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Article

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THE EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON GENDER EQUALITY AT A SELECTED UNIVERSITY IN SOUTH AFRICA

In today's technological environment, it is essential to make technological advancements. This requires both men and women to have equal information, communication, and technology opportunities. Various efforts have been made to address the issue of gender equality in the workplace. It can be noted that even though equal opportunities between men and women may exist, discrimination against women is still immanent in the workplace, for example, gender bias, inequalities, and underrepresentation. Thus, the object of research is the role of information and communication technologies (ICTs) on gender equality in the workplace in today's digital age.

An empirical investigation was carried out at a selected higher education institution in South Africa. Purposive sampling was used, and 19 participants were interviewed. Mixed methods were used for this study, with the qualitative findings used in the preliminary discussions. The collected data were transcribed, coded, and analyzed using Microsoft Excel and NVIVO.

The study's findings show that ICTs play an important role in promoting gender equality. ICTs enable women to be empowered, educated, independent, and autonomous, enabling them to acquire top positions as men in the workplace.

This study adds to the body of knowledge on how ICTs have been proven to be a valuable tool in promoting gender equality by giving a voice to the voiceless and empowering women. This study also informs stakeholders about how women bring diversity to the workplace and why it is essential to give them equal opportunities with men.

Keywords: *gender discrimination, gender inequality, gender glass ceiling, information and communication technologies (ICTs), gender digital divide.*

1. Introduction

In today's technological environment, it is essential to know how ICTs (Information Communication Technologies) can be utilized to promote gender equality; hence, more research is necessary to understand this phenomenon better. Due to historical imbalances, women worldwide are clamoring for equal rights in communities in the business environment [1]. It is common knowledge and experience that until recently, women were not afforded an equal platform in the home, communities, and the workplace [1]. However, there have been interventions in educating women through ICTs as a way of promoting gender equality and closing the gender digital divide [1].

Religious and cultural norms, among other factors, contribute significantly to discrimination against women, widening the digital divide and causing inequalities [2]. This century has seen interventions and several laws being passed to protect women against discrimination [3], but things are still not well regarding equal opportunities, access, and use of digital technologies between men and women [4–7].

It can be argued that women have historically been under-represented and continue to be under-represented in today's digital era [8]. However, if to look at the trend in positions held by women in organizations, it is possible to see that the number of women attaining positions in governance positions is increasing [9]. In the past, women held secretarial roles, but due to female empowerment and emancipation, they are now attaining top management positions [9]. Even though the change in the representation of women is significant, the gender digital divide is still visible [9, 10].

Scholars, such as [11], state that the gender digital divide is highly prevalent due to gender inequality. Although it will take time, even decades, injustices against women must be eliminated from society [2]. Several factors deny women equal opportunities in the workplace, such as gender bias, gender discrimination, and stereotyping [2]. According to [12], gender inequality is a problem that has existed for centuries and is worth exploring to find ways to eliminate this injustice from society. Authors of [13, 14] found that workplace discrimination against women in various countries was rife, exhibiting gender bias, unequal opportunities, and underrepresentation.

A few scholars explored the role of ICTs in promoting gender equality and found that rapid digital transformation enhances women's positions in the workplace, closing the gender gap and inequalities [9, 11, 15]. However, authors

of [2] say there could be concerns about job quality since the job effects of digitalization depend on skills. In studies [16] found that using ICTs is mainly determined by the level of skills a person has and government policies. It is also found that the number of information technology specialists for men is higher than that of women in most countries.

Furthermore, authors of [2] suggested that ICTs can improve women's positions and status. Besides, authors of [2] researched the same topic and found no evidence that individual and collective women's voices through ICTs can influence policy decisions. The lack of conclusive findings has motivated this study and has led to this burning question. «*What is the role of ICTs in promoting gender equality at the workplace in today's digital age?*».

Thus, *the aim of this research* is to evaluate the role of ICTs on gender equality in the workplace in today's digital age.

