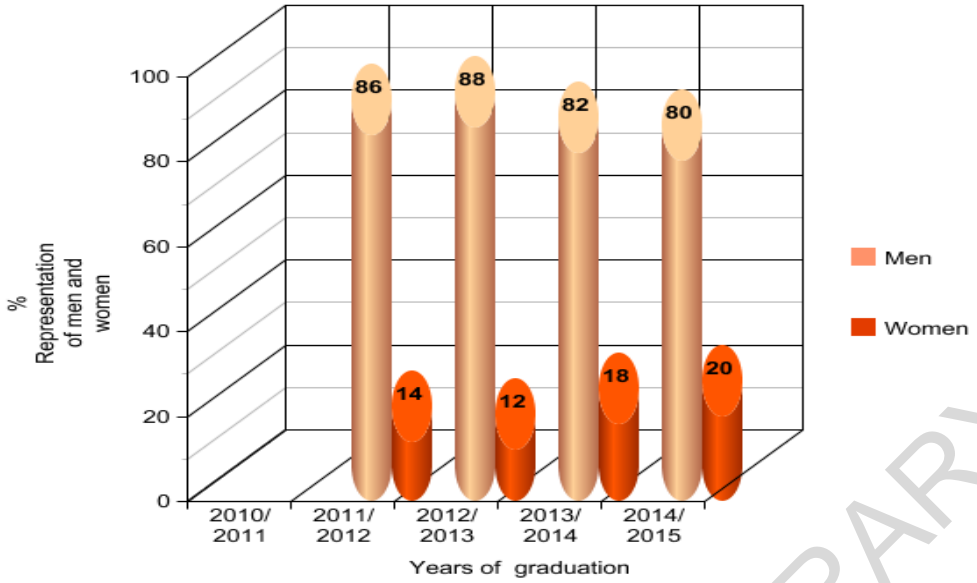


Source: Secondary Data, Busitema University

5.8.3.2. Graduation

An analysis of the graduation ratios of men and women in the Bachelor of Computer Engineering revealed a similar trend, with men making up most of the graduates. Graph 7 indicates that in 2011 86% of the graduates were men while the women constituted 14%. Similarly, the men made up 88% vis-à-vis 12% for women in 2012; 82% for men against 18% for women in 2013; and 80% for men compared to 20% for women in 2014

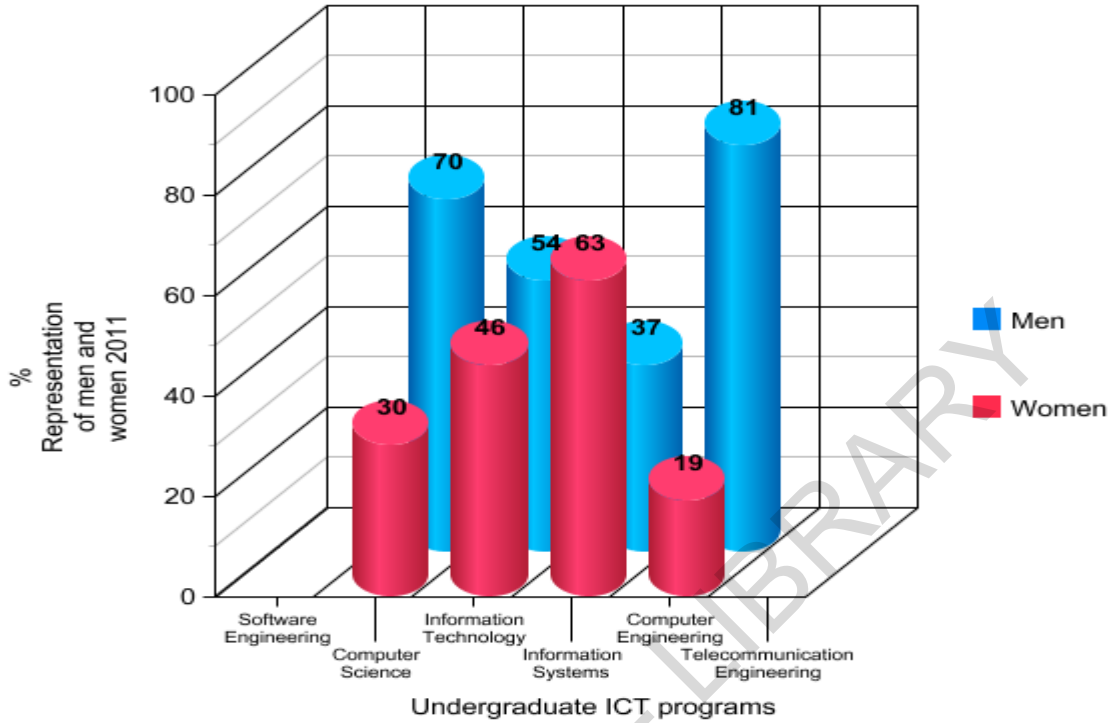
Graph 7: Percentage graduation ratios of men and women in the Bachelor of Computer Engineering Program at Busitema University 2010/2011-2014/2015



Source: Secondary Data, Busitema University

At Makerere University, the graduation pattern was similar to that observed in Busitema University. Graph 8 shows the graduates in ICT programs for the year 2011; 70% men against 30% women in the Computer Science program; 54% men vis-à-vis 46 % women in the Information Technology Program; 37% men compared to 63% women in the Information Systems Program and 81% men against 19% women in the Computer Engineering program. Out of four programs, women outshined the men in only one program, which is the Information Systems Program. Although percentage representation of women at graduation was lower in 2012, conforming to the established pattern with men making up over 70% in Computer Science for instance, the difference between men and men seemed to have narrowed. It is observed that in no graduation class did the women constitute below the minimum required number of 30% to achieve the affirmative action target.

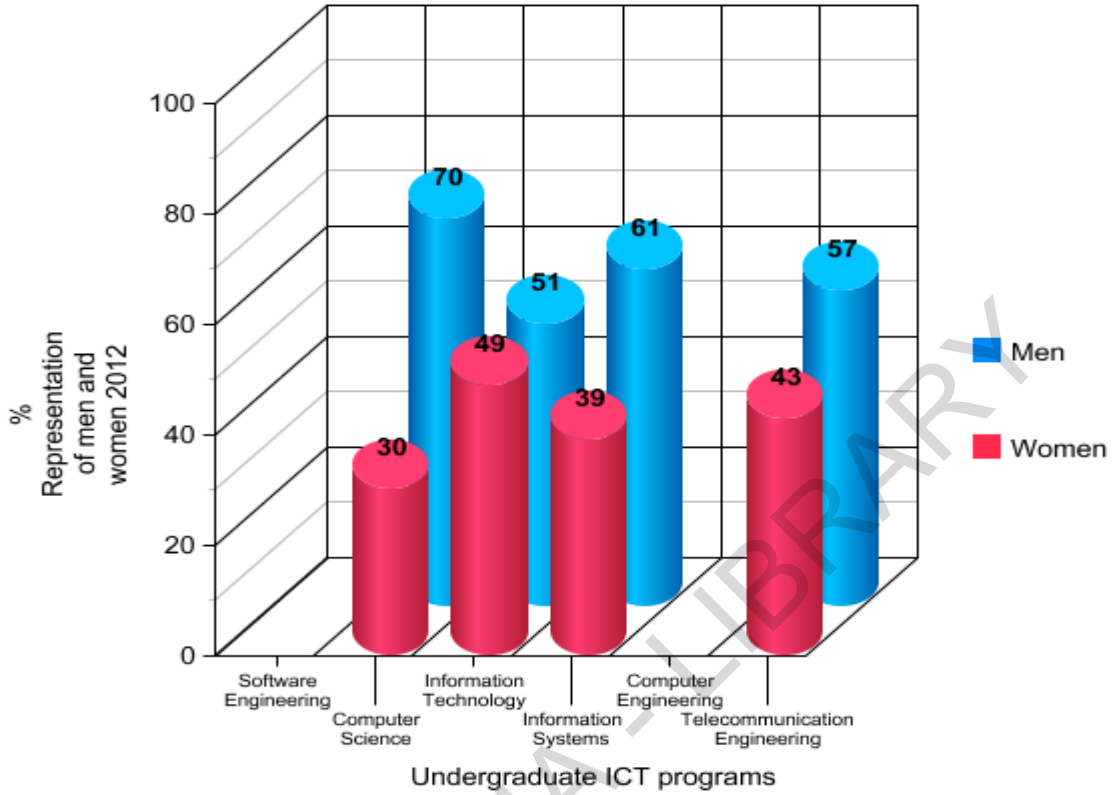
Graph 8: Percentage graduation ratios of men and women in ICT Programs at Makerere University in 2011



Source: Secondary Data, Makerere University

In 2012, as indicated in graph 9 the same trend continued with more men than women graduating but with a narrower gap between the percentage of man and women. This means that more women graduated compared to 2011. That is, 70% for men against 30% for women in Computer Science, 51% for men vis-à-vis 49% for women in Information Technology, 61% for men compared to 39% for women in Information Systems, and 57% for men against 43% for women in Telecommunication Engineering. Observable, is that women exceeded the 30% threshold in all the programs. However, even the Information Technology Program which saw relatively high admission rates for women over the years at admission had fewer women graduating.

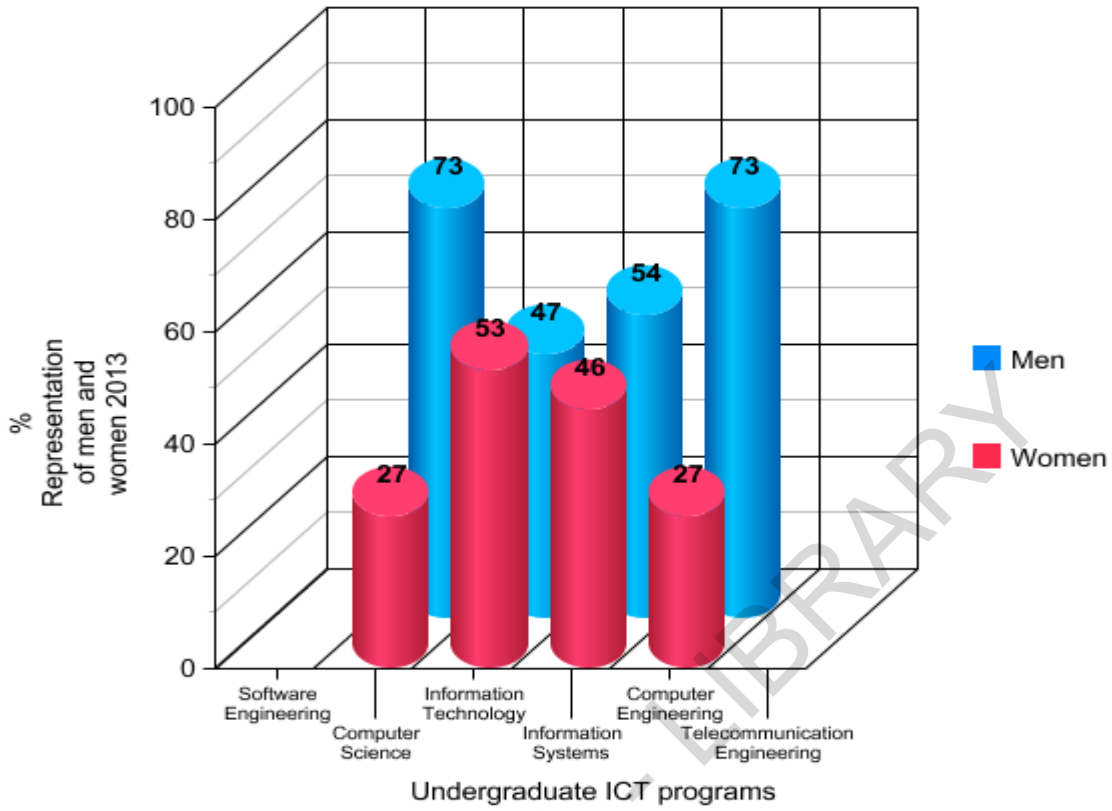
Graph 9: Percentage graduation ratios of men and women in ICT Programs at Makerere University in 2012



Source: Secondary Data, Makerere University

In 2013, as graph 10, the under-representation women continued. For instance, men made up 73% compared to 27% for women in Computer Science Program, 54% for men as opposed to 46% for women in Information Systems, and 73% for men vis-à-vis 27% for women in the Telecommunication Engineering Program. Important to note is that the graduation percentage of women surpassed that of men in for the second time for all the programs in a period of five years. This was in the Information Technology Program where women made up 43% and men constituted 47% of graduating students (see graph 10).

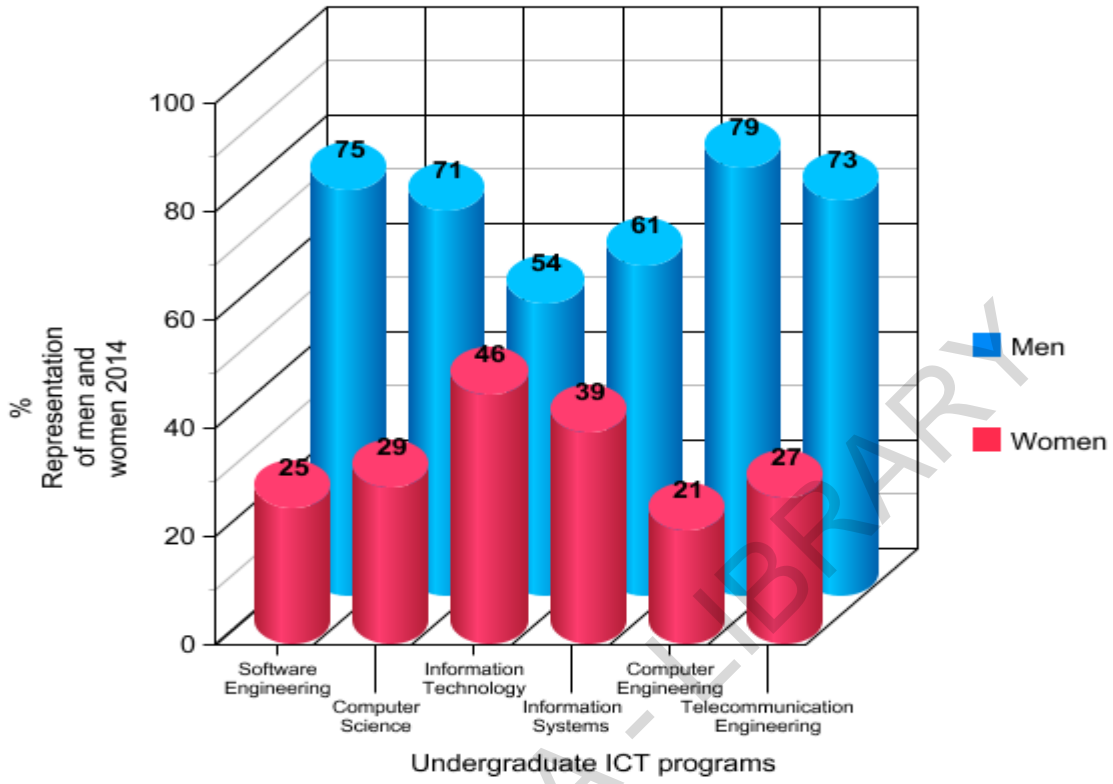
Graph 10: Percentage graduation ratios of men and women in ICT Programs at Makerere University in 2013



Source: Secondary Data, Makerere University

The 2014 graduation statistics continued to evidence the same trend, with more men than women gradating in all the programs (see graph 11). Even in the Information Technology Program where more women graduated in 2013 saw a decrease with men taking the lead again in 2014 by out numbering the women in all six programs.

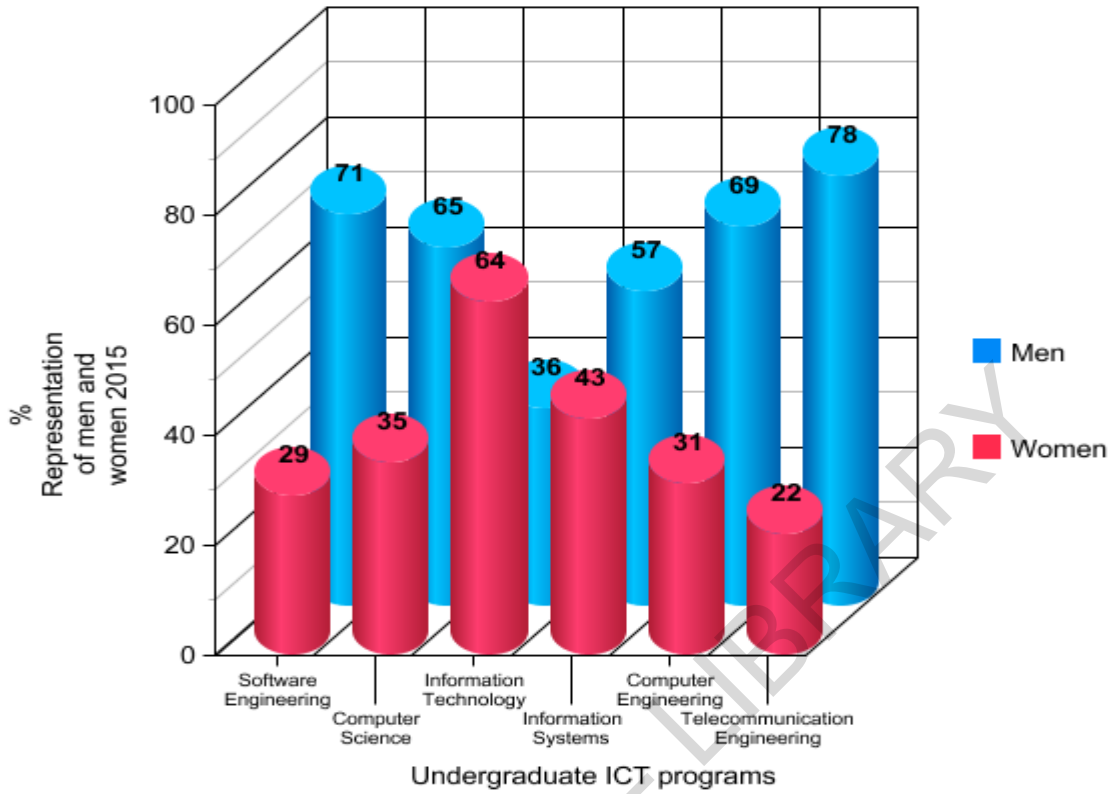
Graph 11: Percentage graduation ratios of men and women in ICT Programs at Makerere University in 2014



Source: Secondary Data, Makerere University

The 2015 graduation statistics produced the same trend, more men than women graduated as shown in graph 12. That is, 71% men to 29% women in Software Engineering, 65% men to 35% in Computer Science, 36% men to 64% women in Information technology, 56% men to 43% women in Information Systems, 69% men compared to 31% women in Computer Engineering and 78% men against 22% in Telecommunications Engineering. However, there was the exception case of the Bachelor of Information Technology Program. In which 64% of the graduates were women compared to 36% for the men.

Graph 12: Percentage graduation ratios of men and women in ICT Programs at Makerere University in 2015



Source: Secondary Data, Makerere University

Interesting to note is that in several graduations, a woman graduated as the best student not only in the College of technology but in all science programs in the university. In 2010, a woman who graduated with a Bachelor's degree in Information science was the best performing science student. This trend was the same in 2014where another female student who graduated with a Bachelor's degree in Information Systems emerged as the best overall student. Women also made up a considerable number of first class degrees. For instance, out of 45 students who graduated with a first-class degree from the Makerere University College of Computing and Information Science in the 2013/2014 academic year, 21 were women (Makerere University, 2014).

5.8.4. Data Presentation

The transcribed responses from interviews and focus group discussions are presented in form of narratives and where necessary, quoted verbatim. Meanwhile the quasi statistical data on

enrolment, gradation, transition patterns from university to the ICT labour market is presented in the form of descriptive statistics. The quasi statistics are accompanied by interpretation narratives that synthesize the information presented. The dates on which the interviews and Focus Group Discussions were held, and the characteristics of informants were noted and are provided to give a better understanding of the context of data. Emerging from the information that informed this study is that the marginal position of women in the ICT industry are influenced by undertones of social cultural stereotypes and that while women in the ICT industry have access to opportunities, negative stereotypes obstruct them from embracing ICTs.

5.9. Validity and reliability

Coming up with valid, credible and reliable information is important in research. Scholars have stressed the need to assess credibility and trustworthiness of qualitative research, as has always been the case in quantitative studies (Marshall and Rossman, 1999). To make sure that the results obtained are valid, reliable and credible data collection methods (individual in-depth interview, FGD, retrieval of admission, gradation, employee data and review of reports) were employed. As Kitchin and Tate (2000) note, researchers are expected to demonstrate reliability of the methods and procedures used in the study to guarantee validity and integrity of the conclusions. Employment of many methods of data collection, also known as methodological triangulation, greatly enhanced validity and reliability of research findings. The different data collection methods complemented each other. Validity was also enhanced by ensuring that canons of good research practice are adhered to, such as informed consent (Silverman, 2005).

5.10. Ethical issues

Ethical issues serve to remind researchers of the formalities to be respected before, during and after undertaking research, including, responsibilities of researcher to informants. No researcher should demand access to any institution or information and it is important to understand that it is a favour when participants give their time and institutions grant access (Bell, 2010). Therefore, the favour should not be abused by researchers, meaning that they ought to treat informants with dignity. Before undertaking the fieldwork, I received ethical clearance from UWC's Ethics Committee. I then sought permission from the Uganda National Council for Science and Technology, the government institution that grants permission to students to do research in Uganda. I also sought permission from the university registrars at Makerere and Busitema to conduct the research and utilise admission and graduation data which they provided.

Similarly, I sought permission from MTN-Uganda and UTL to interview the managers, other employees and utilise the employee data which they provided. During fieldwork, I explained the objectives of the research to all the informants. The rights of the informant, including, the rights not to participate and/or withdraw from the research at any time was explained to all informants. Before interviewing public officials, permission to refer to their positions of authority in the write-up was sought. Other ethical guidelines that I followed during this study included confidentiality of information and anonymity of all informants at all times (Russel and David, 2003). For the focus group discussions, I made sure that I briefed participants on matters of confidentiality. I explained to the students who took part in focus group discussions that nothing that was said by any participant during discussions was to be discussed outside of the focus group discussion setting.

5.11. Conclusion

This chapter has given an account of how this research was undertaken, the methods that were used in the selection of informants and justified why those particular approaches were appropriate. The ways in which the collected information was analyzed and presented have been elaborated. In the next three chapters that present the findings of this study, I examine three issues. One, the socio-cultural stereotypes that result in the differential uptake of ICT by men and women, and the response mechanisms of women to the negative stereotypes. The second chapter of findings examines the factors that influence the choice of an ICT career by men and women. Thirdly, the extent of the digital divide in the ICT industry in Uganda with a specific focus on gender. The specific focus here is are the transition patterns among men and women in the ICT industry at the skills acquisition level, and the progression of ICT graduates into the work environment.

