


# Information and Communication Technology Management for Sustainable Youth Employability in Underserved Society: Technology Use for Skills Development of Youths

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## ABSTRACT

The provision of information and communication technology (ICT) infrastructure is not eminent in many societies due to a lack of digital access and poverty. Therefore, there should be ICT provision in underserved communities to bridge digital literacy and contribute to human and indigenous knowledge development. This paper aims to investigate how ICT access can impact youth employability in underserved townships. The quantitative method was used for the data collection process, using a structured questionnaire to draft both close-ended and open-ended questions. These were drafted into Google forms and distributed on social media platforms. While the sustainable livelihood theory was used to guide the study. Results derived from this study depict the inherent environmental factors that hinder youth access to ICTs. This study recommends policymakers can implement measures to provide sufficient ICT development initiatives to support youths living in underserved communities.

## KEYWORDS

Digital Divide, Digital Technology, ICTs, Sustainable Development, Youth Employability

## INTRODUCTION

In recent times, information and communication technologies (ICTs) have become significant for human and organizational development globally. Digital technology knowledge and creativity have the potential to provide decent job opportunities for youths, improve economic growth and provide sustainability, inclusiveness, and resilience in any country (Ogbonna et al., 2022). Therefore, youths need to have ICT skills training to prepare them for future work endeavors (Ogbonna et al., 2023). The prospects work opportunities in the industry, entrepreneurial leadership, and small business strategy using ICTs (Al-Heneiti & Irtaimeh, 2021). Also, knowledge sharing and receiving information is vital

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for youths to adopt (Al-Heneiti & Irtaimah, 2021). Especially as ICTs and information systems (ISs) both promote technology management to enhance economic growth in developing and developed countries (Yeo, 2022). Hence, many underserved communities face challenges that indirectly affect the youths living within these communities (Alao & Brink, 2020). These challenges include ineffective knowledge sharing, lack of ICT skills, insufficient funding for the complexity of ownership protocols, loss or misappropriation of digitized indigenous knowledge, inadequate infrastructure, and lack of resources (Mkumbo, 2017). ICTs provide easy digitization of indigenous knowledge, provide easy access to information, retrieval, and sharing of information on employment opportunities to a broad geographical location using digital technologies such as mobile phones, computers, and the Internet (Mkumbo, 2017).

ICTs facilitate societal development, especially when technical aspects are incorporated. It promotes not only societal but also organizational development, which is essential for human development (Mkrttchian et al., 2020). So, the emergence of ICTs for development is a socio-technical phenomenon (Mkrttchian et al. 2020). Furthermore, ICTs allow the use of electronic technologies and techniques to manage information and knowledge, and information handling tools used to produce, store, process, distribute, and exchange information (Hilty & Hercheui, 2010). Technology is the key driver of enhanced personal development, and it provides information and knowledge with potential networks and easy engagement (Hilty & Hercheui, 2010). The importance of technology aims to transform a country's economy. However, the goal of transforming the activities of a country lies in the country's adaptability to the fourth industrial revolution (4IR), (eTransform Africa, 2012). This adaptability lies in a country's grassroots and foundation of access to ICT, as well as the capacity of youth trained in ICT skills (Ogbonna et al., 2023).

The scope of this study focused on Sustainable Development Goals (SDGs), like SDG 9, which focuses on significantly increasing access to ICTs and providing universal and affordable Internet access in the least developed countries by 2020 (United Nations Resolution: Transforming Our World, 2015). Also, this study aligns with SDG 4 Target 4.4, which is to achieve by 2030 a sustainable increase in skilled youths and adults trained in technical or vocational skills for employment, decent jobs, and entrepreneurship opportunities (United Nations Resolution: Transforming Our World, 2015). Although the propagation and global action frameworks of SDG 4 and targets have yielded impressive gains in developing countries, there is still significant illiteracy among young people of different genders in developing and least-developed countries (Willard & Halder, 2003; Hilty & Hercheui, 2010). The youths of these regions are yet to reap the impressive gains and access to ICT because of their lack of knowledge, adaptability to innovation, and sustainable access to ICT resources and skills development in higher education institutions. Moreover, the proper implementation and adoption of digital capacity can boost the socioeconomic growth of people (Botha, 2021).

This involves developing technical skills and STEM careers that represent global shortages of highly skilled professionals and are considered to contribute to a country's economy (Botha, 2021). Access to ICT is not evenly distributed in underserved communities in South Africa (Attwood et al., 2013). In most cases, district municipalities could not implement extensive efforts to provide adequate ICT facilities in community public libraries (Alao & Brink 2022). Many youths living in the township could not familiarize themselves with digital technology that can potentially be used as leverage to identify job openings and gain soft and hard skills in high demand in the labor market (Remedios, 2012).