2. Materials and Methods

2.1. Theoretical framework

2.1.1. The technology acceptance model. This theory explains that for technology to be accepted, it must be helpful and easy to use. Most people lag behind technological innovations due to ignorance, fear of change, and illiteracy [5]. It is a commonly used tool to describe an individual's acceptance and use of information systems [2]. Davis introduced the TAM in 1983 and stated that the acceptance of an individual's information systems is determined by perceived use (PU) and perceived ease of use (PEOU) [17]. Several factors influence the adoption of information technology, such as social influence, effort expectancy, availability and cost, performance expectancy, individual beliefs, job relevance, and output quality [17]. One category of ICTs that are easy to use and proving to be very useful is social networking platforms that have gained popularity worldwide, such as WhatsApp, Facebook, Instagram, Twitter, Skype, and LinkedIn. TAM can be relevant in explaining factors that can influence the use of ICTs in promoting gender equality [17]. The use of ICTs depends on external and internal variables, which then influence the perceived ease of use and usefulness of these information systems [2], cited in [17].

Perceived use and perceived ease of use of information systems are affected by an individual's attitude, which is influenced by the acceptance of ICTs and is determined by the actual use of ICTs [17]. Other models, such as TAM2, the Theory of Planned Behavior, and the Unified Theory of Acceptance and Use of Technology, were all designed based on the Davis model [18].

According to [17], variables used in the Technology Acceptance Model include the advantage of innovation, innovation challenges, innovation results, innovation experiments, and innovation boost of the social system or image. Perceived Usefulness and Perceived Ease of Use of information technology affect people's attitudes. If it is damaging, people will have a negative attitude, and if it is positive, they will have a positive attitude toward using ICTs. The attitude will then influence the behavioral intention to use IT, whether to accept it or not. The actual use of information technologies and their innovations depends on an individual's acceptance; hence it is essential to know what ICTs are, how to use them, and what benefits they possess. If people accept ICTs, they can use them as a tool to promote gender equality.

An individual's or a user's perception can change anytime, and this was the main limitation of the Technology Acceptance Model. However, it is still used to measure the acceptance and use of information systems [2]. Women may accept and use technologies that empower them, such as ICTs, in eliminating the digital divide and changing norms that undermine women in the workplace and society. ICTs can be helpful in knowledge acquisition and sharing, making job tasks easier, increasing job flexibility, improving communication, empowering women, and reducing the gender gap at work.

2.1.2. The equity theory. This theory elucidates insight into factors surrounding gender discrimination and inequality. Adam's equity theory can be used to assess whether there is just and fair treatment of employees in the workplace [2]. Adam's equity theory states that there should be a balance between hard work, experience, skills level, distinctive competencies, engagement, acceptance and motivation and rewards, salary, benefits, recognition, and promotion [2]. It can be argued that if inputs are more significant than outputs, people feel dissatisfied and de-motivated [19]. The central argument is that women are underrepresented in the workplace when compared to men despite their efforts, competencies, skills level, and experience [2]. The Equity Theory applies in any social situation where exchange occurs and is applicable as a tool for evaluating gender equality and discrimination [20]. In terms of promotion and recognition, the Equity Theory is used to evaluate the inputs given by women versus those of men against their outputs. The main question is, are women still underrepresented in executive management positions because they are not qualified enough, do not have enough working experience, or lack distinctive competencies, or is it due to gender inequality? [20]. Those women who have made it to the top, even though there are a few as compared to men – how did they get there? Is it because there was a balance between their inputs (hard work, experience, skills level, distinctive competencies, engagement, and acceptance) and their outputs (benefits, recognition, and promotion)? Or are they among some feminists who had to fight for their rights and manage to break through? These questions surround the arguments on the gender digital divide, inequality, and discrimination in terms of equity.

The Equity Theory states that people should be rewarded according to how they have worked [19], «A fair day's pay for a fair day's work», whether it is a man or a woman. It is argued that gender pay gaps exist in the workplace. Masculine skills are more valued than feminine skills, and gender pay gaps affect the perceptions of equity and equality in the workplace [2].

2.1.3. Feminist theory. The feminist theory tries to explain the disparity between men and women in the workplace. Some authors [21] believe that men are deemed superior to women hence the different rewards despite putting in the same effort. Some people believe that some positions should be left for men, such as the army commander and officer [22]. This is because of the stereotype that most women lack the requisite stamina to occupy certain positions due to their nature and physique. The Feminist Theory started from the masculine economy, dominated by men who viewed women as unequal [22]. It looks at gender

roles and gender nature from the point of view of society, where there is the belief that women are defined by their nature rather than by their societal status [2, 22] and are viewed as housekeepers, caregivers and mothers who were generally inferior to men [21].