CHAPTER 6: SOCIO-CULTURAL STEREOTYPES AND RESPONSE MECHANISMS OF WOMEN

6.1. Introduction

Tremendous progress has been registered in the ICT industry in Uganda. However, challenges which could thwart these gains continue to exist. Some of these problems which are largely structured along gender lines emanate from the patriarchal nature of society that creates widening disparity in access and effective engagement with ICT between men and women. Disparities in access are facilitated by the continuous processes of social differentiation and labelling between men and women. This chapter therefore interrogates the gender related socio-cultural stereotypes and perceptions which underpin the 'gender digital divide' in Uganda. The socio-cultural perceptions which continue to obstruct women from making equal gains as men in terms of engaging with ICT are examined.

The findings indicate that the varying conceptualisation of men and women, that is, male scientist and the technophobic woman, and the perception that the most important contribution of a woman to society is to be a mother, wife and care giver significantly contribute to the exclusion of women in ICT education and industry. Women are also characterized as passive and incompetent while men are labelled in the opposite manner as active, proactive and competent. These and other factors, as indicated in this chapter, have resulted in the marginalisation and obstruction of women, as opposed to men, from excelling in the ICT industry in many ways. The application of socio-cultural gender specific stereotypes indirectly ensures that women continue to be marginalised and excluded from the ICT industry. Current social norms and rules are reinforced and repeated by individuals without questioning. In this way, societal structures determine the actions of individuals. In this state, the agency of individuals, specifically, women is not applied to restructure society.

Further, research findings show that not all women have simply given in to these socially constructed stereotypes and labelling processes which are continuing to deprive them of access and use of ICTs. Instead, some women have managed to exercise their agency by tactfully mobilising a rich repertoire of 'everyday forms of resistance' (Scott, 1986) involving individual actions, most of which are gender specific. In his book, Weapons of the Weak, Scott advances and explores the reaction of vulnerable people to oppression. He advances the idea that when subordinate sections of society rebel against oppression, they prefer to do so in covert rather than explicit ways and without openly challenging the status quo. In this way, the formal order of society is left intact and attention is directed to political ends which may never gain formal recognition (Scott, 1986: 33). In the case of this study women devise ways of covertly challenging the myth of male dominance. Most of the women calculatedly 'juggle' work and family tasks while others opt to ignore negative stereotypes as they go about their duties. Still others have sacrificed their careers for their families and some embrace the culture of men in technology. This wide range of response mechanisms is continuously deployed by women as they navigate the everyday gender specific construction, stereotyping and labelling processes that serve to marginalise and exclude them from the ICT industry. The next section examines the socio-cultural perceptions and ways in which women navigate and challenge them in detail.

6.2. Socio-cultural perceptions

6.2.1. The 'male' technician and the technophobic woman

Women are largely believed to be 'technophobic'. The term**,** technophobic, is used here to mean the general fear and inability by women to understand or appreciate science and technology related courses including courses in ICT. In a largely patriarchal Ugandan society, men have often been constructed in a superior manner, indicating that the superiority of a

man goes hand in hand with competence that is required to excel at science and technology fields believed to be complex in such a way that they are intellectually demanding. In contrast women are constructed as feminine with limited ability to excel in science courses and technology which are sophisticated and require intellectual prowess to comprehend but with more competence in arts and humanities. In an interview, a 36-year-old man, a lecturer at Makerere University commented, "Don't you see how women always opt for subjects like history and geography in secondary schools? Most of them take those subjects because they are the ones that are easy to pass. They are cheap. You don't have to think a lot to pass history."[17]

From the foregoing quote, it appears that there is a perception that science subjects require a lot of thinking that women are incapable of, a suggestion which further indicates that women are intellectually weak and that their weakness is evident when they are seen to choose 'easy to pass' subjects like history and geography. This lends credence to the observation of Leeming (1996) that men tend to be associated with hard headedness, single mindedness, ambition and toughness while women are associated with subjective rationality and emotional connectedness. Therefore, the excerpt suggests that women end up in other university programs but not those that "require much thinking" or intellectual acumen like computer related science courses because women are lacking in the desirable traits necessary to do ICT work well. Even the minority of them which ends up in ICT related programs select specializations that are less technical and mathematical in terms of content. The description of arts subjects as 'cheap and easy to pass' and their subsequent association with women directly paints women as weak and men who are associated with the highly coveted science subjects are presented as intellectually strong and therefore superior.

[17]Interview, 40-year-old man, Lecturer at Makerere University, 2014.

This stereotype is validated by admission patterns observed in 2010/2011, when the male affirmative action policy of the university was applied for the Bachelor of laws program that only admitted women on national merit. In that year, 23 men were admitted to the Bachelor of Laws under the male affirmative action policy to balance out the all women class of over 60 students that had been admitted to the law program (Makerere University, 2011). History and literature are the major required subjects that students must study in secondary school in order to qualify to pursue a degree in law (PUJAB, 2011).

However, it is also important to note that in the same year, men were admitted under the affirmative action policy in the Bachelor of Business Computing, Bachelor of International Business and Bachelor of Procurement and Supply Chain Management which also admitted only women on national merit. These programs are not purely arts specializations. The fact that these sciences based programs did not admit any men on national merit imply that men do not always do better than women in all science based programs. This implies that the perception that men are good at sciences and women at arts is a social construction as in this case, where more women than men are seen qualifying for science courses. This corresponds with the argument of Butler (1990) that gender roles and stereotypes are not naturally determined but socially constructed (See also Wilson, 2003). This means that women can excel in science and technology fields as well as men can excel in arts and humanities. The perception that women do not have the mental ability to study science subjects

Data from interviews with women working in the ICT industry revealed that the few women who enter the industry are unexpected and they find themselves in a situation where they are required to prove themselves and to justify their presence on an on-going basis. This means that much of the industry and wider society are not prepared to acknowledge women as competent professionals in science and technology fields. A 28-year-old Engineer narrated her experience:

> There are few women engineers. Many times, we will go to a meeting and I will be the only woman around and people are always surprised whenever I say, I am an engineer. It is not a reaction that is easy to handle and at first, I used to feel very frustrated and annoyed. But am now used to it.[18]

From the interview, women engineers encounter a society which does not appreciate or understand women's choice of career in ICT as normal and this could make it difficult for them to fit in the industry. Often, women Engineers are met with surprise and they constantly must navigate hostile environments and repeatedly assert themselves. This is something that men engineers did not report experiencing. Next, I consider the strong man weak woman stereotype.

6.2.2. The 'strong man' and 'weak woman'

The strong man and weak woman stereotype was mostly presented by managers in the ICT industry. It was observed from interviews that according to managers, women appeared weaker than men in performing tasks. As explained by one of the managers at UTL. "Women usually do simple trouble shooting. They do the massaging and the men do the tough and rough work".[19] Women were perceived as only able to do the simpler tasks such as documentation and data base administration. The association of 'simpler tasks' with women emanates from societal social cultural practices that devalue the work allotted to women (Reskin, 1988). The type of perception observed in the quote above facilitates the process of drawing boundaries for division of labor a long gender lines. Panteli et al (1999) observes that women predominantly work in what is considered "softer" areas of the profession for example in sales, marketing and support functions such as customer care. Portraying women as soft, leads to a situation in which managers only feel comfortable in assigning tasks that

[18]Interview, 28-year-old woman, Engineer UTL, 2013.
[19]Interview, 45-year-old woman, Manager at UTL, 2013.

are perceived as “simple trouble shooting work”. On the other hand, the men are assigned “tough rough work” which requires more effort intellectually or physically and usually comes with higher pay. This perception is stereotypical, discriminatory, and indirectly excludes women as well as men from specific tasks. Another manager explained that women performed some tasks better than men just as men performed other tasks better than women. This is a repetition of social constructs which marginalise women ‘Women are good at documentation. Women are also good data base administrators and report writers. They are also proving to be good at IT security. Men are good at programming and networking.’[20]

It was interesting to note that the tasks which women were said to be good at were the simple ones that did not require strong technical skills like report writing and data base administration. The men on the other hand were thought to be good at tasks that require ICT technical skills like programming and networking. By these processes women and men are assigned specific roles. Both the men and women accept their roles and the division and allocation of roles becomes the norm and in this way, men are made superior to women leading to the unfavourable construction and adverse incorporation of women (du Toit, 2004). Du Toit (2004) contends that it is through the processes of adverse incorporation facilitate the exclusion of vulnerable people from economic opportunities. For the case of this study women can participate in the ICT industry but only in a limited way which prohibits their full participation and eventual exclusion from the industry.

Another manager explained ‘The men are really not good with report writing and those who are good at it just hate doing it’ (Interview with woman manager at UTL, 2014). This reflects the creation and acceptance of expected behavior as presented in Giddens structuration theory and the internalization of expected roles through socialization as in social constructionism. These expectations are never written or spoken but they are known and respected by all

[20]Interview, 45-year-old woman, Manager, UTL, 2014.

parties concerned. This resonates with suggestion advanced by Manning (1982) that rules that govern the process of structuration during interaction are in the memory traces of individuals[21]. The manager is convinced that the men are not at report writing, implying that report writing is an activity reserved for women as even the men who do it well just do not like to do it. The manager and the employees all draw on knowledge that has been learned to enforce boundaries that do not exist in the physical world but are real in their brains.

In a comment of a top Manager, he compared having a woman on a team with having a slow team member on a team:

> This reminds me of a time in my career when I led a team of workers. It was a team of brilliant managers from all over the world and in the group, was this one man who kept asking questions at almost every point of the task. At fast, it was annoying because then the team was held back trying to explain everything to him. Other members of the group where growing impatient. However, as we progressed we all realised that the more we talked about things as we tried to explain to him, the better we understood them. We understood our own ideas better and came up with a great product at the end. Women on a team are like that slow team member who always makes the team think harder and better.[22]

Although this quote could be easily mistaken to be a compliment to women, a closer analysis reveals undertones of negativity in the perception of women. The comparison of a woman with a slow team member is condescending to women. In this context, the word 'slow' bears a negative connotation, therefore a more positive word like inquisitive, focused, vigilant, or cautious could have been used in place of 'slow'. The use of the word 'slow' implies that

[21]According to the Collins online dictionary, a memory trace is the hypothetical structural alteration in brain cells following learning http://www.collinsdictionary.com/dictionary/english/memory-trace [Accessed July 2 2016] [Accessed September 5 2016].
[22]Interview, 58-year-old man, official at government agency, 2014.

women are in some way an inconvenience during the execution of tasks. The view of this manager also means that women generally, can only be tolerated in work. Thus, although the Manager makes an attempt to make to appear appreciative of the presence of women, his description of women as being 'slow' to understand does not reflect well on women as being slow can also be easily interpreted as incompetence. In fast paced business environments, in many instances, decisions must be reached quickly and with a perception of women such as the one held by the top manager, women are likely to be excluded from working on important projects in a company if time is a factor. As a result, women will be assigned projects that managers view as simple. This directly results in the stereotyping of women as intellectually weak and their consequent exclusion in the ICT industry.

6.2.3. The 'working' man and 'domesticated' woman

The 'house wife' stereotype is used here to emphasise the belief that men are suited go out and work while women are best suited to be at home taking care of the family and the home. In their book, *Language and Women's Place,* Lakoff and Bucholtz (2004) discuss nostalgia that they describe as reminiscent of a past when men were men and women were women, there was no divorce and the children were seen and not heard as a perceived halcyon golden age. However, they further argue that such a period of peace did not exist since for the majority of women, children and *even men*, as the so-called period of tranquil caused a lot of suffering. Nonetheless, during interviews and Focus Group Discussions some men in the industry expressed a personal lack of appreciation for the education of women, making it clear that in their opinion, the place of women is not in school or at work outside the home. One informant pointed out that an economically independent woman is a threat to the stability of the family and society. 'I think that women are better off keeping their traditional place. They should take care of the home and family and give an opportunity to the men to

perform their God given role of providing. An economically powerful woman is a disaster to the family until the man dies.'[23]

The perpetuation of such a stereotype by one respondent could be surprising since equal opportunity campaigns are widespread and all the benefits of equal opportunities for equal opportunities for men and women alike are well-publicized. These include benefits of education, not only for the women but for their children and entire families, findings also showed that 20% of the ICT professionals interviewed preferred a household where the father works and the mother stays at home to take care of the family, advancing the need to enable the mother to nurture the children and bring them up with good family values. Some respondents argued that staying at home for a woman and going out to work by men would allow men and women to each specialize in their God-given roles for a more organised society. This kind of perception shows how religion is used to make social constructs persist. As Berger (1966) notes, people can use religion to justify their beliefs and actions.

6.2.4. The male intellectual and the female home maker

The perception that women do not need to be intellectually sound or educated is deeply ingrained within the Ugandan society in general. As seen in a study of Ugandan men and women regarding preferences in the level of education of their ideal spouse, a majority of Ugandan women had a preference for their husbands to be more educated while the men expressed a preference for less educated women as wives (Kwesiga, 2002). Only 25% of men saw it as ideal for their partner to have attained university education while 94.1% of women preferred a spouse with a university education (Kwesiga, 2002). This was validated by women engineers who reported being confronted with such stereotypes that seemed to portray them as unsuitable for marriage because they were perceived as too highly educated. A woman Engineer reported that her colleagues who are men had often described her as not

[23] Interview, 56-year-old man lecturer, Makerere University, 2014.

being suitable for marriage. “The men here often say that they cannot marry a woman who is an engineer because women who are engineers are like men”[24]

Highly educated women particularly those who pursue a career in science and technology fields are generally not viewed as feminine and as suitable partners for marriage. This point of view resonates with the observation of Akello (1990) that educated women are perceived as conceited and argumentative. In Uganda, society labels a highly educated woman as unfit for marriage and questions such as: “who will marry that educated woman?” are used to indirectly front this argument. Negative stereotypes such as this are a source of discouragement for women and a facilitator of the gender digital divide in the ICT industry.

Young men at university were not free from this kind of prejudice as they viewed themselves as superior to women with whom they associated rather than equal partners who could work together in the absence of domination of one by another. University students emphasized their belief that a good woman should follow the lead of man. A 23-year-old man in a focus group discussion explained that he believed that as an African man, he was superior to any woman. He asserted: I am an African man. There can only be one head in a family, when women become engineers or have degrees, they do not listen. They also want to make decisions in the home and I cannot allow that.[25]

This argument resonates with the notion of socialization into culture and highlights how cultural norms are used as a justification for gender related beliefs and actions. In the Ugandan culture, the woman is expected to keep a submissive position with no logical explanation except for the fact that she is a woman. On the contrary, the men are encouraged to treat the women as inferior to assert their dominance. However, it was observed that the majority of ICT professionals, employees from UTL and MTN Uganda were not in support

[24] Interview, 23-year-old woman, UTL employee, 2014.
[25] Focus group discussion, 23-year-old man, Busitema University, 2014

of a family setting where the woman was a housewife and the man went out to work as 75% of respondents preferred a family setting where both parents work to contribute to family income. To support their preference respondents cited their conviction that women, like men, have talents and abilities which should be developed and used.

Respondents valued programs aimed at the emancipation of women which they credited for giving women the opportunity to work and earn a living for themselves and their families just like men do. Other respondents stressed the appreciation of the notion of equality between men and women. Respondents also advanced the argument that the economic situation in the country is characterized by an ever-increasing cost of living. In these circumstances, they argued that raising a family with two incomes would be the better choice, as this would increase chances of financial stability and enable a stable environment for the family especially in the event of the death or incapacitation of one of the parents.

Relatedly, it emerged from the interviews that men did not consider paternity leave important. They did not seem to know their role as parents besides providing financial support as they believed that the role of child minding was solely a woman's role.

> What do I as a man need paternity leave for really? Am I going to deliver the baby? No. My role is to just make sure that my wife has been taken to the hospital. I wait to be told that she has given birth well and then I would come in to make sure that she gets home safe. After that, I have to make sure that the mother and the baby have food. What do I need leave for? You women never even want us, the men to be there when you give birth[26].

Consequently, even if she is overburdened, a woman who juggles work and the home duties well is celebrated and admired as a 'strong African' woman. It appears as if the more

[26]Interview, 35-year-old man, Engineer, MTNU, 2014.

suffering a woman can withstand the more of a woman she is considered to be. As a result, women strive to attain the image of a woman who has it all in terms of family and career, a character that Llewelyn et al (1990) refer to as the 'super woman syndrome'. However, many ordinary women find that the image to which they aspire is a fantasy. (Newell, 1993) observes that although the greatest social change over the last two decades has been the increase of women in the labor force, many of the so called 'super women', often created by the media, largely comprise the minority few who can afford to hire expensive services of caretakers to take care of their children and house chores In reality, many ordinary women with children find themselves overwhelmed but choose to suffer silently because a 'true African woman' is strong and expected to listen and do things but not to complain.

6.2.5. 'Male' 'geek' stereotype

There is a general perception that men are fascinated by technology and women are not: "When you give a toy car to a boy, he will try to open it and see what is inside but when a girl is given a doll, she wants to hold it and dress it up and wash it.[27] The underlying proposition here is that men have inherent inclination towards technology because of they are socially constructed as inquisitive, while women do not the same inclination. This is directly connected to the masculinization of technology. Technology is traditionally equated to industrial machinery and military weapons. This is an indication that the hegemonic form of masculinity is still strongly associated technical prowess and power (Wagcman, 1991; 2009).

6.2.6. Honest, consensus builder, low risk taker, trustworthy and reliable woman versus the dishonest, high risk taker, less trustworthy and less reliable man

There is a continued accentuation of social construction processes in work, where women are perceived as better at some tasks and men at others. Women were generally defined as honest

[27]Interview, 38-year-old woman, Lecturer Makerere University, 2015

and as good consensus builders. Several managers at MTNU and UTL also described women as quick decision makers, which is both a good and inferior quality depending on the situation and tasks being handled. While quick decision making can yield quick results, it sometimes comes with dire consequences. "I have come to realize from my experience that women are better at some tasks and men at others. Women are more honest than men in general. Women are also consensus builders."[28]

Managers asserted that although high risk taking in business is desirable, it needs to be checked and women provide the balance that is needed in a business environment as far as risk taking is concerned. Men were defined as possessing good technical skills. The stereotyping and categorizing of traits that was observed is like a study on gender specific dualisms in which women were found to possess only 3 out of 11 traits required for work in Information Technology (IT) while men had 8 of the traits (Von Hellens, et al., 2004). What this translates into is that men are naturally perceived to be better suited for IT work. This claim resonates with Vinkatesh et al (2000) who suggest that men and women have inherent differences that determine their adoption and use of technology. These issues are indicative of how men and women continue to be both constructed and stereotyped in the ICT industry. This shows that the social construction process of women and men does not stop in homes and wider communities but infiltrates work places. One manager explained:

> In my experience, women generally take decisions fast once they are convinced of a situation. They judge, sentence and hang but they are not high-risk takers so they bring desirable traits in the business world. They balance out the high-risk tendencies of men. Men are usually good at running applications.[29]

[28]Interview, 47-year-old man, Manager at UTL, 2014.
[29] Interview, 45-year-old man, MTNU, 2014.

However, Managers also pointed out that women can be great assets for companies as one manager explained:

> A company that has no gender diversity misses out on these traits that women usually bring to the table. Also, women are more trustworthy and reliable. When a woman tells you, she will be there at 2.00 pm, she will be there. I cannot say the same for the majority of the men that I work with.
>
> Gender equality is diversity and to me diversity is very important. It is always important to have various points of view on any given issue. A diverse group that is made up of men as well women is a rich group.[30]

This quote is a careful acknowledgement of the value that women can bring to the industry. Women generally bring great qualities to tasks which can benefit companies in IT and otherwise. Top level managers with many years of experience in top companies seemed to have a strong conviction of this. Such positive stereotypes of women are rare. It is this kind of attitude that needs to be instilled in managers and society. The view that there are benefits from diversity could explain the findings of a recent study conducted in United states of America, United Kingdom and India in which it was revealed that companies that had women on the board of executives out performed those with men only on the executive boards (Thornton, 2015). The report titled Women in Business: The Value of Diversity compared 1050 businesses with 200 in India, 350 in the United Kingdom and 500 in United States of America. A comparison of companies with at least one-woman executive board member had a higher return on assets than those boards with only men as members. In the United States of America, the return on assets for companies with only women board members was 6.77% while that of companies with women executives was 8.68%. In India, 6.68% for companies

[30] Interview with 54-year-old man, Manager MTNU, 2014.

with men only boards and 7.53% for companies with at least one woman. In the United Kingdom, 6.18% for companies with men only board members and 6.71% for companies with a woman on the board of executives. This could be a demonstration that a team with a good balance of men and women makes smarter business decisions than a team of men only. Positive views of this kind about women could be the start of restructuring of gender related dynamics in the ICT industry.

6.2.7. The dependent woman versus the independent man

There is a perception that women always wait on men to meet their financial needs and to sustain them economically. Neave (2006) argues that not only do women need men, women are fundamentally programmed to depend on men. Neave 2006 attempts to prove that women are physically and mentally built to be protected and provided for by men from the beginning of time. Neave 2006 argues that in general, women are smaller than men and because of this, in prehistoric times, women and their off springs were more prone to being victims of predators and violence. Comparing recent studies on the relationship between men and women, Neave attempts to explain that the relationship between men and women has not changed much today since the time when men were hunter gatherers and women were child bearers. One of the key findings of one of the studies showed that women were more interested in the financial status of prospective partners than their looks while men were more interested in the looks of women. The interest of women in the financial status of prospective marriage partners is a symbol that women are predisposed to depend on men financially. Another key finding was that women who worked were more unsatisfied with their husbands than those who stayed at home. From the quote below, it seems that women were viewed as receivers and men as givers. It appears as if women are perceived as somehow privileged to have men taking care of them and providing for them. The portrayal of men as givers makes

men superior to women who have to depend on men for their livelihood. Students in a focus group discussion echoed this view.

> These are my former students. I do interact with them and recently when I was talking to them it occurred to me that there was actually no girl in the group. I asked them. Guys where are the girls? They told me, Sir the girls have other options. Unlike us they get husbands who take care of them. They gave me examples of two girls who had got married and their husbands had started businesses for them. What makes this an unfortunate situation is that the shops have nothing to do with computer engineering.[31]

The perception that women were always waiting on men to do things for them was reiterated by students in a Focus Group Discussion.

> **Male student:** The girls are lazy. We are always doing work for them in class
>
> **Interviewer**: Is that true?
>
> **Female student:** No, the girls are not lazy but the boys are always offering to help….. So, some of the girls decide to let them do the work. If the boys stop offering to help, they will see that those girls can do their own work.
>
> **Female student 2**: but we the girls should stop accepting the help so that we can learn and do things for ourselves.[32]

6.2.8. Aggressive and flexible man vis-à-vis unenthusiastic woman

Emergent from interviews and Focus Group Discussions is that men are perceived to work with versatility and reliability. Employers perceived men to be substantial risk takers unlike

[31]Interview, 40-year-old man, Lecturer Busitema University, 2014.
[32] Focus group discussion, 22-year-old women and man, Busitema University, 2014

the women who were perceived by managers to be generally slower and reluctant to adapt to change.