2.1.4. Critical information systems theory. The Critical Information Systems Theory explains the relationship between ICTs and gender relationships [23]. The critical theory seeks to expose ideological and cultural forces that facilitate gender domination and are barriers to true freedom. It provokes thinking about practices to change these power relations. It has a leaning towards critiquing and changing society as a whole. This theory mainly focuses on power relations. It has been used to understand women's issues in information technology (IT) related to their retention, recruitment and selection in the IT field [12]. This theory is used to show the changes and transformations that have been taking place in the business environment (women empowerment and gender equality). Using the Critical Information Systems Theory, it is evident that a digital divide is still prevalent between men and women despite the efforts to close the gap, and the number of men using ICTs is higher than that of women [12].

2.2. Literature review

2.2.1. Norms and beliefs. It can be argued that there is a disparity between men and women in the workplace due to values, norms, and beliefs [1], which can cause differences in their acceptance of technologies. The gender differences debate about technology acceptance began in the 1980s and is still persistent even today [8]. Due to the increased use of technology, modernization and globalization, there have been essential transformations in society and the central concept of gender inequality [24].

2.2.2. Social media platforms. Media has a significant influence on perceptions of gender, gender equality, and gender bias and can help close the gender digital divide. Social networking platforms such as LinkedIn, Skype, Instagram, YouTube, WhatsApp, and Twitter allow global communication on issues to do with gender, namely stereotyping and unfair treatment of women through access to and sharing of information. The media's images of women also reflect cultural stereotypes, creating an unrealistic view of women. Using the male voice-over in the media strengthens the cultural view that men have authority over women [10].

Even though social media has influenced gender inequality issues in the past years, it can help close the gender digital divide. This has led to questions like *«Can social media effectively include women's voices in decision-making processes?»* Social media is seen as a powerful driver by advocating for women's rights and gender issues to the broader public's attention and advocating for gender equality [10]. Social media positively influences the global access and sharing of information and data [25].

2.2.3. Innovation. Author of [26] showed that ICTs could enable women to obtain and improve their skills, which can be achieved through innovation. Women can be educated through distance learning using ICTs such as computers, smartphones, and tablets with Wi-Fi. ICTs and new technologies attract the younger generation in the 21st Century; hence, young girls and women can access and utilize them

to enhance themselves. He also found that ICTs allow women to discover, share and spread information with the potential for women empowerment via capacity-building, employment, and skill development [26]. Author of [27] states that ICTs can break socio-cultural barriers, thereby abolishing gender bias. In agreement [26], citing [28], argues that ICTs enable socially discriminated women to participate in the economy, reducing gender stereotyping and perceptual bias about gender. Women struggled with confidence because they always believed they were inferior to men until recently [28]. This is gradually changing due to ICTs, enabling women to gain more confidence, especially on social media platforms. ICTs have led to cognitive and material changes [26]. Women are no longer ignored in decision-making processes in most countries, and their societal awareness has been improving [26]. Women are gaining power and are now independent through ICTs [27]. Based on empirical studies, ICTs can be used to promote gender equality. However, it can be argued that gender inequality is still rife in the workplace and that there are strategies to promote gender equality.

People with traditional gender attitudes are less likely to see unfairness in the division of labor in the workplace [21]. Due to the global changes in the business environment, organizations should be more concerned about gender inequality in the workplace. They should put policies to integrate work and life in an equitable way for both men and women to avoid gender bias in the workplace because all employees should be treated fairly despite their gender to bridge the gender digital divide [29]. Individual inputs should balance with outputs. According to [26], advancement is based on merit, whether man or woman.

2.2.4. Gender glass ceiling. In 1986, the gender glass ceiling was described by the Wall Street Journal as an invisible barrier to women's career advancement [30]. Authors of [31] found that most women experience challenges in the advancement of their careers regardless of their job qualifications and experience. Even though the number of women in employment is increasing and those attaining top positions, the numbers are relatively low compared to men [7, 32]. According to [26], most women are surpassed in promotions based on stereotypes that they cannot lead men. The glass ceiling is not only about gender but also about the woman herself. Other industries, such as services and media, are gender-balanced, but mainly men [12] hold the top positions.

2.3. Methods of research. Research methods (qualitative or quantitative) depend on the study's primary purpose [12]. If the research is explanatory, quantitative studies will be appropriate. However, if the research is exploratory, qualitative studies will be suitable, and if the research is descriptive, mixed methods will be suitable [6, 33]. This research is exploratory to determine how ICTs can be used to promote gender equality in the workplace, so a qualitative study is the most suitable. Furthermore, it is based on social constructivism on how ICTs can be used to promote gender equality.

Research paradigms are a combination of beliefs of ontology and epistemology between researchers about how problems can be addressed, for example, critical, positivist and constructivist [34]. This study's research paradigm is critical because it is qualitative research concerned with social enquiry [12, 34]. This study's ontological position is

historical realism, which states that reality has been influenced by ethical and gender values, society, the economy, and the political and cultural environment [35]. Critical methods are suitable for this paradigm: journals, open-ended questionnaires, observations and interviews [36]. It is the most suitable paradigm for this study, which seeks to explore the role of ICTs in promoting gender equality. This research is about gender equality which is a sensitive topic, and it stereotypes participants as males and females; other participants may not be comfortable dressing the issue that'. The researchers had to apply ethical principles to prevent harm to participants.

The case study design was chosen as it was found appropriate to investigate the prevalence of gender inequalities at a selected academic institution. Furthermore, the study required knowledge of the possible use of ICTs to promote gender equality, which solicited opinions and feelings suitable for case study research that is qualitative and exploratory in most cases. An inductive approach was used to address the primary purpose of the study.

2.3.1. Population. For this research, the population is the academic and non-academic staff (Chancellor, deputy Chancellor, Dean, Deputy Dean, Program Director, Head of Department, Professor, Lecturer, Research Assistant, Administrative assistant, and Senior secretary) at a university. According to [34], a population is a set of all members the researchers wants to study. Nineteen participants were used in this study based on literature from previous scholars [36]. Both men and women were chosen to provide a balanced and not one-sided view.

2.3.2. Sampling. Judgemental sampling is also known as purposive sampling [37]. Research participants are chosen with a purpose in the researchers' mind [1, 6, 12]. The researchers believe that other subjects are more suited for the research than others [6, 38, 39]. This method was chosen as the fit one to show how ICTs can promote gender equality in the workplace. All sampling methods are essential in research, and the researchers need to choose the most appropriate technique for his/her study. In this study, the researchers used non-probability sampling techniques. The population was divided into two main groups, namely, academic and non-academic staff, and two subgroups' men and women. The subgroups were further divided into ordinary employees, middle management, and top management. Participants were chosen in all subgroups, with both men and women being chosen as sources of data.

2.3.3. Data collection instruments. Self-completion questionnaires were not deemed necessary because the study is sensitive. The researchers opted to conduct interviews to cover the whole spectrum of workers at the university. Interviews refer to verbal communication between both parties, which can be structured or unstructured [34]. The researchers used face-to-face interviews. Direct interviews gave quick responses and better understanding. The interview guide was split into sections, Section A, Section B and Section C, as informed below.

Section A requested biographical information and perceived ease of use of ICT and included questions on using ICTs in the workplace.

Section B requested information about the assessment of gender diversity and equality and included questions on employee diversity and representation in the workplace regarding promotion, recruitment, and other workplace issues.

Section C requested information about ICT and gender equality and included questions on whether the respondents agreed or disagreed with answers on the benefits of ICTs and the promotion of gender equality.

The adapted statements used in the questionnaire emanated from the literature reviewed, past studies in similar focus areas and articles in accredited journals. Validity and Reliability tests were conducted to ensure the accuracy of the statements.

2.3.4. Data collection and fieldwork. Data was collected at a selected South African university. The researchers conducted the fieldwork alone without the help of field assistants because this gave a better understanding of the study. The researchers observed the prevalence of gender inequality at the institution of study.

2.3.5. Data coding and analysis. Themes and sub-categories were developed based on the data that was collected. The number of respondents was 19. The researchers used open coding for the interview data for the qualitative analysis [40]. The researchers used tables, Excel sheets and MS Word to present the data. The researchers opted for the computer-based software NVIVO, which helped transcribe and analyze interview questions responses. After coding, the next step was identifying themes, patterns, and relationships between the findings [12]. The researchers scanned primary data for words and phrases that respondents commonly used in the interviews. After identifying themes and patterns, the final step was summarizing the data [12]. The researchers linked the research findings to the research question. The researchers used essential quotations from the transcriptions to highlight the major themes within the findings and the possible contradictions. The researchers analyzed the data without bias, taking the information from all the respondents and using direct quotes as they were based on the responses from the interviews. Sorting was done based on gender to establish if responses were associated with gender. Primary findings were obtained by comparing the similarities and differences between the responses and the literature reviewed.