> I recently sent a team of engineers to some regional offices out of Kampala. I ended up sending an all men team. I have a team of 8 women and 12 men. The men were willing to go but the women did not want to leave their children behind. Some of them told me that they could not leave their boyfriends. So sometimes it is not that women do not have access to opportunities but they simply fail to take advantage of them.[33]

Women were described as lacking the aggressive nature that is required to make it in the field of ICT. Their lack of interest, the informants argued, is reflected in their early departure from jobs, extra help which women always need to balance the efforts of a team and that is perceived to be the norm. Interviews with company managers revealed that fewer women apply for jobs in the ICT sector and some of the women who are offered jobs end up leaving prematurely. However, there were a few who stayed and performed excellently. Women, especially those who are married were viewed as unsuited for work in the ICT engineering field as they had been constructed as not aggressive. The narrative below provides a complete picture of these dynamics.

> The women come and apply for jobs but they divert along the way. Only the aggressive ones stay. Everyone can make it in this field if they have the interest but women are more willing to go and do a job that is outside of what they are qualified to do. They go into banking and accounting. I find that men are more determined to find and stay in jobs that they have academic qualification in. Maybe women do not have as much time as men do because this industry is a 24/7 one. I would not like my wife

[33]Interview, 40-year-old woman, Manager at MTNU, 2015.

> to work in a busy company where they work 24/7 and as I work with women here I realise that I would not like my wife to be working as much as some of them do so I help them and do some work for them to balance it out.[34]

According to the informant, it seems as if women are considered as not aggressive enough for the rigors of ICT work. Women are also perceived as less determined to excel at ICT work. And as result, are more willing to take up work in other fields. The informant points to time constraints that arise as women try to juggle family life and work as the probable reason why women leave ICT jobs. The narrative of a woman lecturer on the Bachelor of Computer Engineering gives insights into the family/work dilemma that many women faces.

> The thing is that really ICT can be a 24/ 7 industry. So, imagine someone who works at the back end of any telecommunications company or any company that uses technology intensively. They are on call 24/7. With technology things can go wrong at any time, a small systems error can lead to the collapse of an entire system and if it is not corrected quickly it can lead to serious losses, you always need to be ready to go.[35]

6.2.9. The incompetent woman versus the competent man

The abilities of women in the ICT industry are often subjected to doubt and questioning. From interview data, it was clear that the performance expectation of women was not high. It appears that young women in ICT courses are watched with the expectation that they will fail. Interestingly, when a woman excels her success is easily attributed a man. In this case a man in their class. The interview with a Lecturer at Busitema University revealed the complexities:

[34]Interview, 45-year-old man, Manager at UTL, 2014.
[35]Interview, 36-year-old woman, Lecturer Makerere University, 2015

> There was a girl who was doing very well on all her tests. She always came in second place after one boy who was also really brilliant. Then one time one of the Lecturers noticed that this girl always sat next to the brilliant boy and they spent a lot of time together. We realised that she was not doing all her work by herself. That boy was always helping her out.[36]

Such an attitude is epitomising the stereotypical way in which young women in the ICT field are constructed and consequently treated. There is a widespread assumption that the women are at best unconfident and at worse incompetent (Fergusson, 1983). In her book titled Forever Feminine: Women's Magazines and the Cult of Femininity, Fergusson explores the role of feminine magazines in perpetuating negative stereotypes of women and thus keeping them in a subordinate position. She shows that magazines depict women as dependent on men and that women need to follow the lead of men. It appears as if intelligence is a preserve for men only and that it is impossible for a woman to appear intelligent. In this case, it did not count that the young woman in question had joined university from a top performing school in the country and been admitted to the program with excellent grades. With such stereotype perceptions directed towards young women in university, it is not surprising to observe that some young women were seen to lose interest in ICT work as observed at the end of university studies. Although they were doing well in school, they expressed the desire to join other careers besides ICT ones.

This tendency to attribute specific stereotyped characteristics to men and women is echoed in the work of Bachtold and Werner (1972) in their work titled: Personality Characteristics of Women Scientists. Their study involved the use of the 16 Personality Factor Questionnaire (16PF) to study women biologists and chemists who had been listed in Who is Who in America and Who is Who of women of American Women. According to the results of the

[36] Interview, 40-year-old man, Lecturer, Busitema University, 2014.

study, women scientists as a group were found to be more serious, radical, confident, dominant, intelligent and adventurous than women in the general population. Women scientists were also found to be less sociable, group dependent and sensitive. The study concluded that personality profile on the 16PF of men and women scientists showed strong similarity.

According to this study, women scientists are perceived as an exception among all other women because they exhibit characteristics like those of men scientists. This kind of perception serves to masculinize and exclude women from science fields. Even the few women who apply their individual agency to challenge this perception are reconstructed as men and given 'masculine' traits. In addition, the salient traits that had previously been reported to be characteristic of the male scientist such as intense channelling of energy, self-reliance and dominance, a low interest in social interaction and a willingness to take risks were all characteristics of women scientists (See also Von Hellens et al, 2004). Consequently, women are generally perceived as less serious, radical, confident, dominant, intelligent and adventurous and less suited for the rigors of work in the science field. Bachtold and Werner (1972: 395) report that contrary to prior 'sex typing' in which women were characterised to be more sensitive than men, their study showed that women scientists were more tough minded than men scientists and women were also more independent than the men.

Focus Group Discussions with young women at the university revealed that some of the women were considering joining other careers after graduation. "I feel like I am not the best programmer there is so I would like to be a spokesperson for a good telecommunications company. I am very good with public relations."[37]This scenario resonates with the work of Bartol and Aspray (2006) in which they found that many women with computer science degrees chose not to enter computer related occupational fields.

[37] Focus Group Discussion, 21-year-old woman, student, Makerere University, 2014.

There is a tendency for managers and clients to view pregnant women as incompetent and incapable of performing tasks. Women revealed that pregnancy is viewed by many employers as an inconvenience that needs to be mitigated or entirely done away with. 'I was 7 months pregnant. I was healthy and in decent shape and felt that I could do the job. When I met the army commander with whom I was to work closely, he immediately told me that there was no way he was going to work with a pregnant woman.'[38]

In this instance, a woman described a situation in which she was almost forced to abandon tasks that she had the ability to perform because she was pregnant. However, women are seen to be exercising their agency and being able to perform their duties well. The officer openly refused to work with her because she was pregnant. The portrayal of pregnant women as incapable of performing tasks renders them a liability in the industry. Hence their construction as less desired and inferior to men. This resonates with a study that showed that women were asked about their plans to have children while men were not required to provide their plans. (Devine, 1992). The findings of the study revealed that in some companies, the decision to hire the women depended on their child bearing plans. Hiring managers directly or indirectly asked women candidates about her plans to have children

Relatedly, this lends credence to a recent occurrence in which the Ministry of Internal Affairs recently came under the spotlight for conducting interview procedures that were characterised by critics as discriminatory against women. In the 'interview process', candidates were required to run a 10-kilometre marathon as a way of testing or gauging their physical fitness (Senkanjako, 2015). The exercise was, as gender sensitive critics in Uganda argued, inappropriately rigorous for approximately 100 women who were pregnant at the time and could not ably participate in it. This was particularly unfair for the women since the tasks of the work that they applied for required no rigorous physical drills. Also, this exercise was not

[38] Interview, 30-year-old woman, employee at UTL, 2013.

fair for less obvious groups of women like the women who were menstruating and those who were overweight for their height. This is a reflection of the lack of attention given to the unique needs of women especially exhibited by government agencies and could be understood as general disregard for the 'practical and strategic' needs (Moser, 1993) of women who are perceived as inferior due to the social construction of biological roles of women as an undesirable inconvenience. In this way, government institutionalises the discrimination and exclusion of women.

Some women also mentioned that they rarely received the support of other women leaders. Goldberg (1968) discusses the existence of possible prejudice of women against women. It was established that indeed women tend to be prejudiced against other women and that they do consider their own sex as inferior. Goldberg conducted this research by giving college women identical articles allegedly written by men and those allegedly written by women. The college women evaluated the articles allegedly written by men more positively. This was interpreted as prejudice of women against other women as compared to men. Further psychiatrists and psychologists have found out that both men and women consider men more desirable in terms of being managers and colleagues at work than women (Sherriffs and Markee 1957). However, a study to replicate and extend that of Goldberg was conducted in 1975 to establish if women in 1975 exhibited prejudices against other women. 145 male and female students were asked to judge an essay. The result was that female students rated the essay written by a woman more positively than that written by a man. Evidence of the claim that women are prejudiced against other women was further provided from the experiences of women informants who found that other women were not always supportive of fellow women in leadership positions.

> Men as well as women colleagues still say things and act in ways that seem to question my ability but like I said, I tactfully deal with them. In my experience women are not always supportive of other women in leadership positions.[39]

From interviews with key players in the ICT industry, it was revealed that there is also a general pre-conceived perception that women are simply incompetent and not doing enough to take advantage of opportunities that have been given to them especially in form of affirmative action as expressed in the quote below.

> I think that women still need to do more. They have not really pushed themselves beyond the affirmative action policies. I have not seen a computer services/software developing company opened/started by women. All the ones I know of where started by men. I do not know why. Have you seen one started by women?[40]

Coming from a top administrator of the innovation hub of the country, the above quote is an indication that the presence of women in the field of ICT lacks recognition because some tasks have been categorized as impossible for women to perform. Even when they are performed by women, no recognition of efforts is given. In contrast, respondents were conversant with innovations that had been made by men. However, some respondents were quick to acknowledge that there are women who excel in ICT and that those who excelled were indeed exceptional. The capability of a few women to excel was emphasized.

> There are some women who have proved that they can excel in the sciences too. In the 2013/ 2014 graduation, the best student in this college was a girl. In 2005, the best student was a girl too. This goes to show that women are as capable as men. There are girls who have developed innovations for example the MafutaGo application which

[39]Interview, 38-year-old woman employee, UTL, 2014.
[40]Interview, 45-year-old woman, Administrator Makerere University, 2014.

was developed to help motorists find the nearest and cheapest fuel stations in Kampala.[41]

6.2.10. Emotional and irrational woman versus emotionally stable and rational man

There is a trend in the ICT industry in Uganda where men are constructed as naturally rational and women are naturally too emotional and for women, this is said to interfere with quality of work. This kind of stereotyping renders women incompetent because it is assumed that they make decisions based on how they feel and not based on reason. Findings from interviews show that 26% of respondents said that they would choose a man for a supervisor, manager or boss if they had the choice. Some of the reasons that were advanced for the preference of a man as a boss were included:

> Women are moody but men rarely have mood swings. Women are also very emotional and tend to get stressed easily and they transfer the stress on to their subordinates. Men can manage the pressure created by stress at work and at home and they treat their subordinates better.

> Women tend to do everything with an inferiority complex so they always want to show they have authority even where it is not called for. They are always out to prove something and in the process, they end up oppressing and ill-treating their subordinates.[42]

This statement resonated with the description of women as guilty of snobbery, irrational and having unpleasant emotionality (Sheriffs and McKee, 1957). From the foregoing narrative of an employee of UTL, it appears if a woman possesses the attribute, it is negative, while if a

[41]Interview with 39-year-old man, Lecturer Makerere University, 2014.
[42] Interview, 28-year-old man, Telecom Engineer UTL, 2014.

man has the same attribute, it is seen as positive. Thus, it does not really matter what women do, they will be perceived as being unable to perform well in ICT. If a man sets out to prove something, he is enthusiastic, aggressively pursuing his objective. He is strong and independent. If a woman does sets out to do the same, she is regarded as moody. Further, only 16% of respondents said they would choose a woman for a supervisor, boss or manager if they had a choice.

> Women are very understanding especially to their subordinates who are men. They take time to listen to and understand the challenges of employees. They are like a mother figure and they can guide and help you work better.[43]

When asked about gender considerations, several managers of companies advanced a claim of gender neutrality. Many times, affirmative action policies are taken to be favours to the people who benefit from them, which is not the case. Critics of affirmative action policy have pointed out that it delegitimizes the achievements of the very people it is intended to benefit and it also creates a feeling of inferiority to those who directly benefit from it (Boxill, 1984). "We consider ability to perform tasks, that's all. We do not look at the gender of the person" was the response of one manager". A woman manager pointed out: "Am all for women empowerment and affirmative action but if a woman cannot do her work well or if she does not qualify for a job, I would obviously opt to work with a man." Another Manager pointed out that the company was gender neutral. He stated, "Here we have a gender-neutral policy. All that matters is weather one can perform and add value to the company. We never look at gender so we do not have any special gender policies on gender issues"

This is an indication that some of the managers have a misconception of the affirmative action policies. Many of them seemed to think that affirmative action required them to hire

[43] Interview, 26-year-old man, 2014.

women solely based on gender without considering their qualifications. They did not seem to understand that affirmative action is a way of giving opportunities to capable, well qualified but under privileged people and underrepresented categories of people, in this case, women.

Despite the stereotypes that were exhibited, it was noted that 95% of the respondents thought that the social and economic position of women in Uganda had greatly improved since the pre-colonial days. This was because of the increased number women who are seen to assume top positions in government. Informants gave examples of the Speaker of Parliament, the Inspector General of government, the head of the Uganda National Roads Authority, and the head of the Uganda Revenue Authority, all of whom are women as of 2017. However, some noted that while emancipation is happening, it is highly limited to the educated urban woman, leaving the rural woman who is uneducated out. While this is the overwhelming view of ICT professionals, transition patterns show a different view, to indicate that the position of urban women leaves a lot to be desired in terms enabling better social and economic position for women. The next section examines the ways in which women have responded and continue to navigate the socio-cultural practices and perceptions in the ICT industry in Uganda.

6.3. RESPONSE MECHANISMS OF WOMEN TO SOCIO-CULTURAL STEREOTYPES AND PERCEPTIONS

The difficulties encountered by women because of socially constructed stereotypes and labels have kindled diverse covert and overt forms of response in the ICT industry in Uganda. Women in Uganda employ their intrinsic agency to challenge and transform the social-cultural structures and stereotypes that construct them as unsuitable for enrolment and work in ICT industry. In the processes of counteracting the often ‘gender insensitive’ social structures and stereotypes, women alter the structural status quo. And by so doing they deconstruct the old and reconstruct new forms of—seemingly ‘favourable’—socio-cultural

relations and the ensuing structures and stereotypes. These women are change what society expects and accepts as the norm. In the context of ICT, women discard the 'old social order' which sees men as ideal ICT professionals and in turn introduce a new social system in which women too, can be viewed as ideal ICT professionals.

The way in which women respond to the socio-cultural structures and stereotypes can thus be contextualised in the form of 'everyday forms' of individual response (Scott, 1986:6) are struggles against the unfavourable social construction of women and adverse incorporation of women in the ICT industry. 'Resistance' that is also contextualized in the form of 'coping', as it will be shown in the latter sections of this chapter. Interviews with ICT professionals revealed that women in the ICT industry have diverse and varied methods of responding to the socially constructed stereotypes and labels which they encounter. These are examined in greater details below starting with juggling.

6.3.1. Juggling

Women continue to take a chance at having a career and family at the same time. Many of the women interviewed thought that they were quite successful at juggling career and domestic roles and responsibilities. Many of the informants explained how juggling was not only difficult but also tiring. Some wished that their husbands could shoulder some of the responsibilities like looking after the children and cooking as opposed to just waiting for them to do each and everything in the home. The Ugandan society has constructed a man to believe that taking care of the home and the children is the role of the woman and that she is happy to do it with no help from the husband or father of the children. Help from husbands was appreciated but not expected and certainly not demanded.

> I do not think that a man needs paternity leave. I personally do not see the need for it. When my wife has a child, I see her after work. We hire someone to help her with the

> baby and other chores. Usually, she goes to her mother's house or my mother comes to our home to help her[44]

The quote below also demonstrates the determination that many women have to complete their studies and build their careers. It shows that some women can juggle their domestic and work roles well. One informant explained that: I had to go with my baby to Nairobi to meet my supervisor who had fled the political instability and joined Kenyatta University.[45]

The above informant and many more particularly women indicated that balancing work and family life was one of the most significant challenges that they must deal with. Women with children had to give up career advancement opportunities to take care of their families. Some women have resigned themselves to their fate as wives and the subordinate position that comes with it. They are independent by day as they work but surrender all their power to the husbands as soon they get home at the end of the day. It was observed that many of the women were reluctant to take up opportunities that required them be away from their homes.

> You cannot just keep abandoning your children and husband when you are called to work but the company may incur serious losses if you do not go so a woman cannot keep using the baby as an excuse not to show up when her expertise is needed but… we are mothers and we must produce for the nation.[46]

The viewpoints in the above quotation resonate with the conflicting choices that working women make between family and career and is linked to traits that have traditionally defined the "goodness" of women is in as their care and sensitivity to the needs of others (Gilligan, 1977: 484). Men on the other hand are rarely faced with a situation where they must choose between families and work (French and Lesser, 1964). In this way, intellectual

[44] Interview, with 40-year old man, Manager UTL, 2014.
[45]Interview, with 55-year-old woman, Administrator at Busitema University, 2013.
[46]Interview, 40-year old woman, manager, MTNU, 2014

accomplishment is maintained as a masculine preserve as women are indirectly denied the opportunity to pursue it. This practice is described by Goldberg (1968) as the intellectual double standard which in turn ensures that men continue to be portrayed as superior and women as inferior.

Information from interviews with other women professionals validated this claim as they also explained that balancing work and family life is the one of most significant challenges that women must deal with and that careful juggling and choices have to be made. Due to excessive demands from within and outside of the home, women with children are often compelled to give up career advancement opportunities to take care of their families. While sharing subjective experiences to about challenges, an administrator at Busitema University explained:

> Certainly, there have been challenges on the job and these have been largely to do with my being a family person because I got married shortly out of my first…. naturally I had to start a family and I had my first baby in the middle of my master's degree research so that was a challenge.[47]

The feeling that having children is an obligation and the ensuing unassisted juggling is clear in the above narrative. While woman often enjoyed their careers, and showed interest in developing them, they were at the same time expected to fulfil their roles as wives and mothers more especially at critical points of career advancement. To fulfil the duties of a wife and a 'proper woman', a woman is expected to have children as soon as she is of age. Therefore, anything besides her children and husband, including her career, takes a secondary position.

[47]Interview, 58-year-old woman, Senior Administrator, Busitema University, 2013.

6.3.2. Subterfuge

On several occasions, the ability of women employees to perform excellently is doubted simply because they are women and this emanates from the manner in which they are constructed in a largely patriarchal Ugandan society. Many are taken for granted simply because they are women. At major computing industry conference, a panel of highly accomplished professional women advised an audience of 1000 people that women are unlikely to succeed in IT Careers if they are conscious of their minority status. The panellists thought that it was a mistake to pay attention to gender. The advice was to just "get over it" (Ambady, et al, 2004) and while this strategy will not result into a more inclusive field, ignoring the gender composition of computing might be a pragmatic individual response to women under representation. Data from interviews with women ICT professionals shows that women have indeed adopted this and other coping strategies to persist in the industry as one informant explained.

> I remember this one time when a client needed the services of engineer. He called and I was assigned the job. I went over to his office and after I introduced myself, he impatiently said "but I sent for an engineer". I politely told him that the engineer was on his way coming but that he (the engineer) had sent me ahead of him to see what he would need for the job. He let me check out the problem and I sorted it out. When the system was back on I informed him that the problem had been sorted and the engineer did not have to come anymore. He was happy to get back to work and I was happy to leave.[48]

The quote above demonstrates the unconscious bias with which the unexpected presence of women specifically in science and technology fields is characteristically met. It also highlights the suspicion and disregard to which the abilities of women in the ICT industry are

[48] Interview, 32-year-old Telecom Engineer at MTN, April 2014.

subjected. From the narrative, it appears that the client was biased from the outset in that he believed that the technical problem experienced could only be resolved a man. The client found it difficult to believe that a woman could resolve the ICT problem even after she mentioned that she had come resolve the technical problem. This implied that the woman did not fit the client's image of an engineer who, in his opinion, must be a man. This scenario resonates with the observation of Horner (1970) that subtle discrimination works against women throughout their career lives, eroding their self-confidence and pushing them towards stereotyped roles in society. In an interview, another informant recounted:

> When I first had people react to me that way, my initial reaction was anger and frustration. I was really annoyed by it because I was sure that I had what it takes to perform the job and I felt like they expected less than what I could offer just because I did not fit their description of an ideal engineer which also meant that I had to be a man but as time passed I learned to tactfully deal with people not expecting me to be the engineer[49]

Covert individual response mechanisms, like what the informant deployed, are gender specific and in this context, resonate with what Scott (1986:6) calls "everyday forms of resistance". Women in the ICT industry have learned to be tactfully honest as they go about their roles. They achieve this by keeping a low profile, knowing that they do not have to be acknowledged as engineers for them to perform their jobs right. In this case, the informant employed her agency

6.3.3. Negotiation

Women negotiated their way to executing projects by convincing clients, managers and supervisors that they could perform duties that had been thought impossible for them to

[49] Interview, 36-year-old woman, engineer MTNU, 2014.

accomplish. This means that women are required to be ready to ably convince people that they are in position to do work assigned to them. This poses extra obstacles that are unique to women. The narrative below is of a female engineer who had been assigned the task to lay a Local Area Network (LAN) at the time when she was pregnant.

> When he saw me he said, "I cannot work with a pregnant woman". I was not offended by this. I just knew that I had to figure out a way around it. I had to plead with him and tell him that I will be able to do the job in record time. He finally accepted but not without letting me know that he would not take any responsibility if I had any accidents or if I needed anything because of my condition. I went ahead to do the job and did it well.[50]

In this case the fears of the client could be justified but it is important to acknowledge that while in the case of the informant, she was able to negotiate her way into performing the task, not all women who are faced with these obstacles can stand up against them. As a result, these women simply give up. As a respondent narrated in the quote below:

> After I graduated, I applied for a job with a large government parastatal. I did well at the interview but then I was told blatantly that the manager preferred to work with a man and there was nothing I could do about it. I had to try my talents elsewhere.[51]

The preference of men to women in by employers was evident in a recent experiment conducted in the United States of America (USA). The experiment was conducted by sending a one-page resume of a fictitious person to a selection of 147 college professors at 6 major research Universities. The professors were asked to rate the resume as part of the study. On half of the resumes, the candidate was a woman and on the other half, the candidate was a man. The results of the experiment indicated that on a scale of 1-7, professors gave John an

[50]Interview, 34-year-old woman, UTL employee, 2014.
[51] Interview, with 35-year old woman, Lecturer Busitema University, 2014.

average score of 4 for competence to the man and 3.3 to the woman, the man was seen more favorably as someone they might hire for their laboratories or would be willing to mentor and finally the average starting salary offered to the woman was $26,508 while that offered to the woman was $30,328.

6.3.4. Sacrifice of career for family

Narratives from interviews with working ICT women professionals showed that women continue to sacrifice their careers for their families and children. This means that they let opportunities of career advancement pass by because they must create a stable environment in which their children can thrive. This means that even if women are interested in pursuing a career, they are always having put in a position where they must choose their family over career. The socialization process that paints women as mothers and wives and not bread winners is largely responsible for this situation. The socialization process exempts men from housework and child minding, giving them the title of bread winner on the other hand. Gerson (1985) suggests that although gender is not rigid but is flexible and simply imposed on human experiences, women are forced to shape their participation in paid work basing on their domestic and family obligations. This is because although women can negotiate their positions, their position in the market place is not sure while the position of man in the home is minimal. Three constructs through which gender experiences are shaped are discussed. These constructs include boundaries negotiation and domination and consciousness. This greatly limits the opportunities of women. As in seen from quote below, the informant made the choice to concentrate on raising her children and in so doing she put her career on hold. It emerged from respondents that women took their role as mothers very seriously and many women narrated experiences in which they gave up great career advancement opportunities on several occasions in order to take care of their families as narrated by an administrator at Busitema University.

> Early on in my career I got the opportunity to go and pursue a PhD degree in in Bergen but I had to turn it down. Later, I got another opportunity to go and study in Oxford and still had to turn it down. I had children to take care of. I thought to myself, what will it benefit me if I get a degree from Oxford but my family is neglected? Finally, I did my PhD at Makerere because this allowed me to stay close to my family.[52]

Similarly, another woman ICT professional stated: "I want to start doing my PhD but I cannot imagine being away from the girls who help me with my children. I have to put it off for now."[53] A woman of child bearing age is expected to have many children whether it is her wish or not and bearing no children was considered a curse or punishment from the God.

6.3.5. Adopting the 'culture of men in technology'

Women who often found themselves as the only woman in a Department allowed themselves to "be like the men". From the quotation below, it appears as if women who find themselves in an environment where they are greatly outnumbered by men sometimes make a conscious decision to act like men. This particularly relates to the way in which they conduct themselves. They do this in the hope that the men will accept them and treat them with respect. This quotation below either directly or otherwise shows that men are seen to accept fellow men in the ICT industry more than they accept women. Hence the more masculine a woman acts the higher the chances of her thriving in the industry. This assertion is in line with the argument that technology has been gendered as male in social construction processes. According to Cockburn (1995), men in technical jobs are typically part of a team characterised by camaraderie, rivalry and humour. A woman Engineer remarked:

[52]Interview, 57-year-old woman, Senior Administrator Busitema University, 2013.
[53]Interview, UTL employee, 38-year-old woman, 2014.

> You somehow become like a man. You joke around with them as they do with each other and they learn to respect you. I cannot say that any of the men has ever tried to disrespect me because I somehow behave like a man. I don't think they see me as a woman[54]

The coping strategy of the informant above seems to resonate with the ideas of Betty Synder Holberton on how women can compete in the work place (Klawe et al, 2009). Jean Bartik, a programmer for the ground-breaking ENIAC computer is quoted to have said: 'The best advice I've ever heard about how women should compete in the work place was spoken by Betty Synder Holberton, the first of my three favourite work partners: "Look like a girl, Act like a lady. Think like a man. Work like a dog" (Klawe et al, 2009: 74).

This means that women who intend to be successful in the ICT industry should be prepared to be exploited because of the male prejudice that is prevalent in the ICT industry. For some women in the ICT trying to "behave like a man" is their chosen coping strategy. This also could explain why many women choose to individually and privately address challenges that they encounter instead of seeking help from authorities. However, in a study of the use of humour at the work place Romero and Cruthirds (2006) identified different types of humour that are employed in the work place including gender based humour. This kind of jokes is made by an initiator with an aim of making a target of the joke appear inferior in one way or another, usually by a man to a woman. Dellinger and Williams, (2002) observed that women are often the subject of sexist jokes. These jokes as Morash and Haarr (1995) point out are usually laden with offensive profanity that is made by men in masculinized sub cultures. Lyman (1987) observed that the jokes are usually aimed at degrading women and they can be stressful to most women as Smeltzer and Leap (1988) explain. In this way, many women find it difficult to tolerate such jokes which could explain the exit of women from the industry.

[54] Interview, 36-year-old woman lecturer, Busitema University, 2014

6.4. Conclusion

Women in the ICT industry encounter multifaceted challenges many of which emanate from the way societies 'construct' men and women in directly opposite ways. This chapter has shown how socially constructed stereotypes and the labels that emanate from these processes 'create' a superior, intelligent and strong 'male' scientist who can ably cope with the demanding 24/7 ICT career vis-à-vis a technophobic woman who is only fit for domestication but not a career in the rigorous ICT industry. Society perceives a woman as 'passive and dependent' and that this 'dependent woman' relies on a strong independent man for all inputs. Even in cases where a woman provides for and contributes to the sustenance of the family for instance through labor particularly in agriculture, her efforts are often not recognized and all the outputs are a property of the male household head (Mafeje, 1973; Tamale, 1999; Tripp, 2000; Byanyima, 2001).

Moreover, women are 'constructed' in diverse and complex ways including the that they are incompetent versus the competent man, emotional and irrational woman against an emotionally stable and rational man, and men are often constructed as aggressive and flexible which is an indication that they can work well in the ICT industry vis-à-vis unenthusiastic women who do not have the ability to thrive in the complex and demanding industry. This chapter has also shown how key players, that is; Lecturers, Deans, Heads of Department and Managers directly or indirectly activate stereotypes. It has also demonstrated that women have been conditioned to perpetuate stereotypes against themselves through socialization.

However, women have and continue to respond to the challenges that they encounter in the ICT industry particularly those that emanate from the negative socially constructed stereotypes and labels in varied ways. Many women 'calculatedly' juggle career in the ICT industry and domestic/family responsibilities/demands, some choose to ignore the

discriminatory acts by getting on with their work, while others adopt 'culture of men' (rigorous and hardworking) in technology. The findings in this chapter reveal the processes akin to the key tenets of the structuration theory whereby social structures affect ICT uptake by women but women also deploy their agency to challenge the social structures to enrol for and work in the ICT industry. The next chapter presents the factors that influence young men and women to pursue a career in ICT.

CHAPTER 7: FACTORS THAT INFLUENCE THE CHOICE AN ICT CAREER

7.1. Introduction

Multifaceted gender related dynamics underpin the uptake of ICTs globally. A multiplex of intertwined undercurrents that emanate from within households at the micro level and the wider communities at the macro level influence the way in which men and women differentially interact with ICTs. With reference to Uganda in general and the selected universities of this study, this chapter examines the factors that influence the decision of students to apply for admission in an ICT related program. Some of the factors examined in this section are direct while others are indirect. These factors include the influence of role models, gender 'appropriateness' and gender based 'self-censorship' and misunderstanding of the realities of work/tasks in the ICT industry. These factors could partly account for differences in numbers between men and women at admission and consequently at graduation and in the ICT industry.

The chapter further reveals that during the processes of choosing whether or not to study ICT related courses, women and men are influenced by and reinforce gender related stereotypes. The findings in this chapter also reveal that men and women challenge gender related stereotypes during the processes of making the choice to enrol or not to enrol in ICT related courses at the university. It is often thought that women play a passive role in the construction and perpetuation of socially constructed stereotypes which are then cast upon them by members of the community and the institutions therein. This means that women are largely treated as either victims or merely recipients.

However, the findings from this inquiry show that women are not entirely passive actors but, many actively participate in the reconstruction and perpetuation of socially constructed gender based stereotypes that promote the perception that women are inferior to men. This resounds what Giddens (1984) terms as the process of 'reproduction' in structuration, whereby choice of degree programs and specialisations, and the ensuing justification put forward by women in some way validate the existing socially constructed stereotypes. Moreover, the chapter demonstrates the ways in which women play a vital role in bringing these socially constructed stereotypes to 'life'. This is largely based on the way they interact with technologies. The next section examines the factors that influenced the choice of an ICT program among ICT university students at Makerere and Busitema universities in detail.

7.2. Gender appropriateness and gender based censorship

Based on the pervasive influence of socially constructed aspects of men and women, women practice 'gender based self-censorship' by limiting their selection of academic programs to those that society ''labels' as 'easy and ladylike' or feminine. In focus group discussions with young women at Makerere and Busitema Universities indicated that they not only recognise but accept the socially constructed gender identity prescribed roles and expected behaviour and for that matter society either directly or indirectly compelled them to restrict their choices to 'ladylike' specializations.

The narrative below is of a young woman in her final year of the Bachelor of Software Engineering program at Makerere University and it clearly reflects the influence of 'gender based self-censorship' which reproduces and constitutes an artificial barrier to entry, let alone advancement in an ICT career.

> I chose to study the Bachelor of Software Engineering program because I felt that it suited me as a lady. I scored enough points to get me into the Electrical Engineering

> program but you know it is not ladylike to wear dirty overalls or jeans as a lady. I like the Software Engineering program because I can just sit at my work station and do my work. I don't need to move around carrying heavy or dirty things. I can be a lady. That is why I chose this program.[55]

This scenario resonates with what Bem (1981) refers to as gender schemata or the 'socialization and internalization' of behaviour. Where individuals begin to readily appreciate and accept socially constructed gender roles that are assigned to them by society, accepting them as their subjective truth and passing them on to next generations. The above excerpt exposes the ways in which socially constructed stereotypes directly and indirectly reproduce 'invisible' limitations that in turn restrict the career choices made by women. Choosing one course over another particularly because it is perceived as 'ladylike' is what Lorber and Farrell (1991:8) refer to as 'doing gender'. These 'invisible and socially constructed stereotypes compel women to associate themselves with the 'softer' side of technology profession. By declining to study the Electrical Engineering program because it is labelled as masculine and not 'ladylike' and opting for the Software Engineering program due to its 'ladylike' characterisation, the informant directly but unconsciously reproduced one of the socially constructed labels and stereotypes that are attached to women.

Like other women, this young woman appears to engage in practising femininity which in this case calls for looking nice, neat and sitting down in one place as opposed to wearing overalls which are perceived as untidy, and walking around which is also viewed as, 'manly' or masculine behaviour. Respondents conformed to the society definition of a 'good woman' as one who sits still and is clean, well-poised, neat and is not expected to be physically strong because of a societal perception that a lady does not carry heavy things. These issues are like

[55] Focus Group Discussion, 22-year-old woman, student, Makerere University, 2014.

what Allan (2009) describes as hyper femininity and heterosexuality. While investigating hyper femininity, Allan (2009) shows how school girls are taught that to be feminine means that one should be prim and proper, and sit still. One of the school girls she interviewed explained: "It's sometimes like… well, you just feel like they (the teachers) just want you to be a proper little lady. You have to sit with your legs crossed and your back straight" (Allan, 2009:1). According to the Trade Union Centre (1984), lessons of passivity and submission to men who are portrayed as dominantly active and filled with ambition are taught to young women.

Important to note however is that stereotyped images of women do not reflect the reality of women's lived experiences and their roles in society (Itzin, 1986) as many women do not just sit around looking neat and nice but they are workers and providers who exercise professional responsibilities and skills, they are heads of families and householders (Trade Union Centre, 1984). Moreover, a large part of core ICT work requires one to move around, cut and connect wires, unscrew and screw, check connections that may be suspended in the air, squat, bend over and climb high pylons or occasionally carry heavy greasy objects. The nature of these ICT job tasks goes against what society categorises as feminine behaviour which entails sitting still, discreet and looking "presentable "always. A classic example of this is seen among the Baganda tribe of Buganda kingdom in central Uganda where phrases like: Omukyaala omuganda talinya mmuti, loosely translated as 'a lady from the Baganda tribe does not climb a tree'. The expectation and mentality to be 'ladylike' is counterproductive as it works against women in the ICT field where in some specialisations climbing of high pylons may unavoidable. This confines many women in the ICT industry to clerical work in offices and ultimately keeps many out of the industry. Noteworthy is that these perceptions of a ladylike woman are not real but merely social constructs (Adam et al, 2004) that serve to hold back and maintain the marginal status of women in largely patriarchal societies.

In addition, society is rife with double standard rules and guidelines that apply to men and women differently. These double standards are manifested in many ways in which women are required to behave in one way while they are in public and the direct opposite way in private. For instance, when performing house chores, women move about, climb trees, bend and squat as they clean, get dirty in the kitchen as they cook, carry heavy jerricans and pots of water and heavy bundles of firewood and not 'just sit down looking nice' but these chores are not considered 'un-ladylike'. Meanwhile men are not required to sit still with legs crossed for them to be perceived as gentlemen at home in private or in or in public. From a feminist perspective, the rules are manipulated to exploit women and at the same time privilege men.

In contrast with the foregoing narrative of a young woman, the narratives below from young men demonstrate how young men are drawn to ICT related programs. What is observable is that men did not feel the need to justify their fascination with ICT as expressed by a recent ICT graduate of who at the time of the interview was working as an Access Network Engineer at Uganda Telecom Limited.

> I love maths and physics and I am passionate about them. I do not have a role model in this field but I have always loved engineering. I was drawn to telecom engineering because to me ICT is trendy, new and exciting. There are all sorts of new things happing in the field and I wanted to be a part of that.[56]

From the quotation above, it appears as if the men had a natural predisposition towards technology and this was a view that was common among most of the men interviewed as evidenced by the narrative of a 22-year-old man below.

[56] Focus Group Discussion, 24-year-old man, 2014, Engineer, UTL

> Computers were a childhood fascination of mine. When I was growing up, my father had a computer. I always had a passion for computers and when it was time for me to decide on what to study at university; I had to choose computer science.[57]

The next section examines the influence of role models in homes and the wider society on career choice

7.3. Influence of role models

As narrated by a 24-year-old woman, below, akin to many others whose experiences are presented hereinafter, indicates that role models play a positive role in influencing the career path of women. Although many of the role models whom women look up to may be men as is the case for the informant, they still play a significant role in shaping their career choices. The lack of a woman role model amidst many men role models is an indication of the under representation of women the ICT and related fields and of the broader patriarchal structure of society.

> My uncle was a computer engineer. Everyone always spoke highly of him and that's what drew me to computer engineering. I also grew up around many boys. I have many brothers and cousins and a sizable number of them had taken on science occupations but also, I always just loved physics and maths and I was very good at them.[58]

Role models are very important. Margolis (2003) has observed that many girls who study computer science come from families of 'computer scientists and engineers'. She attributes this to the fact that there is the expectation that they could do whatever they wanted including studying academic programs that society constructs as masculine and hard. Thus, the

[57] Focus Group Discussion, 22-year-old man, Busitema University, 2014.
[58] Focus Group Discussion, 23-year-old woman, Makerere University, 2014.

narratives from informants and the observations elsewhere allude to the fact that role models play a significant role in shaping and informing career choices. It also shows that lack of role models who are women limits the possibilities of women in the industry in a multiplex of ways. However, most role models in the ICT field are male and interviews with women working in ICT industry, having recently graduated from ICT related programs highlighted the mostly unmet need for women to see women role models in the ICT profession. Some women respondents expressed that they felt the need to see women role models for inspiration, encouragement and motivation but that there were no women to look up to.

Another informant expressed that:

> I did not have a woman teaching me while I was at university. When I was retained to teach programming, after graduating second in my class, I wished I had seen a woman teach me just so that I could know how to do it. I had never imagined it possible for me to stand in front of a class and teach programming.[59]

The above excerpt indicates that many young women seek not only inspiration but also reassurance that it is possible for women to excel particularly in the men dominated ICT industry. This is important since in their research, Cahoon (2001: 113) found out that the presence of female faculty significantly determined whether female students left the Computer Science major or not. Their research revealed that departments with no female faculty lost female students at high rates relative to men. The study was conducted in 23 departments of Bachelor's degree granting coeducational computer science departments in Virginia State between 1992 and 1997.

[59]Interview, 27-year woman, Lecturer Busitema University, 2014.

However, the above women informants indicated that they had role models who were men. The consequences of having only men role models could lead to maintenance and accentuation of socially constructed stereotypes that women lack the capacity favourably engage and are not competent to effectively participate in the ICT industry. This could result in the promotion of imposter syndrome or perceived fraudulence (Kolligian and Sternberg, 1991) where women begin to feel like intruders who are in the field by error. In two studies designed to measure perceived fraudulence, Kolligian and Sternberg, 1991, administered the Perceived Fraudulence Scale PFS, First, to 50 College Undergraduates and then in a second study, to 100 College undergraduates. The findings of their studies provided evidence for the existence of perceived fraudulence. The experience of the informant could also be closely connected to what Clance and Imes (1978). (1978) calls the imposter syndrome phenomenon, where women begin to feel and believe that they are not good enough to do work that they are suitably qualified to perform. People with the imposter syndrome find themselves trapped in a cycle in which they are convinced that their success is not due to their own ability but due to hard work, double effort and or luck (Stober, 1995). While role models, who are men, could be influential in positively shaping and informing the career choices of young women, they may not be sufficient as indicated by the above informant. Due to the paucity of women role models mainly in the ICT industry, women who aspire to join the ICT industry feel unsure of how to navigate 'gender specific' challenges in the industry. As a result, their confidence level reduces because they feel misplaced or left out and this could explain why women end up opting to leave ICT and join other fields.

However, the narrative below from young woman, who is a telecom Engineer and had a woman role model in the home right from childhood, reflects the confidence that a role model who is a woman could give to other women. The telecom Engineer pointed out that:

> My mother was an Engineer with Uganda Electricity Board (UEB). She worked in the field and I grew up seeing her wear overalls and go up electricity connection poles to connect wires so for me becoming a telecom engineer kind of came naturally. I wanted to be like her.[60]

West and Zimmerman (1987) argue that the conventional process of becoming girls or boys has been sex role socialization. Children watch and learn from the people around them. In this instance, the presence of the role model served to implode socially constructed ideas of femininity right from childhood. This resulted in the production of a woman who is not obstructed by socially constructed social structures (Giddens, 1984). In other words, a woman empowered with agency to challenge prevailing societal beliefs. The importance of role models was further highlighted by a 27-year-old woman engineer; "but my friends who are girls are proud of me and they respect my career choice and work. They think am very smart and look up to me". This shows that is important to for young girls to see engineers who are women and that it is a source of inspiration for the girls

However, although the influence of role models featured significantly in influencing the choice of ICT academic programs for women, other factors such as high levels of confidence and self-assurance were highlighted as important for the men. This means that the confidence and self-assurance with which young men were seen to approach technology was in stark contrast with the gender based self-censorship that young women engaged in. A comparison of gender based censorship among the women and self-assurance among the men reflects the notion of honest over confidence, whereby the men express self-assurance that often lacks among the women Reuben (2011). In a focus group discussion at Makerere University, one young man pointed out that:

[60]Interview, 23-year-old woman, Telecom Engineer, UTL, 2014.

> I always knew that I was good at physics and I had always had a passion for the engineering profession. I did not need to know anyone who was doing computer engineering or engineering. I knew what I wanted to be early on in life and was lucky to have good teachers who always gave us a good sense of direction and career guidance depending on our capabilities and strengths.[61]

In this quotation, a display of honest over confidence as defined by Reuben (2011) is observed. A 2011 study revealed that men consistently rated their performance on a set of math problems at about 30% better than it was. Reuben (2011) explains that it was established that the men were not trying to brag or intentionally mislead anyone but that they honestly were over confident in their abilities, an attribute that women did not exhibit. As Anderson (2009) explains, over confidence can get one far in life and from focus group discussions, this was the case for the men.

This is supported by the fieldwork in Uganda. A young man explained: 'I do not have any role models in Uganda but I have international ones. I admire Mark Zukerberg, co-founder of face book[62] and I want to be like Bill Gates, founder of Microsoft[63].'' The men exhibited a lot of confidence in their capabilities and looked up to the world leaders in the industry for inspiration. According to Varma and Hahn (2007), the likes of Bill Gates, Steve Jobs, Paul Allen and other leading ICT entrepreneurs embody the image of the modern geek. He explains that "to be a computer geek is to be the ultimate twenty first century entrepreneur, someone who reaps the very tangible rewards of the most lucrative scientific field of the new millennium by being talented, capable and driven." (Varma and Hahn, 2007: 361). Although

[61] Focus Group Discussion, 22-year-old man, Makerere University, 2014

[62] Facebook is an American for-profit corporation and an online social media and social networking service based in Menlo Park, California.

[63] Microsoft Corporation is an American multinational technology company headquartered in Redmond, Washington. It develops, manufactures, licenses, supports and sells computer software, consumer electronics, personal computers, and services

the ‘geek’ is typically a western concept, with globalization and the influence of media, as evidenced from the narrative above Many young African men appear to have great admiration for the ‘geek image’ loosely used to refer to modern ICT entrepreneurs and so do young men in Uganda.

According to Kendall (2007), the basic profile of a geek shows that they are white males who do well in school especially in mathematics and sciences, with a have high intelligence quotient, collect technical products and are science fiction fans but socially inept. While the geek culture inspires and motivates young men, it seems to demotivate women who are fascinated by computers but feel excluded from the geek culture because the ‘geek’ is ‘constructed’ in masculine image (Margolis and Fisher, 2002). The over confidence of the men was only checked by their own inability to meet minimum entry requirements into their degree program of choice.

7.4. Failure to obtain minimum entry requirements for other preferred academic programs

In ICT and other related science based academic programs, enrolment for the men seems to be only deterred by their own failure to attain minimum entry requirements. Failure to obtain minimum entry requirements of a first-choice degree to qualify for a national bursary at the most prestigious university in the country was a major factor for many of the men to enrol for ICT related courses. For many of the men, their first-choice degree program was what they believed to be the ‘harder science’ degree programs, such as civil or engineering, mechanical or electrical engineering. However, failure to attain minimum entry requirements was not a factor for the women; in fact, only one out of all the women interviewed mentioned having failed to get into her first-choice degree program as the reason for her enrolment into an ICT

related program. However over 50% of the men presented it as a primary reason why they enrolled for a degree in ICT. One student explained:

> My first choice was not computer engineering. Electrical engineering was my first choice but I could not afford the fees for electrical engineering. That is how I ended up doing computer engineering.[64]

While another recounted:

> I was offered place and a government scholarship on the computer engineering course and did not earn enough points to get a government scholarship on the civil engineering course at Makerere so I had to study Computer Engineering.[65]

Ironically, the two narratives above indicate that many men seem not to consider a degree in ICT as prestigious compared to a degree in Electrical or Mechanical Engineering. It appears that enrolling in what society constructs as 'traditional hard science academic programs' was a way of validating their masculinity. There was evidence that women on the other hand were content with their career choice in ICT and many reported being perceived as intelligent by their peers based on their choice of career in ICT. In this way, women successfully challenged the socially informed stereotype that women are not capable of excelling at science and technology programs. This is evidenced in the quote from a 27-year-old woman Engineer that follows as she alludes to the idea that her friends who are girls are proud of her and they respect her career choice and work. According to the 27-year-old Telecommunications Engineer at UTL, referring to the way in which her friends view her, "They think am very smart and look up to me".

[64] Focus Group Discussion, 22-year-old man, Busitema University, 2014.
[65] Focus Group Discussion, 21-year-old man, Busitema University, 2014.

7.5. Influence of parents

Information from interviews and focus group discussions, seem to indicate that parents influence the choices made by their children regarding academic programs. Based on socially constructed stereotypes, many women indicated that they were discouraged by their parents not to choose what society constructs as harder subjects given the ways in which the subjects are constructed as hard and masculine. Women recounted that they had felt coerced to take on career choices that parents believed to be the best-fit for a "proper woman". The simpler careers that are less technology oriented were recommended by parents for their daughters. A young woman explained:

> My parents were not happy when I told them that I wanted to study Computer Engineering. They discouraged me saying that it is too masculine but I insisted. My father wanted me to be an accountant. It took them a long time to come to terms with my choice and I reported to school 3 months late. My father had refused to pay for my degree in Computer Engineering[66].