2.4. Ethical considerations. This research was conducted in line with ethical standards, and the Ethics Committee of the university gave the ethical clearance certificate.

2.5. Declaration. This is the researchers' work emanating from a master's study.

3. Results and Discussion

3.1. Results. Demographic information was analyzed in table format since 19 interviews were conducted, and it was possible to establish an association between gender and level of computer literacy.

Table 1 show that the response rate was very high at 95 %. Nineteen interviews were conducted, enabling the researchers to reach the saturation point regarding responses. According to [12], 19 interviews are sufficient for researchers to reach a saturation point where no new themes are generated.

According to the literature, men and women perceive and understand ICTs differently due to the digital divide [41].

The researchers interviewed both men and women to investigate their perspectives.

Response rate

Class	Targeted Number of Participants	Actual Number of Participants	Response Rate
Male	10	9	90 %
Female	10	10	100 %
Total	20	19	95 %

Note: Author's construction

Table 2 indicates that 5.3 % of the participants were in the age group 30–39 years, 31.6 % in the age group 40–49 years, 57.9 % in the age group 50–59 years, and 5.3 % in the group 60 years and above. It was important to target all age groups to ensure no biased responses due to age. People should have the necessary skills, education, experience, and qualifications to advance and acquire top positions, which evolve [1]. About 31.6 % of the respondents obtained a Master's degree level of education, 31.65 % a Doctorate level, and 6.8 % held Professorships.

Personal Information

Attribute	Class	Frequency	% Frequency
Gender	Male	9	47.4
	Female	10	52.6
Age	30–39 years	1	5.3
	40–49 years	6	31.6
	50–59 years	11	57.9
	60 years and above	1	5.3
Highest Qualification	Master's Degree	6	31.6
	Doctorate	6	31.6
	Professor	7	36.8
Years at Institution	1–5 years	4	21.1
	6–10 years	10	52.6
	11–15 years	2	10.5
	16–20 years	3	15.8
	Above 20 years	0	0

Note: Author's construction

Employability at the institution was computed as follows. About 21.1 % have worked at the institution from 1 to 5 years, 52.6 % from 6 to 10 years, 10.5 % from 11 to 15 years, and 15.8 % from 16 to 20 years. The majority of the respondents, 78.9 %, had been at the institution long enough to provide reliable information regarding gender equality.

Employee advancement is based on length of service [1], but this is contrary to what [2] said when they stated that even though women were qualified with many years of working experience as men, the gender digital divide still prevails because stereotypes are still alive and dominant. Based on the discussion around the TAM, females did not have any problems regarding the perceived ease of use of technology.

About 21 % of the respondents used computers at work and were in the category of employment between 1 to 5 years. About 53 % between 6 to 10 years, 10 % between

11 to 15 years, and 16 % between 16 and 20 years. Most respondents had several years of experience using computers at work, implying that they conversed with computers and would not have difficulty using ICTs to promote gender equality.

Computer illiteracy is one barrier that prevents the adoption and use of ICTs. According to the Technology Acceptance Mode, for technology to be accepted, it must be helpful and easy to use [17]. The latter assisted the researchers in evaluating the perceived usefulness of ICTs at this institution and how ICTs can promote gender equality in the workplace.

Quantitative data was collected for personal information to check if there is an association between demographic characteristics and computer use and knowledge.

About 10 % of the respondents were newcomers to the use of computers, 53 % were at the advanced stage, and 37 % were experts. The majority of participants had the requisite knowledge and skills when using computers. This implies that ICTs can readily be used at this institution to address the gender digital divide.

The researchers investigated further whether gender influenced the levels of computer usage. According to [12], the more women upgrade their computer skills, the more they may become empowered in the workplace. It can be seen from Table 3 that there are more male experts than female experts in the ratio of 6:1, even though several women at the institution had the required computer skills.

Gender and computer usage

What is your gender?	How would you describe yourself concerning the various levels of computer usage?			Total
	Newcomer	Advanced	Expert	
Male	1	2	6	9
Female	1	8	1	10
Total	2	10	7	19

Note: Author's construction

The results showed that there were more male experts than female experts in the ratio of 6:1, even though many women at the institution had the required skills. Another example can be evidence of the digital divide.

According to [42], the more women are computer literate, the more they become empowered. About 18 of the 19 respondents believed that women are afforded equal opportunities at institution X. The reasons were that there are laws in South Africa that prevent discrimination by gender.

Employees are aware of their rights, making it difficult for discrimination to be prevalent. Besides, women now have a voice through feminist movements, democratic processes, and social media platforms. In their study, this is supported by [43].

For the qualitative findings and discussions, selected verbatim responses are shown below due to the journal's page length requirements.

Respondent 10 responded below to the following question: To the best of your knowledge, are women and men afforded equal opportunities at this institution in the practical sense?

«Yes, we all are. Based on my experience, no one has been discriminated against before here. People have a voice, especially women, due to this so-called feminist movement».

Seven respondents said they had never encountered discrimination at Institution X, with some pointing out that everyone was free to apply for a position. All 19 respondents said they use ICTs to disseminate and receive employee rights information. This shows that ICTs can be a powerful tool in promoting gender equality because people can be aware of their rights by sharing information.

The latter was supported by [10] stating that social media is seen as a powerful driver by advocating for women's rights and gender issues to the broader public's attention and gender equality. All 19 respondents said that they use ICTs for training and development. This can enable women to discover, share, and spread information with the potential for women empowerment via capacity-building, employment, and skill development.

All 19 respondents said they use ICTs for job tasks at Institution X, and all 19 said they use ICTs for communication and working from home. Other factors influencing gender equality were education, qualifications, experience, achievements, personal goals and objectives, culture, perceptual bias and stereotypes, behavior and attitude towards others, length of service, workplace engagement, systems and protocols, the law, feminists and trends, technology, social media activists, and family responsibility.

Respondent 15 responded below to the following question: To the best of your knowledge, are female employees fairly represented in top managerial positions at this institution?

«Fear of the unknown, other women still feel some way, they are not yet ready to take up bigger demanding roles, maybe due to family responsibility and other things. Men build their careers and continue their studies because they have limited drawbacks compared to women, who have to cater to their families. I missed out on some opportunities when I was pregnant; I could not often travel while researching. This was a drawback for me, and even when the baby was born, I remember taking much sick leave from work whenever the baby fell ill, and I took the baby for immunisations».

All 19 respondents agreed that ICTs could enhance employee knowledge and skills through training and development, increase flexibility, reduce absenteeism, reduce employee turnover, and give both men and women a voice. The next question was asked about the assessment of gender diversity and equality:

To the best of your knowledge, are women and men afforded equal opportunities at this institution in the practical sense? Please give reasons to support your answer.

Table 4 provides an abridged version of the responses.

ICTs have the potential to develop the knowledge and skills of women in society and the workplace, enhance the technical expertise and competence of women through education and awareness, enable women to gain technological empowerment, allow women all over the world to share the information which can enhance their position in the society and their households, thereby eliminating gender bias, and increase the awareness of women on the national and global issues thereby closing the gender digital divide. The themes generated by this question are as follows: equal opportunities; discriminatory laws; employee rights; salary scales.

Respondent 5 responded below to the following question: To the best of your knowledge, are female employees fairly represented in top managerial positions at this institution?

«I can only talk about our faculty; I do not know if it is because women do not apply for these top positions. It could

be for several reasons. There are many research positions and choices, so as a woman, I would rather do what I love. We do have a couple of females with top positions, though».