The informant above used her agency against the will of her father to pursue a degree in Computer Engineering. She seems to have been certain that she wanted to be a computer Engineer, had the intellectual ability to get into a computer engineering program and was determined to pursue her passion. She exhibits confidence and self-assurance just like many of the men often exhibited contrary to social constructs that present women as lacking confidence, intellectual ability and interest in technology.

In contrast, a 21-year-old man on the Bachelor of Software Engineering program at Makerere University shared that his parents tried to convince him to apply for the Bachelor of Mechanical Engineering course but he, knowing that the maths content in the Mechanical

[66] Focus Group Discussion, 21-year-old woman, Busitema University, 2015

Engineering course could turn out to be too advanced and challenging for him, opted for the Bachelor of Software engineering degree program.

> I chose the Bachelor of Software Engineering because Mechanical Engineering has a high content of advanced level maths. I am not very good at maths. I can do the simple maths in Software Engineering though.[67]

This shows that the perception that men are better than women at science, technology and maths is a social construct which is not always necessarily true. As the narrative of the informant above suggests, men are not always interested in doing hard science courses with a advanced maths content although men are often expected and coerced by parents to pursue careers in science and technology. As such, in this case, the socially constructed perception that men are always better at science, maths and technology subjects is challenged and the status quo of the structure of society is also challenged. This narrative resonates with the writings of (Weitziman et al, 1972) who observe that those labelled as female are not alone in suffering from sexism. They note that men are also confronted by rigid sex role stereotypes that require them to be strong, competent, fearless and brave and are told never to show their emotion especially by crying. They argue that in the same way that girls and women are constrained by images which stereotype them as pretty and passive, boys are constrained by images that stereotype them as strong and unemotional (Weitzman and Rizzo, 1975). Cornhall (2000) observes that dominant masculinities are not achievable for all men always and for many men, there is a gap between the dominant model of society and the realities of men.

[67] Focus Group Discussion, 22-year-old man, Makererec c University, 2014.

7.6. Misconceptions about ICT work

Findings from data collected indicate that ICT students did not fully understand the ICT work. In a Focus Group Discussion at Busitema University a young woman explained:

> I cannot imagine myself pulling and carrying cables. It becomes hectic for a lady I think. Because when you finish studying you hope to have an office job doing managerial work or administrative work or something to keep you in office, something which does not need you to move up and down and even if you have to walk around a lot at work, what you are doing exactly matters. You want to be smartly dressed. You don't want a job where you are going to wear jeans from Monday to Friday. You want to be able to wear heels and stay neat.[68]

Once again, the socialization of women to sit, be quiet and look a nice and just sit back and wait for someone else, ideally a man to do the tedious work is reflected here. Although women are qualified and able to perform tasks, they were seen to refrain from performing tasks that require application of physical strength. It could also be argued that these women are rational and that the rewards from doing physical work may not be worth the additional income that might come from doing it or that they simply are not interested in doing physical work.

However, managers in the ICT companies argued that there are misconceptions about the nature of work that ICT graduates do among prospective students and society in general. This is indicated in the quotation of a manager below.

> By the way, engineers do not usually carry heavy cables and routers. They may do it but it is on very rare occasions but we usually have men trained to assist them, men who have gone to school and obtained certificates in laying those cables and lines.

[68]Focus Group Discussion, 23-year-old woman, student, Busitema University, 2014.

> There are casual labourers as well. The Engineer is usually giving instructions and supervising to make sure that the work is done right so there is a very common misconception of about the actual work of this field but engineers are not the ones doing all the manual heavy work.[69]

These diverse, complex and gender laden stereotype and perceptions bring the social construction of gender and its application to fruition through the choices of young men and women who are prospective ICT professionals.

Other prevalent misconceptions surrounding ICT work include the perception that ICT work requires mathematical skills. There is a general thought that for one to engage in any ICT work, they must have a good understanding of concepts in mathematics. However, as Verspoor (2016 para 30)[70] notes, there are many aspects of ICT that do not use mathematics at all. For instance, web programming and software engineering are much more about algorithms, a sequence of instructions that a computer must follow to solve a problem or to respond appropriately to a request. Another common misconception about ICT work is that programming is logical and sterile and therefore boring.

According to Verspoor (2016, para 31)[71], the process of programming requires tremendous creativity as solutions to problems are not always obvious and there may be many ways to solve a problem. The perception that people who work in ICT are not social is a common misconception because as technology becomes more complex, diverse project teams will be required to work together to design and build solutions. Teams might involve a user experience expert, a graphic designer, a database expert, a domain expert and programmers

[69]Interview, 45-year-old woman, Manager, UTL, 2014.
[70] The article can be found online at: http://theconversation.com/cmon-girls-lets-program-a-better-tech-industry-28757 [Accessed August 6 2016].
[71] The article can be found online at: http://theconversation.com/cmon-girls-lets-program-a-better-tech-industry-28757 [Accessed August 6 2016].

with various areas of focus (Verspoor, 2016 para 32)[72]. Nonetheless, it is these misconceptions that keep young girls and women uninterested in ICT work. The next section examines the ways in which women either directly or indirectly actively participate in reinforcing and accentuation of socially constructed stereotypes through their 'everyday' actions.

7.7. Reinforcing socially constructed stereotypes

Information from women pointed to the multifaceted ways in which they enhance gender-based stereotypes. This is particularly through the choices that they make after university such as pursuance of careers outside the ICT Industry often influenced by overt and covert discrimination, failure to secure a job in the mainstream ICT field and lack of support from their husbands or partners.

7.7.1. Pursuance of careers outside the ICT industry

Although it could be assumed that students who pursue a degree in ICT would ultimately engage in ICT work after graduation, information from focus group discussions with final year students revealed otherwise. Some of the women planned to engage in work outside of the core of the ICT sector after graduation even when they qualify to do technical ICT work in the industry. Many end up in entirely different kinds of work that have nothing or very little to do with the ICT industry. This is reflected in the future aspirations of two young women: "I would like to go into business and run a Tours and Travel Company for people in technology related companies. That is just what I want to do."[73]Another young woman

[72]The article can be found online at: http://theconversation.com/cmon-girls-lets-program-a-better-tech-industry-28757 [Accessed August 6 2016].
[73]Focus Group Discussion, 22-year-old woman, Makerere University, 2014.

explained: “I love fashion and beauty and so I plan to use my skills in technology to build a career in fashion. Maybe I will apply them in boutique that I plan to set up”[74]

This scenario resonates with studies elsewhere that have revealed that women are more likely than men to lose their confidence in their ability to succeed in science (Kahle et al, 1993). This also could be evidence that women did not find a career in ICT interesting enough or as interesting as a career as they thought. Hence their change of career path. This resonates with the work of Anderson et al (2008) whose research among high school students revealed that that senior high school girls tend to perceive advanced computing subjects as boring and they express a strong aversion to computers.

While some women expressed that they did not believe that they were good enough to do jobs in the core of the ICT industry such as programming, others indicated that they had other interests. The above informant who also holds a Bachelor’s Degree in Computer Engineering indicated that she is interested in applying her knowledge of ICT to build a career in fashion design. When women opt to pursue careers that require the application of technology rather than the workings of technology itself, they ‘satisfy’ the stereotype that women are not interested in technology for its own sake but for the social applications that technology possesses (Pentali et al, 1999). From analysing the quotes above, it could also be argued that women who choose not to pursue a career in the core ICT labour market are simply being rational and avoiding a difficult career in ICT by opting for other career paths. It could be that the conditions in the industry repel women and are conducive for men.

While some women expressed no interest in taking up work in the core of the ICT work, the men indicated otherwise as many planned to engage in highly technical work which is at the core of the industry such as creating ICT companies. The men claimed that they understood

[74] Focus Group Discussion, 22-year-old woman, Makerere University, 2014.

that finding a job would not be easy so their minds were set on creating employment for themselves. The excerpt below indicates this claim. “Some friends of mine and I have started a graphic design company called Hive Collab. It is in its initial stages but we plan on making it something big. I want to be self-employed because finding a job these days is difficult.”[75]

Observation of a trend in which men aspire to work in the ICT industry while women ultimately take work on the outside or on the periphery of the ICT field was reiterated by Lecturers and Managers in the ICT industry. Some attributed the occurrence of such a trend to the shortage of jobs in a young and small industry. It emerged that key players understand that the ICT industry particularly in Uganda is new and with limited opportunities. However, although the job market for ICT graduates is still relatively small, graduates are encouraged to focus on job creation rather than job seeking after graduation. Whereas women, as the data shows, are largely not able to thrive in the ICT job market, many men succeed in job creation thereby making a career out of their qualifications in ICT. This trend is corroborated by the quotes below.

> When you look at the industry of Computer engineering in Uganda, it is a new field and the employment opportunities are not very many yet. Our students are not doing well after university but the boys come out and struggle on their own. Actually, we train them to survive in the market without looking for jobs. They have formed companies, earned sponsorships and won tenders to develop projects. I know a group of my students who won a tender to construct a Local Area Network (LAN) for large, for a well-known Non-Governmental Organizations offices and others won a tender to construct a MUST for a company in town.[76]

[75] Focus Group Discussion, 22-year-old man, Makerere University, 2014.
[76]Interview, 41-year-old man Lecturer, Busitema University, 2014.

7.7.2. Acceptance of the role of sole caretaker of the home

A female Lecturer argued that women have in a way accepted their domestic position as well as their position outside the home. She stated that "When I come home from work, I leave gender equality at the gate and I become a wife".[77] It is as if women are required to maintain a delicate balance between submission and power. As Thomson and Walker (1989) observe, women must contain their power so as not to threaten their husband, observing how in twentieth century England, women give up their rights to their husbands at marriage. Interview data further revealed that this is a widely accepted practice among professional women in the ICT industry as some women found it strange, even laughable that there are people who advocate for more paternity leave time for fathers

> Laughs; I do not see the need for paternity leave. For the women, I understand that they need leave because they need time to heal after having a child and they also may need to nurse the baby but the men … No, they don't need leave.[78]

Another woman Lecturer from Busitema University pointed out: "My brother never goes to hospital when his wife gives birth. It is always me and my mother who take care of his wife."[79]It appears as if women have become resigned to their fate as the ones who bear the domestic burden and have become so accustomed to it that they find it impossible to imagine their lives otherwise. While it seems acceptable to get support from other women like the mothers, mothers in law, sisters and sisters in law. Information from interviews showed that it largely appeared to be unthinkable to ask for help from the father of the child or another man when it came to child minding. The picture presented is that of women who are highly qualified and independent at work but torn between family and career.

[77] Interview,36-year-old woman, Lecturer, 2014
[78]Interview, 29-year-old woman engineer, UTL, 2015
[79]Interview, 36-year-old woman, engineer UTL, 2015

In the job market, women were seen to perpetuate oppressive stereotypes when they accepted and overstated their role as the sole housekeepers and caretakers of children. Interviews with professionals indicated that motherhood and taking care of the family was taken as the role of the women and men could only play a supporting role when they felt like helping. This was validated by the data that showed that 73% of respondents agreed that a woman's most vital role is to take care of her family. Informants argued that emancipation of women does not mean abandonment of their domestic duties. "Women's emancipation has never meant abandoning one's family, I am a woman and I take pride taking care of my family".[80] This could be seen to be a display of socialisation into the social role of nurturing. Jackson (1999) observes that gender identities are positive and valued by women at the same time as they may be devalued in hegemonic ideologies and the opinion of the informant above assertion from an interview with an ICT professional reflects the notion that the goodness of a woman is seen in the way that she takes care of others and sacrifices for them. It is also a reflection of the results of socialisation that women go through as they are taught that a woman who puts her family first is the good woman and the one who does not is a bad woman (Lorber and Farrell, 1991).

Moreover, women believe in gender equality but they do not think that it has anything to do with the men who are their partners helping with housework. This shows the considerable extent to which women have internalised their roles as the housekeepers and home makers, caretakers, in addition to having to go out and earn a living just as men do. This lends credence to the long and deliberate process by which women are socialised into domesticity that Musisi (1992) describes. She examines the education system in the colonial era which systematically trained young women to become house wives. Ruxton (2004) contends that

[80]Interview, 43-year woman, Manager, UTL, 2015

unless the practices of men change, efforts to promote gender equality will face an uphill struggle.

7.8. Conclusion

This chapter has showed how socialisation to social structures, cultural norms and stereotypes as well as perceptions influence the choice of academic programs and contribute to under representation of women in the ICT industry right from enrolment into university to the job market in the core ICT industry. The often taken-for-granted 'every-day' social construction processes (Burr, 2003) which heavily influence the way women and men are differently constructed in society are at the core of these dynamics. The labelling and stereotyping of women through the social engineering processes that take place in society (West and Zimmerman, 1987) reproduces as intellectually weak woman who is unable to excel at 'hard subjects. Arising from such 'negative' and disempowering process are processes such as self-censorship which compels women to select what society construct as 'easy and feminine' academic programs and avoid the perceived hard and masculine ones.

Moreover, the construction of men as strong and superior, masculine and therefore able to excel at academic programs with advanced mathematical content which are also branded as masculine, indirectly informs the nature of courses taken on. This has resulted in the pervasive masculinization of science and technology and this is influenced by gender specific social cultural stereotypes. Even when women supersede men in some academic programs at the admission phase, many drop off at every subsequent stage during their careers. The chapter has also shown how a few of the women and men challenge the status quo by insisting on pursuing These dynamics in the ICT industry in Uganda seem to show that the gender digital divide continues to be a problem in the country and beyond. Having analysed the dynamics that influence the choice of ICT academic programs and the ways through

which women reinforce the stereotypes, the next chapter presents the first section of the findings: transition patterns in the ICT industry in Uganda.

CHAPTER 8: GENDER TRENDS IN ADMISSION, GRADUATION AND EMPLOYMENT IN THE ICT INDUSTRY

8.1. Introduction

This chapter provides overall and aggregated insights into the extent of the digital divide in the ICT industry in Uganda with a specific focus on gender. This is accomplished through an analysis of transition patterns among men and women in the ICT industry at critical points of their careers. That is, during the skills acquisition phase at university particularly admission and graduation phases and then career progression into the work environment which principally consists of an examination of ratios of men and women at ICT companies from entry level up to the top executive level. The findings indicate that fewer women than men are admitted for ICT related courses and the statistics at graduation reveal a similar pattern of fewer women than men graduating from ICT programs. Generalised social cultural perceptions such as: women do not possess the intellectual ability to excel at 'hard' science and technology, 'masculine' courses with high mathematics content and that require performing tedious calculations shape and inform admission patterns in ICT degree programs and could therefore partly explain the gender patterns evidenced in ICT programs at admission to university.

However, in some cases as this chapter shows, more women than men are admitted on specific ICT related academic programs. This scenario is particularly evident in programs which are described as containing few modules that require advanced mathematics skills and are therefore less intellectually demanding. This is indicative of the 'masculinization' of technology and ICT at the critical career point of skills acquisition, characterized by the perception that women lack the ability to perform well in what is 'socially constructed' as hard science subjects. At the employment phase, after analysis of career progression of ICT

graduates, the chapter further indicates that the numbers of women are lower than those of men at all career levels with exception of low level positions. The next section examines the transition patterns of men and women in ICT degree programmes in Makerere and Busitema Universities at the admission and graduation.

8.2. Transition patterns

To provide insights into the nature of the gender digital divide, the first section analyses the ratios of women and men admitted into six ICT related degree programs at Makerere University on national merit[81], for a period of 5 academic years. That is, 2010/2011, 2011/2012, 2012/2013, 2013/2014, and 2014/2015. Graduation rates of the same programs over a period of 5 years are also examined. The degree programs that are considered in this study include Bachelor's degrees in Information Systems[82], Software Engineering[83],

[81] Admission on National merit or government sponsorship is admission to a public university on a government bursary to cater for tuition fees, and on campus accommodation. The bursary also caters for meals and recipients are given a stipend to be spent on living costs. National merit scholarships are highly competitive. In 2014-2015, out of 23,000 students admitted to Makerere University, only 2000 students were admitted on national merit and 21,000 were admitted on the private sponsorship scheme (Anguyo, 2014). This means that only 9% of admitted students received national merit bursaries.

[82]According to the website of School of Computing and Informatics Technology, **Information Systems** (IS) graduates are trained to adapt their careers to the evolving workplace and new career opportunities. Some of the roles IS graduates are able to fill after graduation include: Business analyst, Network analyst, Intelligence/threat analyst for top government organization, Web developer, Creative Internet campaigner, Systems designer/engineer, E-commerce project officer, Assistive technology designer, Technical support analyst, Bioinformatics analyst, Change and transition manager, IS security auditor, IS Project manager, IS consultant, Database administrator, Analyst programmer, Development manager, Technical research officer, Business systems consultant and IS manager. To be admitted into the Degree of Information Systems program, a student is required to have studied Mathematics, Physics, Economics, Chemistry, Biology and Geography, Entrepreneurship. Any two of the best done subject are considered to determine admission More information is available online at \;http://cit.mak.ac.ug/index.php/demo-layouts/bsc-information-systems.html

[83] **Software Engineering**: The program offers diverse career options including: Software developer/ engineer, Software architect, Analyst/ programmer, Games developer, Project manager, Mobile application developer, Test analyst/engineer, and IT consultant. According to the School of Computing and Informatics technology, a graduate in Software Engineering has an adequate grasp of the required principles and techniques to produce software systems on time, within budget and with few or no defects. A graduate is expected to apply these principles of engineering to the design, development, maintaining, testing, and evaluation of the software and systems that make computers or anything containing software work. Thus, the training given in the Bachelor of Software Engineering program ensures that graduates have a personal, business and technical skill to advance their career wherever they want to go. An applicant to the Bachelor of Software Engineering program is required to have at least two principal passes at the same sitting in Uganda Advanced Certificate of Education (UACE) in any two subjects (Mathematics, Physics, Economics, Chemistry, Biology, Geography, Literature and Entrepreneurship). More information is available online at: http://cit.mak.ac.ug/index.php/demo-layouts/bsc-software-engineering.html

Computer engineering[84], Telecom Engineering[85], Information Technology[86], Computer science[87] at Makerere University. The chapter also provides an analysis of admission and graduation data of the degree program in ICT that is taught at Busitema

[84] **Telecommunications Engineering:** According to the College of Engineering, Design, Art and Technology, a graduate with a Telecommunications Engineering degree can work for telecommunications service providers (such as MTNU and UTL), major equipment and device manufacturers (such as Nokia, Samsung or Apple) and a huge range of specialist technology groups. Other opportunities include engineering positions involving planning, design, implementation, operation and management of telecommunications systems and networks.
An applicant for the Bachelor of Telecommunications Engineering program must have obtained two advanced level passes, one in Mathematics and one in Physics, at the same sitting of the Uganda Advanced Certificate of Education (UAEC) or its equivalent. Key subjects considered include Mathematics and Physics as Essential subjects. Chemistry, Economics, Technical Drawing, Applied Mathematics or Pure Mathematics are the other relevant subjects required for admission. More information is available online at: https://cedat.mak.ac.ug/undergraduate-programmes/bsc-telecom-engineering/bachelor-of-science-in-telecommunication-engineering

[85]**Information Technology:** The Bachelor of Information Technology (BIT) graduate can function as a user advocate and select, create, apply, integrate and administer computing technologies to meet the needs of users within a societal and organizational context. The skills obtained after completion of the Bachelor of Information Technology should enable the graduate to: Analyze a problem, identify and define the computing requirements appropriate to its solution, then design, implement, and evaluate a computer-based system, process, component to meet desired needs function effectively on teams to accomplish a common goal understanding of professional, ethical, legal, security and social issues and responsibilities communicate effectively with a range of audiences and engage in continuing professional development, apply current technical concepts and practices in the core information technologies, identify and analyze user needs and take them into account in the selection, creation, evaluation and administer computer-based systems and effectively integrate IT-based solutions into the user environment. Understand best practices and standards and their application and assist in creating effective project plans. More information is available online at: http://cit.mak.ac.ug/index.php/demo-layouts/bsc-information-technology.html.

[86]**Computer Science:** This course introduces students to the foundations of software engineering as a discipline. Students are introduced to the evolving role of soft- ware engineering, especially with emphasis on software engineering process and process models. Key topics covered include Software configuration management, Requirement analysis, Software Specification, Design methods, Software testing, Software project management techniques. To qualify for admission to the Bachelor of Computer Science program, an applicant should have at least two principle passes at the same sitting in Uganda Advanced Certificate of Education (UACE) in any of the following subjects: - Economics, Entrepreneurship, Geography, Physics, Chemistry and Biology. More information is available online at: http://cit.mak.ac.ug/index.php/demo-layouts/bsc-computer-science.html.

[87] Some of the careers associated with the Bachelor of Computer Engineering program include: Computer and Information Research Scientist, Computer Network Architect, Computer Network Support Specialist, Computer Programmer, Computer Systems Analyst, Computer Systems Engineer, Network and Computer Systems Administrator, Software Developer, Service engineer, Network engineer. For a candidate to be admitted into the program, good knowledge of mathematics and physics are essential, other relevant subjects include: Economics, Chemistry, Geometry and Mechanical. Drawing, Geometry and Building Drawing
More information is available online at: http://studenthub.ug/courses/211/bachelor-of-computer-engineering.
https://chuss.mak.ac.ug/downloads/2013/Pujab/_Programs_offered_at_Busitema_University_and_a_combined_weight
oPROGRAMMES_OFFERED_AT_BUSITEMA_UNIVERSITY_AND_THE_COMBINED_WEIGHT_OF_A__CANDIDATE_FOR_ADMISSION.pdf

University. That is, the Bachelor of Computer Engineering degree over a period of five academic years: 2010/2011, 2011/2012, 2012/2013, 2013/2014 and 2014/2015. The reason for choosing 2010/2011 as the starting year is that while Makerere University has been in existence since 1922, Busitema University was only established in 2007and graduated its first class of ICT students in 2010. The academic year 2010/2011 was chosen to facilitate a more uniform comparison between the two universities. Furthermore, the ratios (numbers of men and women) lecturers, heads of department and deans of the programs are also examined with the aim of interrogating the level of gender diversity and representation regarding those who teach on and make decisions in ICT programs.

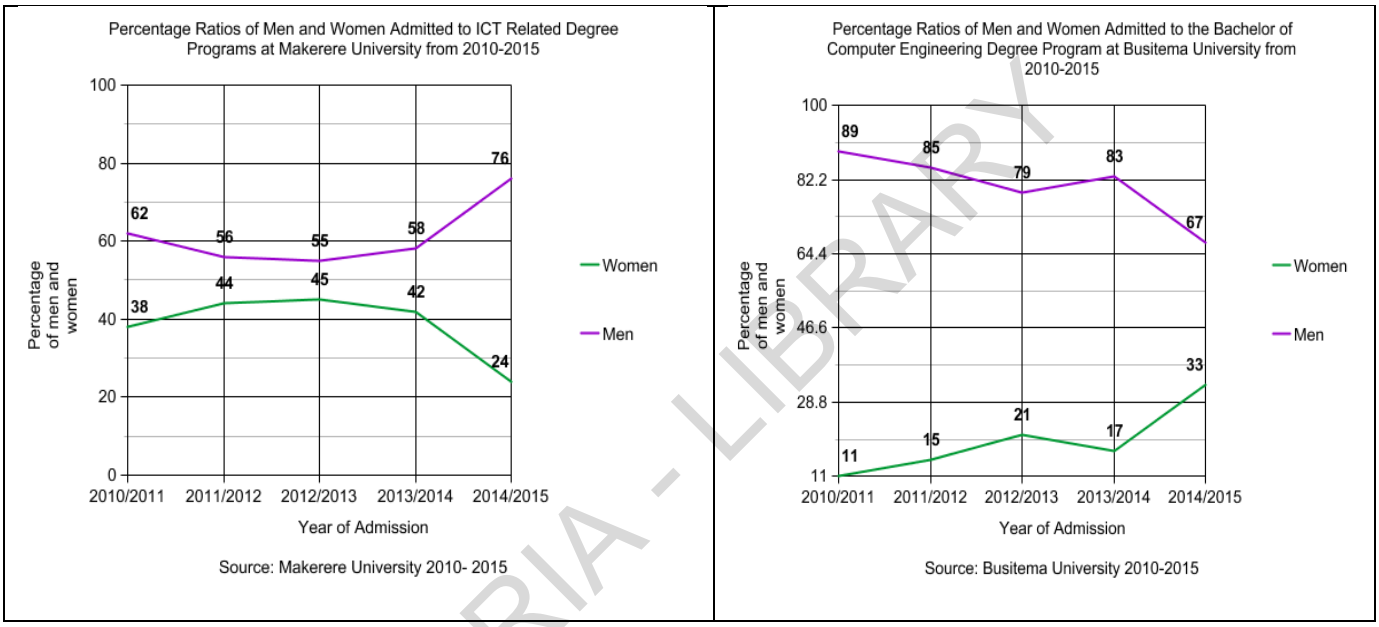
At the employment level, the percentage ratios of men and women in various positions at MTNU and UTL are presented and examined. At UTL, ratios were considered at the following positions: Off-roll staff, Junior Officers, Assistant Managers, Heads of Department and top Chief Officers. At MTNU, ratios were considered at the following positions: Intermediate skilled, highly skilled technical, Professional, Executive and Managerial. The trajectory formed by the percentage numbers of men and women at each critical transition point, that is, admission into university, graduation from university, entry into the ICT industry and career advancement to the top executive level is what I describe as transition patterns. The subsequent section examines the admission rates at Makerere and Busitema Universities in Uganda.

8.2.1. Admission rates

An examination of admission ratios of men and women in ICT degree programs from 2010/2011 to 2014/2015 at both Makerere and Busitema Universities revealed an apparent difference along gender lines. The difference is evident in the overall lower ratios of women when compared to those of men. As graph 5 indicates, men typically made up many students in all the six ICT programs at Makerere University and in the Computer Engineering program

at Busitema University Main Campus. At Makerere University, women made up between 24-45% of all the ICT programs while the men constituted between 76 -55% of the students in the classes. At Busitema University, women constituted 11 - 33% of the Computer Engineering class, while men made up between 67-89% of the students in the class.

Graph 13: Percentage Admission rates for men and women at Makerere and Busitema Universities for Academic Years 2010/2011 to 2014/2015.



At Makerere University, the percentage of men admitted in ICT academic programs over a five-year period was generally higher than that of women. Overall, the percentage representation of men and women varied, increasing in some years and decreasing in others without an evident trend emerging. The percentage of women admitted at Makerere University from 2010/2011- 2011/2012 increased by 6% and then by 1% in 2011/2012 - 2012/2013. However, in 2012/2013-2013/2014 the numbers declined by 3% and further reduced by 18% between 2013/2014 and 2014/2015. In the same period, the percentage admission for men was 62% in academic year 2010-2011, registering a 6% decline in 2011/2012, further reducing by 1% in 2012/2013. It went on to register an increase of 3% in

2013/2014, and a further increase of 18% in 2014/2015. Overall the percentage of women registered a greater decline while that of men registered a greater increase.

A similar scenario is witnessed at Busitema University where percentage of men admitted in the Bachelor of Computer Engineering program over a five-year period was generally higher than that of women. The men made up between 67-89% of admitted students while women made up 11-33% of admitted students. Nonetheless, the percentage admission rates of women were generally progressive over the five-year period, registering more of an increment than a decline. In academic year 2010/2011, 11% of the admitted students were women, increasing to 15% in 2011/2012, 21% in 2012-2013, 17% in 2013/2014 and 33% in 2014/2015. On the other hand, 89% of the admitted students in academic year 2010/2011 were men, reducing to 85% in 2011/2012, further declining to 79% in 2012/2013. The percentage of men then increased to 83% in 2013/2014 before declining to 67% in 2014/2015. Overall, in no given year did the percentage women constitute more than or equal that of men in both Busitema and Makerere Universities which is indicative of the under representation of women at the admission level.

However, at Makerere University where more than one ICT related specialisation is offered, an analysis of individual specialisations revealed a larger difference in participation of men and women for most of the academic programs. In the 2010/2011 academic year, men made up over 80% of students in some ICT academic programs. For instance, in the Information Systems program, men constituted up to 87% of all enrolled students while women made up 13 %. A detailed presentation of admission ratios of men and women in academic programs in which the percentage of men was disproportionately higher than that of women is presented in table 4.

Table 4: Academic programs that registered more men than women

Academic program	Academic Year									
	2010/2011		2011/2012		2012/2013		2013/2014		2014/2015	
	% M	% F	% M	% F	% M	% F	% M	% F	% M	% F
Information Systems	87	13	-	-	-	-	77	23	70	30
Software Engineering	78	22	100	-	60	40	60	40	82	18
Telecommunications Engineering	83	17	72	28	71	29	56	44	69	31
Information Technology	-	-	-	-	-	-	-	-	68	32
Computer Science	-	-	74	26	78	22	74	26	100	-
Computer Engineering	-	-	72	28	-	-	69	31	73	27

Source: Makerere University (2010-2015)

The Head of Department of Makerere University reiterated the above observations by noting that: "You see we (Makerere University) have scholarships for women from the Carnegie cooperation but every year we fail to get female students to take the scholarships for science programs and we end up giving them to humanities and arts students."[88]

Information from other interviews with university administrators also revealed that the low numbers of women in the ICT academic programs persisted even after affirmative action policies were implemented.

> In this university (Busitema university), we implement what I can call a double affirmative action policy. We add the women an extra 1.5 points[89] and then we lower the points required for entry specifically for the women, depending on the

[88] Interview, 45-year-old man, Head of Department, Makerere University, 2013.
[89] Makerere University also implements the affirmative action by adding an extra 1.5 points to all the women at entry into the university.

performance in each year but we still fail to get enough women applying. It's a big problem.[90]

Although men made up the larger percentage of students in most of, much of classes at Makerere University, it was interesting to note that there were some specific specialisations where women made up many of students. The ICT related academic programs that registered more female than male students are presented in table 6. Noteworthy is that in instances where women made up most of, many of students, the percentage of men did not fall below 30%. This is noteworthy because it is a further indication of the underrepresentation of women in ICT degree programs and that the representation of women is most times below the national affirmative action target of 30%. As indicated in the table 6, the percentage of women admitted in the Bachelor of Information Technology was higher than that of men for three consecutive years. That is, 52% for academic year 2010/2011, increasing to 69 in 2011/2012, 61% in 2012/2013 and 66% in 2013/14 (see table 6 for a detailed comparison).

Women only made up a majority in three of the programs in some of the academic years. In 2011/2012, 2012/2013 academic years, women made up 44% while men made 56% of admitted students on the Bachelor of Information Systems program. On the Information Technology program, women constituted the majority of admitted students on national merit in four out of the five years considered. Women made up 52% while men constituted 48% of the class in 2010/2011, Men constituted 39% while women made up 61% of students admitted in 2011/2012 academic year. In 2013/2014, men made up 31% and women made up 69% of the admitted class while in 2014/2015, women made up 66% of the class admitted and men made up 34% of the admitted class.

[90] Interview, 47-year-old man, Head of Department Busitema University, 2014.

An investigation into the cause of the relatively consistently higher numbers of women admitted particularly in Bachelor of Information Technology Program for four consecutive academic years, that is 2010/2011, 2011/2012, 2012/2013 and 2013/2014 was made. The informants argued that the Information Technology program is less technical and more managerial and that in their view that explains the relatively higher numbers of women who opt for this academic program. It was also indicated that the advanced mathematics content of the program was low compared to other programs. The perceived choice of a program that is 'constructed' as less technical and low in mathematics content reproduced and reinforced the stereotype that women can only manage less challenging tasks in the ICT industry (Lorber and Farrell, 1991). These arguments further deepen the socially constructed assertions that men are superior and can therefore enrol for more 'masculine' challenging courses vis-à-vis inferior women who are seen to enrol for more 'feminine' and less challenging courses (Yuval, 1997). Excerpts from other informants lend credence to this analysis. A Lecturer commented that: "Girls fear maths so they go for those courses that are low in maths content like Information Technology. That is why you see that they are even more than the boys in the Information Technology program."[91] The comment by the lecturer could be an example of the process of 'othering' as described by Beauvoir (1997) in the process of social construction of the identity of women. The Lecturer characterises girls as fearful of maths and by so doing, paints them as weak. This justifies dismissive treatment of girls and women subjects that require a good knowledge of maths ICT and is indicative of adverse incorporation and resultant exclusion of girls and women specifically in ICT education.

In 2014/2015 however, the percentage of women admitted in the Bachelor of Information Technology Degree program reduced from 66-32%. Another Lecturer explained why the numbers of women had suddenly reduced even when more women than men had enrolled for

[91]Interview, 48-year old man, Lecturer, Makerere University 2013.

the academic program in the previous years. The informant attributed the sudden decrease in enrolment of women particularly in the Bachelor of Information Technology program from 66% in academic year 2013-2014 to 32% in academic year 2014-2015 to revision of the curriculum which resulted in the introduction of more advanced Mathematics modules within the course. "That program (Bachelor of Information Technology) was revised and more advanced maths modules were introduced, that is why you see the girls abandoning it."[92] Although socially constructed, the informant indirectly indicates that introduction of more advanced Maths content made the academic program less appealing to women. So, women had opted for other 'feminised and easy' 'alternative academic programs. The above arguments and the view points of the Lecturers reaffirm the observation of Tamale (1999) that social and cultural rigidities are replicated in the education in such a way that society structures condition women to study courses, those constructed as 'easy' in this case. It is important to note that a good score in mathematics is essential or desired for admission to all the ICT degree programs under consideration.

What is interesting to note however is that in the Bachelor of Statistics program, 2014/2015 academic year, women admitted to the program on national merit outnumbered the men who were admitted on the program. Out of 28 admitted students to the program, 16 were women and 12 were men. In the 2016/2017 academic year, out of 30 students admitted into the Bachelor of Statistics at Makerere University, 19 were women and 11 were men. This is in contradiction the general perception that women lack the ability to do subjects that involve complex number calculations. It is also an example of agency as in Giddens structuration theory applied by women to do and excel at subjects that are considered masculine. By so doing, these women exercise individual agency to challenge existing social structures that tend to exclude them. While it was difficult to obtain the ratios of students pursuing a degree

[92] Interview, 38-year-old man, lecturer, Makerere University, 2013.

in pure maths because pure maths is usually done as a major or minor a alongside other course units, evidence from graduation lists of Masters students in pure maths suggests that only men graduated with Master's degree in pure for four consecutive years from 2015, 2014, 2013 and 2012. Only 11 men graduated in the five-year period.[93]

However, there are situations where more women than men enrolled for academic programs that are perceived to have many modules with advanced mathematics content, such as the Bachelor of Computer Science in academic year 2010/2011. Women constituted 56% and men 44% of the class. This scenario: first, validates the notion that differences between men and women that are brought to bear through labelling and stereotyping merely are socially constructed but are not always the reality. Second, indicates that notions of women's inability to excel in what society perceives as 'hard masculine courses are socially constructed. Third, indicate that since that these arguments are not 'real' but social constructions, some women ably deploy their 'agency' by challenging the socially constructed beliefs that women generally do not have the ability to study in what is perceived to be hard masculine academic programs. In other words, the women who enrol for such courses exercise their 'agency' as active members of society by not reproducing the 'already constructed structures (Giddens, 1984). These women engage in creating new social structures that depict their reality. The next section takes a closer look at the graduation rates.

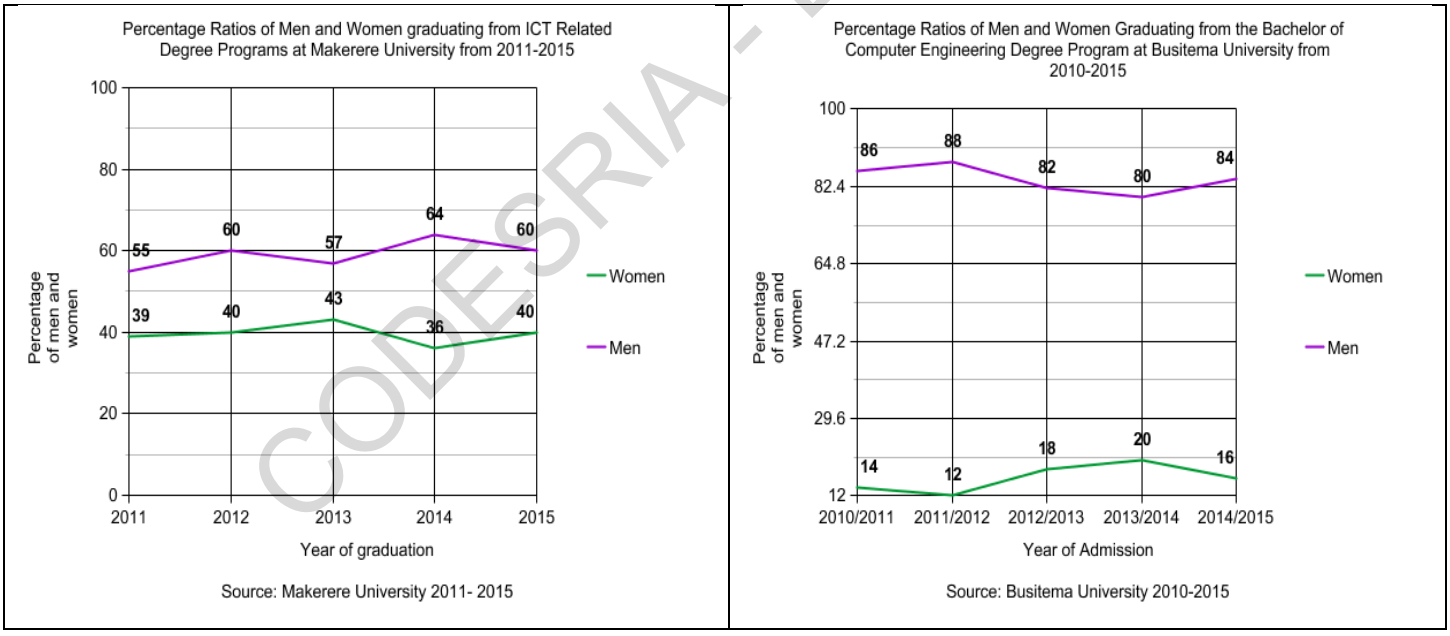
8.2.2. Graduation rates

Statistical data on graduation continues to indicate that women are unfavourably incorporated in the ICT industry. The composition of men who graduated in all ICT related academic programs at Makerere University was between 55-64% while that of women was between 36-40%. In 2011 women made up 39% of the graduates in the ICT degree program, including

[93] Information can be found online at: http://cns.mak.ac.ug/graduation.

students on private sponsorship (not on national merit) compared to the men who constituted 55%. A similar trend is observed in subsequent years when women made up 40% against 60% for men in 2012; 43% for women vis-à-vis 57% men in 2013; 36% for women as opposed to 64% for the men in 2014; and 40% for the women compared to 60% for men in 2015. An analysis of the graduation ratios of men and women in the Bachelor of Computer Engineering at Busitema University reveals a similar trend, with men making up most of the graduates. In 2011 as indicated in graph 6, 86% of the graduates were men while the women constituted 14%. Similarly, the men made up 88% vis-à-vis 12% for women in 2012; 82% for men against 18% for women in 2013; and 80% for men compared to 20% for women in 2014.

Graph 14: Percentage Graduation rates for men and women at Makerere and Busitema Universities for Academic Years 2010/2011 to 2014/2015



In the individual specialisations at Makerere University as indicated by table 5 the percentage representation of men and women greatly varies from one ICT program to another. Even though this is the case, graph 5 shows that men constituted most graduates in all the five

academic programs combined including those where more women than men were admitted (see table 6 below).

Table 5: Academic programs in which more men than women graduated

Academic program	Graduation Year									
	2011		2012		2013		2014		2015	
	% M	% F	% M	% F	% M	% F	% M	% F	% M	% F
Information Systems		-	61	39	54	46	61	39	-	-
Software Engineering	-	-	-	-	-	-	75	25	71	29
Telecommunications Engineering	-	-	57	43	-	-	73	27	78	22
Information Technology	54	46	51	49	-	-	54	46	-	-
Computer Science	70	30	70	30	73	27	71	29	65	35
Computer Engineering	81	19	-	-	73	27	79	21	69	31

Source: Makerere University (2010-2015)

In a few academic programs however, as indicated in the Table 8 below, women made up a majority of the graduating class in specific years. Out of five programs, women outshined men in only two academic programs in some years: one, Information Technology; and two, Information Systems. Important to note is that it is particularly in these programs that women topped the admission list with 52% in 2010/2011, 61% in 2011/2012, 69% in 2012/2013 and 66% in 2013/2014 (table 9). Ideally, one would expect the high admission ratios to translate into high graduation ratios for women in all the four years. However, the graduation figures for the four years indicate that even with more women being admitted in the four successive years, men topped the graduation figures in three out of the four years for the Information Technology program. The men constituted 54% in 2010/2011, 51% in 2011/2012, and 54% in 2013/2014 while women made up the majority in only one (53% in 2013) out of the four years being compared here. A related scenario applies to the Information Systems program

where women topped the admission list in 2011/2012 (56%) and 2012/2013 (56%) but the men constituted many graduates in four successive years out of five, that is, from 2012 to 2015.

Another interesting aspect is that in several graduating classes, a woman graduated as the best student not only in the College of technology but in all science programs in the university. In 2010, a woman who graduated with a Bachelor's degree in Information science was the best performing science student. The same situation applied to 2014 where another woman who graduated with a Bachelor's degree in Information Systems emerged as the best overall student. Women also made up a considerable number of first class degrees. For instance, out of 45 students who graduated with a first-class degree from the Makerere University College of Computing and Information Science in the 2013/2014 academic year, 21 were women. Women accounted for close to half of the first-class degrees (Makerere University, 2014).

A closer look at women obtaining first class degrees across the university reveals that women maintain a consistent presence on the first-class list. Close to half of the number of the first-class degree holders between 41-47%. Women made up 41% of graduates with first class degrees in 2016, 47% in 2015 and 44% in 2013.

Table 6: Percent of women with First Class Degrees Across the University, at Makerere University 2016, 2015 and 2013.

Men	Women	Total	% women
168 (2016)	118 (2016)	286	41
157 (2015)	140 (2015)	297	47
125 (2013)	109 (2013)	248	44

Source: Daily Monitor (2016)

Several observations can be made from the achievements made by women. First, by the very fact that women enrol for and perform well in courses that are socially constructed as masculine and 'hard' validates the assertion that labels such as 'inferior, weak feminine' are

not 'real' but social constructs. Second, some women appropriately deploy their agency to challenge the socially constructed structures by performing well in class. Third, not all women are passive victims but active agents as evidenced by the varied responses including out-performing men. One lecturer remarked:

> "In my class (systems networking), the girls do very well. They understand the content of the course and they compete favourably with the boys. It is rare to find a girl with the worst grades in class. In fact, it has not happened before[94]

These views resonate with those put forward by Berdousis and Kordaki (2015) that no significant differences exist between male and female students in terms of achievements. This indicates that at the point of admission in ICT degree programs at Busitema and Makerere University, what a man can do, a woman can also do and even better in some cases as evidenced by the best performing women in what society perceives to be 'hard masculine' science and technology programs. It is a diversion from the general perception that women cannot perform as well as men in science subjects and further highlights the agency of women in breaking down social barriers that lead to oppression and exclusion specifically in the ICT industry at the phase of skills acquisition in Uganda. The next section examines the dynamics in the ICT labour market with reference to MTNU and UTL.

8.2.3. ICT labour market dynamics with reference to MTNU and UTL

The disproportionate admission and graduation ratios between men and women, with men constituting the larger percentage, seem to be replicated in the ICT industry in Uganda. Men constitute the larger percentage in the ICT industry, but even the few women who join the industry leave at the initial stages of their career. This is reflected in the gender disaggregated data at MTNU and UTL.

[94] Interview, 36-year-old woman, Lecturer, Busitema University, 2014.

8.2.3.1. MTNU Employee Gender Disaggregated Statistics

Out of 1227 direct employees of MTNU, only 255 were women, making women 21% of the workforce while the men constitute up to 79%. At the entry level in MTNU as indicated in figure 19 below, men made up 92% of the workforce, while women made up 8%. For jobs labelled as highly technical, 36% were women and at managerial and executive level, women made up 22% of employees. This pattern replicates a gender digital divide that has been observed in most parts of the world and in top technology companies (European Commission, 2013; Google, 2013; HP, 2013).

Table 7: MTNU Gender Employment Statistics

Occupational Category	Male	Female	Total	% Men	% Women
Executive and managerial	45	13	58	78	22
Professional	83	38	121	69	31
Highly skilled technical	274	153	427	64	36
Intermediate skilled administrative	572	51	623	92	8
Total Employment	**974**	**225**	**1229**		

Source: MTNU employment data (2013).

Information from UTL shows a pattern that is like that of MTNU where women are generally under represented with the only interruption to this pattern observed at the 'off roll' level, a position that consists of call centre services and data entrants and for which an ICT degree is often not a requirement. Here the difference is striking, and at the 'off roll' level, women made up 70% of the employees while men made up 30%[95].

At the Junior Officer level in UTL, an entry level position for technical people, women made up 46% of all employees while the men accounted for 53%. However, it was evident that as men and women began to progress from the entry level position, the percentage of women

[95]Data from UTL (2014).

drastically decreased as that of men progressively increased. At the level of Assistant Managers, women made up 23% while men made up 77%. The number of women decreased further as they progressed from the assistant manager position to manager. This vividly shows the 'leaky pipeline' at work (UTL, 2013).

At the Assistant Manager level, women made up 13% as men accounted for 87% of employees. At the top Executive level, women made up 14% while the men constituted 86% of employees. This kind of pattern resonates with the suggestion that women successfully make their way into companies but leave prematurely. This further indicates that women do not stay long enough to advance through the ranks. The pattern lends credence to HewIett, et al (2008) who has established that 52% of highly qualified women in science, engineering and technology fields may quit their jobs at a critical stage in their career. It is thus a pattern that is not necessarily specific to ICT, but to science and technology. Information from interviews indicates that only 13% of respondents reported having a supervisor or manager who is a woman. This observation was validated by the testimonies of women who explained the challenges they encountered specifically as working mothers.