Table 4

Extent of gender inequality

Respondent	Gender	Answer	Brief Comment
1	Male	Yes	No discriminatory policy
2	Male	Yes	Recruitment is based on qualifications and experience. Women have a voice in South Africa
3	Female	Yes	Laws and employee rights. Employees are aware of their rights
4	Female	Yes	Recruitment based on skill
5	Male	Yes	No discrimination at this institution
6	Female	No	Beliefs that men are paid more
7	Female	Yes	No gender-specific vacancies
8	Male	Yes	No gender-specific vacancies
9	Female	Yes	Equal rights. Recruitment based on skill
10	Male	Yes	No discrimination. Women have a voice through feminists' views
11	Female	Yes	No discrimination. The best gets the job based on skills
12	Male	Yes	Never encountered discrimination
13	Female	Yes	Labor laws and employee rights
14	Male	Yes	Eyes watching
15	Female	Yes	No restrictions for job applicants
16	Male	Yes	Employee rights
17	Male	Yes	–
18	Female	Yes	No discrimination or stereotypes
19	Female	Yes	Have not been discriminated

Note: Author's construction

The respondent was not sure if women were not somewhat represented yet because they did not apply for the positions or there were other factors. As discussed in the theoretical section, most women fail to attain top positions because they believe they are inferior to men. However, others fail to do so because of family responsibilities and other commitments [22].

«Even though women are breaking through and obtaining top positions, men are still dominant. Here the DVC and chancellor are women; in other positions, I feel like men are still dominant».

This is supported by [7], who said that even though the number of women who are attaining top positions is increasing, women who hold these positions are few compared to the equally qualified men. The themes generated from this question were domination and inequality.

Respondents 7 and ten other respondents said that the chancellor, most of the deans and the DVC at Institution X are women. This shows that women are in leadership and hold executive positions at this institution. Author of [26] stated that women in the 21st century are breaking through barriers and acquiring top positions. A male respondent, respondent 5, said that women are now dominating. He said, *«Yes, I think females dominate the world these days because if you look at this institution, I think more women hold executive positions because the chancellor*

and the deputy vice chancellor of research are women. Most deans are women, and I think lecturers are equally represented in departments».

Authors of [12] believes that women are fighting for their social status globally and are managing to break through social barriers, attaining top positions that men previously held.

3.2. Discussion

3.2.1. Practical and theoretical contributions of the research. The study will add to the knowledge of how gender equality can be promoted using ICTs. The study will also benefit both men and women in all industries because they will have equal opportunities at work. This study will promote gender equality in line with the national constitution and policies, UN charters and worldview. The study will inform institutions of higher learning on the need to include gender equality in their curricula, especially in promoting the use of ICTs.

3.2.2. Limitations and future research. The study was a qualitative case study with only 19 participants at a selected higher education institution; hence, the findings cannot be generalized to the entire population. It should be noted that ethical clearance was tough to obtain due to the sensitive nature of the study. However, the findings can be a good foundation for which further studies can be conducted given more time. A broad study in different sectors and countries is recommended to see if ICTs can promote gender equality. Further studies are recommended because; it is argued that even though women are advancing and attaining top positions, including those of IT specialists, equilibrium with men has not yet been reached, so it is essential to investigate this case further.

Further studies are recommended to investigate gender inequality, that shows that most IT professionals and experts are men, with a few being women. It is fundamental to investigate gender equality in other sectors and countries and why that is the case. This study was carried out between 2018 and 2019, but with the rate of digital acceleration, it would be recommended to conduct this study in the future.

4. Conclusions

There was no gender inequality at the institution under study. However, it is evident that the gender digital divide exists, based on the fact that out of all the respondents, a large number with expert IT knowledge were men.

Based on the study, it is evident that different factors can influence the gender digital divide: education, qualifications, stereotyping, perceptual bias, gender inequality, family responsibility, goals and objectives, culture, masculinity culture, gender-sensitive skills, and working experience.

ICTs have a positive effect on organizational performance, and most of the staff at the institution under study know that ICTs can be a valuable tool in promoting gender equality and closing the gender digital divide.

At the institution under study, most employees use ICTs to promote gender equality by receiving or disseminating employee rights information. Communications such as training and development, working conditions, exposing unfair practices in the workplace, and reporting abuse at work are shared using ICTs.

ICTs can be used to promote gender equality by increasing flexibility at work, reducing male and female absenteeism, enhancing men's and women's knowledge and skills through training and development, increasing their job competency, reducing workloads, enhancing men's and women's job satisfaction, increasing flexibility reducing male and female employee turnover, increasing awareness of both men and women employee rights, giving men and women a voice through anonymous and confidential communication, exposing unfair practices against men and women in the workplace.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

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Data availability

The data from this study is available at Mendeley Data under the title «Data from the survey of ICTs and gender equality» and can be accessed at [44].

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