I think the most challenging issue that women in the industry encounter is striking a good work-life balance. Many women are forced to choose between career and family. I have a friend who just turned down a managerial position at a top company. She now takes care of her family full time. She could not deal with all the juggling between children and work. You see the higher up the ranks you go. The more challenging it becomes.[96]

This scenario resonates with concept of the glass ceiling. It is arguable that this woman could be at the glass ceiling. It is possible that she could have reached her limit of career progression having faced increasing challenges.

[96] Interview, 36-year-old woman Telecom Engineer, MTNU, 2014.

8.2.3.2. UTL Employee Gender Disaggregated Statistics

Table 8 shows a similar trend in the public sector, with the numbers of women again dropping as they advance in career level. At Junior Officer Level, the gap between men and women was relatively narrow but from the managerial positions onwards, the gap drastically widened. The overall trend shows that the numbers of women are lower than those of men at each subsequent level with no exceptions. Thus, the glass ceiling does not only apply in the private sector in which government equity policies may be more loosely applied but also in the public sector in which we might expect greater compliance.

Table 8: Uganda Telecom Limited Gender Employee Disaggregated Statistics

Occupational Category	Male	Female	Total	% of Men	% of women
Chiefs	6	1	7	86	14
Heads of Department	17	3	20	83	17
Assistant Managers	50	15	65	77	23
Junior Officers	212	182	394	53	47
Off-roll Staff	52	120	172	30	70
Total	337	321	658	51	49

Source: UTL Data (2014).

Women are also under represented in managerial positions at the study institutions, that is, Makerere and Busitema Universities. Table 9 shows that fewer women assumed top executive, managerial, teaching and administrative level positions. Out of 31 Lecturers at the College of Engineering, Design, Art and Technology, 27 were men and 4 were women. Moreover, out of 18 Lecturers on the Bachelor of Computer Engineering program at Busitema University, 16 were men and 2 were women. These findings resonate with those of Shuttleworth et al (1992) who examined the positions of women in the computing industry in the United States and in the United Kingdom. Their findings indicate that 10% of males and only 3% of females in the survey had achieved managerial positions.

Table 9: Women and Men in Top Management and Faculty of Institutions and Information Technology Departments of Study Institutions

University and Department	Men	Women	Total	%tage
Department of Computer Engineering (Busitema University)	16	2	18	11
College of Information Technology Top management (Makerere University)	4	3	9	33
College of Information Technology Directors (Makerere University)	7	4	11	36
College of Engineering, Design, Art and Technology (Makerere University)	27	4	31	13

Source: Makerere University, Busitema University (2013).

Overall, the transition patterns suggest that there is an under representation of women at every level of career development. That is, at admission, graduation, transition into the ICT industry and the subsequent progression to the top executive level. The admission rates show that the percentage of women is lower than that of men at the beginning of the career path. Although few women are admitted into ICT related programs, the ratio of women continues to progressively reduce as student's progress on the career path. However, it was observed that women made up the greater portion of employees at the off-roll staff level[97] in UTL. That is, they constituted up to 70% of the population while the men made up 30% of employees at off roll staff level. It is important to note that even if off roll staff work in the ICT industry, most of them do not possess degrees in ICT related fields.

On the contrary, the trajectory of men showed an overall progressive increase in percentage representation at each stage of career advancement. In MTNU for instance, men made up 64%, 69% and 78% of highly skilled technical, professional and executive managerial levels respectively. This pattern lends credence to the idea of the leaky pipeline in the private,

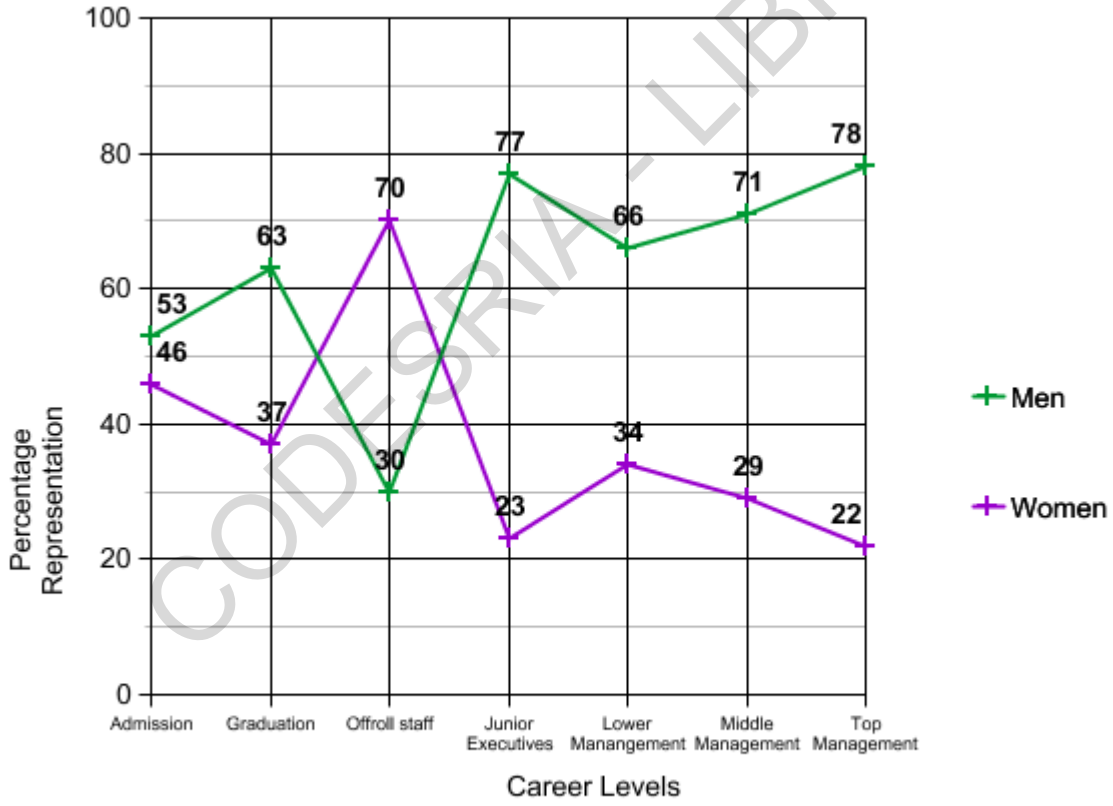
[97]The off roll level is also the lowest of the career levels and this is manly comprised of call centre representatives and data entrants.

public and university sectors (Castaño and Webster, 2011; Etzkowitz, and Ranga, 2011; Varma and Hahn, 2007; Valenduc, 2011) which has been long observed in science and technology fields)

8.2.4 Overall transition patterns of ICT graduates

Graph 15 presents the overall transition patterns from admission, graduation to the ICT industry in a gender perspective. To come up with the transition pattern graph, totals of Admission and graduation data from Makerere and Busitema Universities and the percent total of women and men employees at MTNU and UTL were used.

Graph 15: Overall Transition Patterns of ICT Graduates



Source: Secondary Data MTNU, UTL, Makerere University, Busitema University 2010-1015

8.3. Conclusion

This chapter has showed that more men than women are admitted into ICT related academic programs at Makerere and Busitema universities. Socio-cultural factors, stereotypes and perceptions inform this trend particularly due to the way women and men are differently constructed. The labelling and stereotyping of women as intellectually weak and therefore unable to excel at 'hard subjects', implies that women are not suited for ICT work. Moreover, the construction of men as strong and superior, and therefore able to excel at 'hard subjects', indirectly informs the nature of programs that many men tend to gravitate towards. In addition, there is a pervasive 'masculinization' of science and technology which is influenced by gender specific social cultural stereotypes. Even if on a few occasions women supersede men in some courses at the admission phase, many women drop off at every subsequent stage during their careers. These dynamics in the ICT industry in Uganda seem to show that the digital divide structured along gender lines constitute a challenge for equitable development. Having analysed the nature of the gender digital divide in the ICT industry, the next chapter concludes the study by revisiting the central arguments and findings of the study. It also highlights the key findings and the contribution of the thesis to knowledge.

CHAPTER 9: CONCLUSION

This dissertation has revealed that gender dynamics in the emerging ICT industry in Uganda unfold in convoluted and complicated ways and is riddled with numerous challenges. The roots cause of the discrepancies and gaps in access to ICT and related services emanate from the convoluted traditional and historical socio-cultural practices which differentially constructed both men and women in pre-colonial Ugandan societies. Further, these social differences were not only reproduced and institutionalized throughout the colonial period but have also been sustained by the post-independence governments. Even after 50 years of independence, the gender-blind or gender-skewed institutions and structures created by the British colonial government in Uganda continue to significantly inform the gender dynamics in Uganda especially in the contemporary period.

Thus, this dissertation has argued that understand the gender-related dynamics in contemporary Uganda and the perceptions that underpin them, it has been necessary to comprehensively explore the historical and cultural foundation from which they spring. The present perceptions and dynamics on gender, as Musisi (1992) points out, are connected to historically-situated events and realities. Elsewhere, Misa (2010) justifies the need to historicise the ICT related research by noting that effective interventions to improve professional practices in computing and other technical fields require greater historical awareness and understanding. A detailed exploration of the traditional social organisation of Uganda that has been undertaken by this dissertation has proved to be central in disentangling and/or revealing the specific cultural perceptions and practices that shaped and continue to inform gender dynamics, including the interpretation of 'femininity' and 'masculinity' and the resultant allocation of specific roles and tasks to women and men.

The emerging findings of this dissertation is that the marginal and peripheral positions of women in the ICT industry in Uganda are largely informed by and spring from the rooted convoluted traditional and historical socio-cultural practices, and differential construction of men and women. This study has established that it is through the processes of social construction—specifically socialisation, internalisation—and reproduction of structural social norms, rules and values through structuration that socio-cultural stereotypes are formed and maintained. Often, the ways in which stereotypes are manifested evolve to take on new subtle and subliminal forms which are acceptable with changing times, defying and transcending 'modernity' and persisting through pre-colonial, colonial and post-colonial periods.

Moreover, not even modern education can completely reverse the psychological implications of socio-cultural stereotypes on women in terms of obstructing them from taking their peripheral position in the ICT industry right from education to the labour market. Women live with the impacts of the socio-cultural stereotypes throughout their lifetime. Cultural practices and stereotyped images work against women to the extent that even the 'highly educated' women (and men) in positions of influence often relapse into support for traditions that clearly oppress women, including in policing gender.

Another central argument underpinning these gender related stereotypical perceptions is that there are differences in innate biological, mental, physical and emotional traits and abilities between men and women. These differences are 'believed' to make men and women suitable for specific roles, responsibilities and work but not others. That is, sophisticated and intellectual careers especially those that involve the use of sophisticated gadgets outside of the home are for innately intelligent, ambitious men. Conversely, innately intellectually weak, nurturing women are the best fit for the position of home manager or at best assistants

to men in the work place. Further, this dissertation reveals that although socially constructed and 'imaginary', these constellations have come to be accepted as 'real and true' in the home, the school and at work in the broader society. The socially constructed' attributes subsequently determine the way social, economic and even political issues in society are structured and shared including the differential pursuance of particular academic programs and types of work done by men and women.

Furthermore, this study established that most of the women in the ICT industry in Uganda have achieved equal status with men, not through exercising their agency as active human beings, but through affirmative action. Data from interviews indicated that there is a general fatigue with discussions about affirmative action as several ICT professionals expressed the view that national affirmative action programs had achieved their goals. In fact, many recommended that it was high time that affirmative action programs were stopped because they had achieved their goals as evidenced by the increasing numbers of women in positions of power mostly in government ministries, department and agencies. It emerged from interviews that ICT professionals and managers that affirmative action was only relevant for women in rural areas but not urban educated urban women. However, this dissertation shows that such arguments are far from the reality of many highly educated women struggle daily to survive in an ICT industry dominated by men and oppressive to women. Socio-cultural stereotypes affect highly qualified professional/educated women in the ICT industry. This is vividly evidenced by the gender specific challenges encountered by some of women in the emerging ICT industry.

The drawback to national affirmative action policies is that policies are implemented at one single point—entry into the university and particularly by adding the 1.5 extra points on the marks obtained by women—and too late (on when the women are seeking admission to the university. The key issue is that at the point of entry into university the young women would

have already been socialised and initiated into the world of 'gender insensitive' socio-cultural stereotypes. Even after exit from the university into the ICT labour market, there seems to be no functional affirmative action policies to shoulder young women graduates from the shocks arising from the constraining social structures, rules, norms and stereotypes. Socialisation begins early in homes and common societal spaces, and goes on throughout the lives of boys and girls In addition, emerging from findings was that discrimination and oppression of women take indirect, subtle and psychological forms that are not easily recognisable. Therefore, the few initiatives undertaken by the state when women have already been socialised and at a later point, cannot register significant gains in allowing women a fair chance to excel as technical professionals in the ICT industry.

Moreover, affirmative action policies are not only seen to be missing in ICT companies but they seem to be misunderstood by managers and or key decision makers. Managers hold the view that affirmative action requires giving opportunities to incompetent, unqualified or poorly qualified women simply because they are women. While commenting on the affirmative action policies for gender equality, several managers were quick to claim that the companies which they represent are gender neutral and that their policies are merit-based.

Clearly emanating from the data is that women were often described in negative terms, for instance. For instance, a seasoned Manager in one of the telecommunication companies described a woman who often asked a lot questions as opposed to her male peers as 'slow'. Instead of conceptualising the questions as a 'the quest for clarity', and even when a more positive term, such as inquisitive, cautious or detail oriented, could have been used, the Manager defined her in the opposite manner. Although asking questions for clarity in a situation of uncertainly is a positive quality, the manager termed it as a negative practice of women which can be annoying and time wasting. It thus appears that positive qualities in women are easily contextualised in a negative manner. At the skills acquisition level, young

women were discriminated against and marginalised in institutions of higher learning because of the socio-culturally informed stereotypes. For instance, excellent performance of young women at university was attributed to her close association with a brilliant male classmate. It was inconceivable for some university Lecturers to believe the women can perform better than men in ICT programs. This is because of pre-misconceptions informed by the socio-culturally rooted stereotypes that define women as poor performers in science

Informants, both men and women, largely agreed that the ICT industry is rigorous and time consuming and thus placing heavy demand on the professionals. It was argued that ICT professionals must be on call 24/7. Women were described as unsuitable for work in this rigorous and demanding industry because of their triple roles as mothers, wives and providers of the household (Moser, 1993). These responsibilities directly and indirectly demand that they must leave work early enough to take care of their domestic chores and wifely duties. Men on the other hand are who are socio-culturally exempted from domestic encumbrances can have all the time to successfully engage in the rigorous and demanding work that characterizes the ICT industry.

The socio-cultural definition of a man's roles and responsibilities directly facilitates them with time and confidence to pursue careers. In contract, society encourages women to pursue careers 'inside' of the home. It indirectly does so by defining the roles of women and limiting them to the confines of the home. At the same time, it does so by not providing them with the required time-slots. So, women are confined into choosing between careers and family. Even in instances where governments have run fully-fledged programs to promote gender equality, the very structures and institutions that are to promote gender sensitiveness lead to the over burdening of women. For instance, a 60-day paid maternity leave for women and 4-day paternity leave for women indirectly pushes much of the childcare burden and responsibility to the woman, and directly exempts men. Singlehandedly shouldering the multiple burdens at

household and community level obstructs women from pursuing careers out of the home. It reproduces the 'working husband' and 'stay at home mother' stereotype.

In many cases where women are confronted with negative stereotypes that threaten their career progress, they often devise 'private' and 'individual' covert and/or overt mechanisms to confront the challenges that they encounter. While some women successfully navigate the challenges of the demanding ICT jobs, many fail to effectively do so. They are not only forced to give up on their employment, but many take on other jobs even when they are qualified undertake ICT and related work. This directly facilitates the phenomenon of the 'leaky pipeline'. In this research, it was revealed that socially constructed stereotypes and the power dynamics that underlie therein often reward women who accept the status quo— in other words exhibit inferior qualities— and men who exhibit aggressive qualities. The differential rewarding of men and women is based on the social and cultural norms as this is what it dictates. Strongly emerging from the thesis is that women are not passive observers or recipients of their oppression. Many sub-consciously or unconsciously actively participate in the oppression of fellow women and in self-censorship through 'policing gender'. Many women urge for and compel other women to comply with oppressive and gender insensitive socio-cultural stereotypes in society.

Socialisation through social structures and the policing of cultural norms and rules tame and domesticate young women right from a tender age. The 'home' is the starting site for the socialisation and domestication process. Parents play a key role in the socialisation of girls and enforce a directly opposite socialisation process for boys. In school, teachers accelerate and reinforce the exclusionary socialisation processes as they continue to send subtle messages informed by their own socialisation cycle. Because teachers and parents are part of society and have been subjected to the same stereotypes, socialisation and social construction sequence, they effortlessly engage in practices that further exclude young women. The

discriminatory messages are subtle and affect women individually and in private spaces, the law and public policies do not capture such acts. For that matter, many women are instead forced to create individual coping mechanisms. This is a burden that men do not typically have to deal with as they are not subjected to negative stereotypes that women often must overcome. The 'social space' for men that is free of social and cultural encumbrances permits men to concentrate on their rigorous and demanding ICT work with fewer or no interruptions. Here an exhibition of societal structures impeding that obstruct the progress of women is displayed yet again.

The 'Gender digital divide' originates from and has been accentuated by a combination of forces particularly the manner in which men and women are differentially constructed in societies. The socio-cultural norms, customs, beliefs and practices which construct men as superior, sophisticated, ambitious and hardworking vis-à-vis women who are constructed as inferior, simple minded, less ambitious, less hardworking and best suited for care of children and the home are among the major causes of the digital divide in Uganda. Directly related to this is that the ICT industry is constructed as masculine and therefore associated with sophistication and intellectual prowess, qualities that men are perceived to possess. On the contrary, society constructs and social structures associate women with simple mindedness, intellectual weakness and lack of ambition, socially constructed qualities that directly and indirectly infer that women can only thrive in 'ladylike' careers and unquestionably those out of the ICT industry. These contrasting socially constructed characteristics largely entitle men to fully engage with technology and disqualify women from engaging with it.

Gender dynamics in the ICT industry in Uganda are multi-layered as underlying forces behind the dynamics interact with and reinforce each other in diverse and profound ways to entitle some categories (men) and deny others (women) access to and use of technology. The

findings from this study indicate that the digital divide continues to be a problem as more men than women are admitted and therefore graduate from ICT related academic programs at Makerere and Busitema Universities. The unequal admission and graduation ratios of men and women are replicated in the ICT industry where the men constitute largest percentage of employees in MTNU and UTL when compared to women. The few women who try to engage in the ICT industry often leave at the initial stages of their career, a situation which scholars have dubbed as 'leaky pipeline' (Varma et al, 2008; Valenduc, 2011).

Differences in admission and graduation rates as well as in employment ratios in the ICT industry emanate from the 'masculinization' of technology, socio-cultural norms, customs and practices which indirectly dictate that to be a man and masculine naturally makes one compatible with technology, while to be a woman and feminine naturally makes one incompatible with technology. However, this study has showed that socially constructed differences are not real as there are instances where women ably challenge and navigate the social cultural norms, customs and practices by exercising their agency to excel in the ICT academic programs and in the industry.

Of significance to this inquiry is that a multiplex of factors directly and indirectly influence the decision of men and women to pursue a career in ICT. Some women do not fully engage in the ICT industry because they are limited by 'gender based censorship' which, in this context, means that women tend to gravitate towards courses which society constructs as feminine even when they qualify, have the interest and ability to excel in courses that are perceived to be 'masculine'. Other women are less motivated to take on ICT academic programs due to lack of role models from whom to draw inspiration. To some, the major source of inspiration and motivation is parents and these play a significant role in the career

choices made by young men and women. Moreover, the 'leaky pipeline' scenario among young women at university arises from the misconceptions about the ICT industry. For instance, the misunderstanding by some women that all engineers carry and pull heavy cables or that they have to climb up high pylons which are against the socially constructed 'ladylike' character. In the processes of choosing to pursue a career in ICT and during their career in the ICT industry some women reproduce and reinforce socially constructed stereotypes which ultimately work against them. Women reinforce negative stereotypes in a number of ways including accepting the role of 'sole caretaker of the home', choosing to specialise in academic programs that society constructs as 'easy' and therefore feminine, and pursuance of careers outside or on the periphery of the core ICT industry even after graduating with good grades form ICT degree programs.

The crosscutting issue in this study is that gender specific socio-cultural stereotypes downplay the capabilities of women while elevating the abilities of men in the ICT industry. The directly opposite labels attached to men and women frustrate the achievements of women professionals in the ICT industry. Thus, women who pursue careers in the ICT industry in Uganda often find themselves in a situation where they must disprove numerous gender specific socio-cultural perceptions which are an impediment to their recruitment and advancement in the ICT industry.

Despite the negative labelling and stereotyping, some women do not merely give in to the socially constructed stereotypes, socio-cultural norms and practices. Findings show that women are 'active agents who deploy their agency to challenge and navigate these negative and disempowering characterizations. Many have 'crafted' equally 'vicious' and full-blown individual, covert and overt, mechanisms to navigate the negative socially constructed stereotypes and perceptions to advance and build a career in the ICT industry. Some women

have managed to exercise their agency by mobilizing a rich repertoire of 'everyday forms of resistance' (Scott, 1986) including juggling between family and work (ICT career), others have resorted to ignoring the discriminatory acts that they are faced with on a day-to-day basis to get on with their work, tactfully negotiating with their managers, supervisors and clients to be allowed to perform tasks that are considered too difficult for women to accomplish is the other strategy that some women have adopted. The intention is for women to defy and redefine the stereotypical perceptions. Still, other women admitted to intentionally and cautiously trying to adopt the behavior of men as a survival tactic in the industry. The diverse forms of resistance indicate that women possess diverse abilities and that they can ably thrive in the rigorous ICT industry.

Although the categories of women described above seem to succeed in their quest to remain in the ICT industry, it is important to recall that the strategies that they employ to survive and even thrive in the ICT industry are individual and other women have simply given up their careers in ICT for family or have opted to join other professions. These women are therefore obstructed and ultimately excluded from effective participation in the ICT industry. Multiple actors at varying levels participate in the production and reproduction of the 'gender insensitive' stereotypes that simultaneously disempower women and empower men. Of significance is that production of the gender insensitive and disempowering stereotypes is not only done by men at policy making/government level and/or cultural figureheads in communities. Women too are heavily involved in the production, perpetuation and even 'policing' of gender stereotypes either cautiously, sub consciously or unconsciously. They also participate in and facilitate the processes of structuration by repeating the existing patterns through socialization and constantly reminding young women to be submissive to men.

Training of women for subordination is deliberate, organized and starts from the time of birth. From a very early age, young girls are taught that their mission is to please men. Girls are implored to be submissive to husbands and be good caretakers of the household and deliberate steps are taken to ensure that they master their duty of being assistants to the men in their lives. Further, women are socialized into believing that men are providers who can provide beyond measure but only for women who please them. Conversely, men are socialized into believing that they are the providers of food and security for women and the family, and that they are excused from all household affairs. Men are also made aware of the power that they possess over women at an early age. The varying socialization processes means that women are trained to shoulder the domestic burden alone. So, building a career for many Ugandan women is a luxury preserved for men and a few exceptional women. Structures dictate that the burden of childcare lies solely on women. Men can help as and when they want to but it is not mandatory. Accordingly, men on the other hand are encouraged, facilitated and guaranteed by society structures and rules to pursue a career outside of the home uninterrupted as they are exempted from doing housework.

9.1. Contribution to knowledge

9.1.1. ICTs as an opportunity for structuration

From the findings of this study, it can be said that ICTs present an opportunity for structuration to close the gender gap in many developing countries including Uganda. ICTs present an opportunity for re-socialisation and restructuring of gender relations. When interacting with ICTs, women and men alike are presented with an opportunity to contest and or renegotiate their positions and roles in the industry and indeed in the wider society. Yet, ICTs also present the opportunity for men and women to cement their current respective positions with women occupying a marginal position and men taking on a privileged position.

Whenever men and women in the ICT industry interact with ICTs, they are faced with two choices. First, to interact with ICTs in a way that society dictates adhering to the expectations of society. Second, to interact with technology in innovative ways without consideration for the expectation of society. Cameron (1997) argues that gender is regulated and policed by rather rigid social norms, but this does not mean that men and women can only be socialised by programmed by early socialisation to repeat forever the appropriate gendered behaviour. Women are like conscious agents who may engage in acts of aggression, subversion and resistance. As active producers, rather than passive producers of gendered behaviour, men and women may use their awareness of gendered meanings, meaning agency, that attach to ways of speaking and acting to produce a variety of effects.

This dissertation has contributed to knowledge by providing the basis for a deeper understanding of the gender divide in the ICT industry in Uganda by disentangling admission, graduation and transition patterns from university to work and expanding the notion of a gender digital divide. It also examines the factors that influence the choice of an ICT career, stereotypes that facilitate the marginalisation of women and the response mechanisms that some women adopt to challenge the stereotypes. In so doing, the thesis contributes to knowledge in five diverse ways. First, the thesis provides insights into the extent and nature of the gender digital divide in Uganda particularly in ICT employment. Research question 1 seeks to understand the admission and graduation patterns for men and women in undergraduate ICT related programs at Makerere and Busitema Universities in Uganda.

Research question 2 set out to understand the transition patterns of ICT graduates of Makerere and Busitema Universities as they move from university into the ICT industry. So,

both research questions are plausibly answered in the thesis by admission and graduation patterns and subsequent progression of men and women from university to work. In this way, the study establishes a transition pattern followed by men and women in their career path in ICT. Although this kind of gender disaggregated data is essential for policy formulation, in the case of Uganda, it is not readily available in organised forms that policy makers can easily reference. The findings which indicate that women are underrepresented in the ICT industry of Uganda can be important for informing policies that focus on the provision of universal access to ICTs as well as those that promote gender equality specifically at work. However, a wider and more comprehensive study that includes more universities and employers is necessary because this study was limited in scope as further explained in the 'limitations' section. Specifically, the involvement of women in small, medium and micro ICT enterprises is not discussed in this thesis.

Secondly, this study has provided a nuanced understanding of how the rooted historical and traditional socio-cultural stereotypes systematically and discreetly continue to exclude women from the ICT industry in Uganda and perhaps other developing countries specifically on the African continent even in the contemporary period. It explains how through the processes of social construction, women in Uganda have been constructed as modest and weak both intellectually and physically throughout history. Men on the other hand have been constructed as sophisticated, intellectually sound and physically strong. The implication of this 'skewed' construction process for the ICT industry is that men are perceived as naturally well suited for the rigors of the demanding ICT industry which requires strong intellectual abilities, physical strength and sophistication, qualities that men possess by nature but women lack. These socially constructed perceptions are maintained through the processes of structuration by which constructed perceptions are reproduced. By exploring socially constructed stereotypes, research questions 3 and 4 are adequately addressed. Thus, the

factors that influence women and men to choose a career in the ICT industry and the socio-cultural stereotypes and perceptions that facilitate and/or obstruct the progress of men and women in the ICT industry in Uganda are examined.

Third, this thesis contributes towards research that shows the masculinisation of science and technology and ICT. Findings from this study indicate that ICT in Uganda is still largely considered a domain for men. Women are viewed as less suited for the rigors of what is often referred to as a 24/7 industry. The widespread but often unspoken perception is that the reproductive role of women and their role as wives are the most vital role that women can play. The finding that ICT is perceived as a territory for men provides a basis for the formulation of policies that aim to increase the participation of women in science and technology fields. This study also clearly shows how gender is policed in Uganda and in the ICT industry.

Fourth, by merging ICT and gender, this study contributes to a dimension of the digital divide which has not received substantial attention specifically in Uganda. Most of the studies that have been conducted in Uganda focus on one dimension, that is, either ICT or gender but not both (Cleaver, 2002, Ssewanyana, 2007). Further, other studies that have been undertaken focus on one aspect of ICT, such as, access and end use (Madanda et al, 2007, Diga, 2007) either in rural or urban areas but not ICT work or employment. In addition, some focus on ICT education but not work (Wells and Wells, 2007). This study has focused on ICT education (ICT skills acquisition), ICT employment and gender in both rural (Busitema University) and urban (Makerere University) settings. In this manner, it provides useful insights into the gender divide that exists in the human resource of ICT industry, achieving the overall objective of the study to examine gender related dynamics among men and women graduates of ICT. By achieving the four goals above, this study has contributed to

existing debates and discourses around gender, ICT, STEM education, education in general and the ICT labor market.

9.2. Policy recommendations and other implications

This study has established that women continue to be discriminated and marginalised in Uganda, particularly in the ICT industry even though affirmative action policies and national gender equality campaigns have been implemented for over 20 years. The findings of this study indicate that discrimination majorly stems from traditional socio-cultural beliefs, and historically informed practices which have elevated men over women. In addition, data from the study revealed that some parents still hold traditional views of women and discourage their daughters from pursuing careers in ICT. Data from interviews and Focus Group Discussions revealed that women who manage to enter the industry feel that they lack the confidence because there are no women that they can look up to. Study findings have shown that women at university particularly find programming intimidating because of the few numbers of women they see teaching or doing it. Research findings indicate that companies operate without any gender considerations and conduct business with a claim of gender neutrality. Evidence from interviews and Focus Group Discussions points to the fact that women ICT professionals are over- burdened at home particularly with child care. The men on the other hand do not seem to understand that they can help women with child care.

Affirmative action and gender equity campaigns in Uganda seem to be uncoordinated with no systematic procedure followed. Interventions to remedy the underrepresentation of women are often made at advanced rather than the initial stages of education. For instance, efforts to increase the number of women in science and other fields target students at the point of entry into the university. The policy is general to all women in all programs including arts and humanities programs, with no special consideration for women in science technology and

mathematics where women are grossly under represented. Although the government has designed programs to introduce computer studies in secondary schools, these initiatives are general with no specific focus on young women.

Therefore, the government approach should be more systematic, aggressive and specifically focused on increasing the numbers of women in ICT education and work. In addition, national interventions should be made early rather than later. This means that the specific targeted policies should focus on attracting young women to the ICT industry right from primary schools and not just at secondary and university level. After recruitment, activities to continue guiding and encouraging young women to stay in the industry should be designed. This means that the government should come up with specific policies that focus on educating and demystifying that what the local populace and women in Uganda perceive as 'real' differences between men and women are mere social constructs that do not reflect the 'reality'.

The emphasis here should be that men and women have the same abilities, can perform the same tasks and can therefore achieve equally at any given task. Government needs to carry out sensitization campaigns parents and caretakers, discouraging them from telling young girls that they are not well suited for science and technology fields. There is need for girls to have role models who are women. Therefore, deliberate efforts to make successful women in ICT visible to young women should be made as this will inspire and motivate them to pursue a career in ICT. The government should require government and private companies to have policies that contribute to national policies that are aimed at achieving gender parity. It is important for managers of ICT companies to make themselves conscious of the unconscious biases that often permeate industrial settings. Finally, there is need for government to re-evaluate policies that send subtle discriminatory messages. For instance, there should be efforts to revise the employment act and increase paternity leave days for men. This will send

a signal that men are expected to participate in taking care of their families in the home and that it is okay for them to do so, especially the younger generation. As the employment law stands today, women are entitled to 90 days of maternity leave while the men receive only 4 days.

9.3. Limitations of the Study

This study is limited in many ways: One, it focuses on only two universities and two telecommunication companies, implying that the findings only apply to these specific case study universities and companies. Two, data on admission and graduation was limited to only 5 years and five academic programs in the case of Makerere University, and 5 years and one academic program in the case of Busitema University. This indicates that this information provides only a partial picture of the gender digital divide in the ICT industry in Uganda. Therefore, a nationwide study that is not only limited to telecommunication companies and universities in needed to establish the aggregate participation of women in the ICT industry over a longer period. This will provide a broader understanding of the gender digital divide in the country for appropriate policy formulation to tackle the growing vice of exclusion and marginalisation of women in the industry. Further, qualitative methods were employed to collect, analyze and present data from this study. However, the methods were unable to quantify the extent, trends and severity of the issues described in this study. In this light, quasi statistics were utilized to illuminate the depth, extent and or severity of issues discussed.

9.4 Conclusion

The gender related dynamics evident in the ICT industry are a direct reflection of what transpires in the wider Ugandan society in gender terms. Gender related dynamics are similar

in the home, school and at work where women have access to opportunities but lack enough freedom to fully utilise the opportunities. Thus, as the relationship between men and women in the Ugandan society stands today and indeed in the ICT industry, women are given access to opportunities work in the ICT industry but the freedom to explore these opportunities is grossly limited in many ways. The constraints to the freedom of women to explore opportunities lie in the domestication and feminisation of women by society on one hand and the masculinisation of men and work outside the home and particularly, work in the science and technology sector. Here, the definition of feminine and masculine is key as femininity is made synonymous with simplicity, weakness and masculinity is made synonymous with sophistication, intelligence and power.

While women are given the opportunity to freely go out of the home and find jobs, the weight which they shoulder as they undertake various forms of household chores including cooking and childcare limits the time that they can spend at work and the greatly reduces the effort and concentration with which they work. In school, girls are granted the opportunity to study the same subjects and in the same schools as boys. However, subtle messages with 'instructions' of the subjects that best suit the "feminine" nature of the socially acceptable girl and woman are variously disseminated. These messages discreetly and indirectly but quite effectively limit the freedom of girls to freely choose a career. The indirect messages either from teachers, parents or peers (both men and women), dictate the choices made by young women and often, these choices are not in science and technology. Usually, large pools of young women choose arts and humanities subjects over science and technology ones. This is because science and technology is perceived by society as masculine. At work, not only in the ICT industry but in other professions as well, equally qualified men and women seem to be offered equal access. However, some tasks are reserved for men and others for women only because of the unwritten societal expectations that limit the freedom of women to

perform some tasks that are believed to be masculine and demand intellectual prowess and time, qualities that women are believed to be lacking. The men in turn, are exempted from perceived simple and consequently feminized tasks which are then reserved for the women in the industry.

In many communities in Uganda, women are deliberately socialized, trained and groomed in subtle ways to assume a subordinate position to men in every sphere of life. The initial socialization processes limit the choices of women and trains women to believe that they are different from and inferior to men in all aspects, be it social, economic or political. Therefore, the 'invisible hand' of socialization which makes women subordinates of men is at the core of the fabric of society. For many women, it is an invisible but real barrier to the attainment of diverse opportunities including those in the ICT industry. Socially constructed stereotypes and the power dynamics that lie therein often reward women who accept the status quo— in other words exhibit inferior qualities— and men who exhibit aggressive qualities. Women who accept an inferior position are praised as real strong African women and those who challenge the inferior position that most women are relegated to are referred to as rebellious and lacking in the true qualities of a 'true African woman'— simple, humble, submissive long suffering, sacrificial, family oriented. This means that a true African woman should never be seen to aspire to things that are not simple like technology and science. That a true African woman should be humble and submissive, always ready to take instruction from her husband who takes care of her. That true African women should be able to shoulder the burden of having many children and taking care of them without much help from her husband. That she should give up the pursuit of her dreams and knowledge and neglect her talents because her most significant and God given role is to be a mother and a wife. The differential rewarding of men and women through gender policing ensures that both men and women observe their socially engineered expected societal roles.

While it is true that ICTs have the potential to spur many social changes, this can only happen when appropriate and gender sensitive policies and programs are appropriately formulated and applied. It is often argued that for ICTs lead to development, there should be suitable pre-existing conditions like appropriate infrastructure and favourable policies (Toyama, 2011). In this case, conditions that facilitate equal access to and freedom to use ICT and related opportunities by men and women have to be instituted in order to realise the desired changes and development. In other words, technology only serves to amplify and/or reinforce the already existing conditions—equality or inequality—rather than change or ameliorate them.

Toyama (2011) observes that ICTs do not provide a substitute for missing institutional capacity but serve to amplify the existing gender structures in the Ugandan society and identifies the consequences of failure to align institutional capacity and human intent and the expectation that ICTs are a panacea to development challenges. The first consequence is that technology cannot substitute the missing institutional capacity and human intent. Second, technology sometime amplifies existing inequalities especially with the paucity of gender-tailored policies and frameworks. Third, technology projects in developing countries are most successful when they build on and amplify already successful development efforts as opposed to when they seek to fix, provide or substitute for broken or missing institutional elements. Juxtaposed to this study, ICTs in Uganda cannot fix the gender divide which is rooted in the socio-cultural norms and practices, daily socially contracted language which looks down on women as opposed to men, and societal rules. In this case, it seems the uptake of technology between women and men is merely amplifying the already existing gender divide.

In addition, Toyama (2011) notes that the effective use of technology requires a foundation of competent and 'well-intentioned' people. The result is that appropriate technology amplifies their capacity and leads to significant achievements. On the other hand, Toyama (2011) notes

that in circumstances that are characterized by negative human intent, such as corrupt government bureaucrats, minimal capacity and denial of sections of society to basic education, no amount of technology will lead to positive change. This aptly fits in the findings of this study in that introduction and application of technology in a society where perceptions of the local people are still informed by patriarchy and policies to promote gender equality are lacking or not well implemented, women will continue to be subordinate to men and subsequently excluded from opportunities that ICTs present. This will continue to manifest in the low population of women in the industry as users and consequently as producers of ICTs.

Hence, while ICTs are peddled as a strong vehicle for development especially in developing countries including in Uganda — where it is often claimed that ICTs are a panacea for eliminating poor social service delivery, enhancing health service delivery and education, spurring business opportunities, promoting good governance and ensuring prosperity for all — evidence from this research indicates that ICTs can provide opportunities and prosperity to some categories of people, in the case of this study, men and not others, in the case of this study, women. This means that women will continue to occupy peripheral and marginal positions in the ICT industry in Uganda for as long as they continue to occupy marginal positions in society in general.

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APPENDIX: Research Instruments

Formulation of this research instrument has been guided by the specific research questions that this research intends to answer. The specific research questions include: (1) what are the numbers and proportions of men and women students at enrollment and graduates in Uganda? (2) What are the transition patterns of men and women graduates as they move from university into the work environment? (3) What are the gender-related societal perceptions about the ICT job market in Uganda? (4) Do gender dynamics facilitate or constrain transition into the ICT career field in Uganda? And (5) Does the participation of women in the ICT career in Uganda transcend typing and email to the level of computer programmers, engineers, systems analysts, and designers, managers and policy makers?

Appendix 1: Interview Guides

Company Managers semi structured interview guide

- Do you enforce any gender related policies? For example, the Maternity Protection International Labour Organization (ILO) Convention. [98]
- How often have you advertised positions in this company in the past year? Which positions have been advertised?
- Did you receive as many applications from women graduates as men? And in general?
- Did women apply for high level jobs?
- Did you find that graduates possess the skills that the company requires? What is missing?

[98] C183 - Maternity Protection Convention, 2000 (No. 183)
Convention concerning the revision of the Maternity Protection Convention (Revised), 1952 (Entry into force: 07 Feb 2002) Adoption: Geneva, 88th ILC session (15 Jun 2000) - Status: Up-to-date instrument (Technical Convention).

- Did you find the women as well qualified as men? Did you find the women to have the same competencies/skills as men?
- How do men react to women being their managers or supervisors?
- Has there been an increase in the number of women engaged in managerial high level skill jobs as defined by the company? Why do you say that?
- From your own experience, does having a gender balanced team make any difference to productivity or achievement of company goals? Why do you say that?
- Could you describe the current gender balance in this company and in the Ugandan ICT field in general?
- Why do you think the gender balance situation is the way it is?
- Are there any unique challenges do you encounter as you work with women as compared with men? And men compared to women?
- What issues need to be considered when you work with women compared to men? And with men compared to women?
- In your opinion, which future do women have a in this field?
- What do you think will be the next important develops in ICT internationally? And in Uganda?
- Do you carry out any training on gender mainstreaming?

Dean/Head of Department (HOD) /Registrar/ Lecturer Semi structured interview guide

- This year, did you receive as many applications from women as men? And in general?
- What do you think influences the gender relations/gender proportions among students?
- Have the enforced gender related policies improved the women's participation trends?
- What can be done better to balance out the gender proportions?
- Are there any unique challenges do you encounter as you work with women as compared with men? And men compared to women?
- What issues need to be considered when you work with women compared to men? And with men compared to women?
- Could you describe the current gender balance in this company and in the Ugandan ICT field in general?
- In your opinion, is this a field where women can thrive?
- In your opinion, which future do women have a in this field?
- What do you think will be the next important developments in ICT internationally? And in Uganda?
- Are there any actions aimed at supporting work life balance provided for in your institution policy?
- Do you carry out any training on gender main streaming?
- Have you ever done a gender sensitive review of data on student attainment?

Government officials' semi structured interview guide:

- What kind of reception have gender policies received?

- Are there any new developments in the gender and ICT policy arena?
- Are they necessary to improve the gender situation?
- What challenges do you face in making and implementing these policies?
- What can be done differently to make policies more effective?
- In your opinion, is this a field where women can thrive?
- In your opinion, which future do women have a in this field?
- What do you think will be the next important developments in ICT internationally?
- And in Uganda?
- Could you describe the current gender balance in this company and in the Ugandan ICT field in general?
- Are there any actions aimed at supporting work life balance provided for in your national policy gender equality in education?
- Do you carry out any training on gender mainstreaming?

Appendix 2: Focus Group Discussion Guides
Students focus group discussion guide for women

- Background information on the participants: age, grades achieved at university, major courses taken, additional training outside the degree, work experience, perhaps mother's highest education, employment status of mother and father, and some indicator of wealth, neighbourhood in which they live, school attended
- When did you first learn about ICTs and ICT course at this University?
- Why did you choose to study computer engineering?
- Do you have a role model in the ICT work sector? Definition of role model: A person to be looked as an example to be imitated
- Is your role model a man or a woman?
- Is your role model Ugandan?
- Is it important for to have a role model who is a woman? Why?
- Do you think ICTs is a field where men fit well? Why?
- Do you think ICTs is a field where women fit well? Why?
- Describe the proportion of males to women in your class?
- Why do you think the proportion of men to women is the way it is?
- What did your mother think of your choice of course?
- What did your father think of your choice of course?
- What do your women friends think of your choice of study program?
- What do your male friends think of your choice of study program?
- Where do you hope to work when you graduate?
- What type of job do you hope to get?
- Do you expect to reach a position as a manager/designer/executive?
- What challenges have you encountered in university?
- What challenges did you encounter during the application process?
- What do you wish could change in class, admissions?

- Do lecturers treat you and the males the same? For example, when assigning leadership roles.
- Should women be awarded extra points in order to assist them to qualify for admission in ICT courses? Why?

Students focus group discussion guide for men

- Background information on the participants: age, grades achieved at university, major courses taken, additional training outside the degree, work experience, perhaps mother,s highest education, employment status of mother and father, and some indicator of wealth, neighbourhood in which they live, school attended
- When did you first learn about ICTs and ICT course at this University?
- Why did you choose to study computer engineering?
- Do you have a role model in the ICT work sector? Definition of role model: A person to be looked as an example to be imitated
- Is your role model women or men?
- Is your role model Ugandan?
- Is having a role model who is a woman important to you? Why?
- Do you think ICTs is a field where males fit well? Why?
- Do you think ICTs is a field where women fit well? Why?
- Describe the proportion of males to women in your class?
- Why do you think the proportion of men to women is the way it is?
- What did your mother think of your choice of course?
- What did your father think of your choice of course?
- What do your women friends think of your choice of study program?
- What do your male friends think of your choice of study program?
- Where do you hope to work when you graduate?
- What type of job do you hope to get?
- Do you expect to reach a position as a manager/designer/executive?
- What challenges have you encountered in university?
- What challenges did you encounter during the application process?
- What do you wish could change in class, admissions?
- Do lecturers treat you and the males the same? For example, when assigning leadership roles.
- Should women be awarded extra points in order to assist them to qualify for admission in ICT courses? (Affirmative action). Why?

Out of work graduates semi structured interview guide for men and women

- Why are you out of work?
- How long have you been out of work?
- What challenges are you facing in your search?
- Do you find that you have acquired the skills to perform the duties of advertised positions?
- Do you think your gender affected your chances of landing a job in the past?

- What kind of jobs are you looking for?
- What did your parents think of your choice of course?
- What do your friends think of your choice of study program?
- What was your dream job when you were still in university?
- Do you have a role model in the ICT work sector? Definition of role model: A person to be looked as an example to be imitated
- Is your role model a man or a woman?
- Is your role model Ugandan?
- Is having a role model who is a woman important to you? Why?
- Do you think ICTs is a field where men fit well? Why?
- Do you think ICTs is a field where women fit well? Why?

Appendix 3: All informants interview questions

Question 1: These will specifically solicit the perceptions of informants on gender

Gender

A) Woman
B) Man

Question 2: Which kind of family arrangement do you think is better for society?

A). One where one of the father works to provide for the family and the mother takes care of the house and children.

B). One where the two parents both work for money and both take care of the house and children.

C). No difference

Question 3: If you were taking a new job and had your choice of a boss (or supervisor), would you prefer to work for a man or a woman?

A). Man

B). Woman

C). No difference

Question 4: Do you think, in this country, society generally favours...

A). Men and women equally

B). Men over women

C). Women over men

Question 5: In the past five years, do you think that the overall position of women compared to men in this country has...

A). Improved

B). Worsened

C). Remained about the same

Question 6: Do you think that women in this country SHOULD have equal job opportunities with men, or not?

A). Yes, should have equal job opportunities

B). No, should not have

C). No difference

Question 7: Do you think this country would be governed better or governed worse if more women were in political office?

A). Better

B). Worse

C). No difference

Question 8: Which job category best describes you?

A) Manager

B) Customer care

C) Computer programming

Question 9: Taking into consideration men's and women's personalities, interests and abilities, 'intelligent' applies more to...

A). Men

B). Women

C). No difference

Question 10: Does gender balance matter to you?