## **Background**

South African youth unemployment is alarming and needs to be addressed, especially as young people aged 15–24 years and 25–34 have unemployment rates of 64.4% and 42.9%, respectively (Statistics South Africa, 2020). Youth unemployment has caused serious socioeconomic consequences such as crime, economic welfare, social instability, erosion of human capital, and social exclusion (Shankar et al., 2016). This study aims to investigate how ICTs can be used to overcome youth employability

in the community of Tembisa, a township with a large population of youth unemployment. Similar studies have shown that a lack of digital skills contributes to the high rate of youth unemployment in underserved communities (Alao & Brink, 2020; Booi et al., 2019). Also, the lack of ICT infrastructure in poor communities is the main cause of lack of ICT access which hinders the flow of necessary information on the required ICT skills in the job market (Alao & Brink, 2020).

The country has a very high unemployment rate (Statistics South Africa, 2021), with more than ten million households (10,193,203) earning R7,167 (\$536) per month, while a small elite population earns more than R196,668 (\$14,692) per month (Statistics South Africa, 2018). This affects the minority population of the country, leading to extreme wealth inequality, which makes the country remain extremely divided, which is the main cause of inequality between the *haves* and *have-not* (Statistics South Africa, 2018). In essence, inequality remains high due to the lack of income generation caused by the high unemployment rate in the country. Due to this, poverty and inequality are the major challenges facing South Africa (Ogbonna et al., 2022; Kyobe, 2011).

Over the years, youth unemployment has risen in the country, and young people between 18 and 35 constantly migrate from rural areas to urban locations to seek employment opportunities to improve their economic standards (Alao & Brink, 2020). Other factors contribute to youth unemployment, such as lack of education, lack of support from the government, low economic development, and poverty (Ogbonna et al., 2022; Alao & Brink, 2022; Scott et al., 2005). In this paper, we focus on how to address the problems that contribute to youth unemployment caused by the scarcity of ICT resources in Tembisa Township.

## Global Context of ICT and the Labour Market

Globally, COVID-19 pandemic affected the youth employability, while over 208 million unemployed will rise worldwide, which will cause 214 million employers to be affected by extreme poverty (International Labour Organization, 2023). Technology has a tremendous impact on industry performance, and organizations need talent management to operate their organizations effectively (Sivathanu & Pillai, 2019). This has encouraged many organizations and businesses to adopt ICT in their operations business (Gunawardana, 2018). Also, business growth depends on the adoption of e-commerce, which uses information technology for online business marketing transactions (Gunawardana, 2018). Therefore, ICT skills development is essential for improved youth employability.

Countries like India have encouraged entrepreneurship as an important aspect of economic development (Verma, 2022). Business start-ups from Sri Lanka use crowdfunding to gather capital and financial support from charities using the ICTs such as the Internet to manage a Web presence, investors, and connect to crowdfunding teams to achieve their financial goals (Gunawardana, 2020). Hence, entrepreneurship education should be emphasized in educational systems in South Africa to prepare youths to be independent and job market savvy (Verma, 2022). This is because many youths are unaware of career prospects available in the ICT industry. Also, science-technological projects, ICT training schemes, internships, government organizational sponsorships, apprentice opportunities, and career fairs should be created to inform youths about the ICT industry's educational requirements and expectations from prospective employees (Zuma et al., 2019).

Studies have shown how South Africa has adopted possible strategies to tackle unemployment using strategies such as research and innovation, adoption of a lifelong learning scheme, strengthening university-business collaborations, participation in society, and social responsibility (Choung & Manamela, 2018; Evoh, 2009). This effort was adopted to generate a sustainable competitive advantage to improve employability, but did not produce the expected results, but only produced a limited number of highly skilled young people (Azmu, 2016; Eynon & Geniets, 2016).

ICT education is valuable to youths to fit conveniently into the global industries or labor markets, which can be problematic without digital knowledge due to the lack of ICT skills development (Eynon & Geniets, 2016). Studies have shown that ICTs can be a process that leads to development, improve employment, and reduce poverty in developing countries (Merkel et al., 2019; World

Bank, 2012). Although access to ICTs is not a solution to poverty, it can best be adopted as a tool to promote digital and specialized skills development for improved employability in the labor market (Mohammed & Sadiq, 2015).

Currently, relevant IT skills are required to boost economic growth, and the demand for ICT skills that would be forerunners of the 4IR is essential for economic growth in the country (Fernández-Sanz et al., 2017). Social partners, research institutions, and educational authorities have adopted the third industrial revolution (3IR) and 4IR as possible approaches for job creation (Calitz et al., 2014). To achieve this, ICT listed occupations such as chief information officer, ICT project manager, data management manager, application development manager, information systems manager, IT manager, computer quality assurance specialist, ICT communications assistant, AI specialist, data science analyst, programmers, and other science and technology professions are specialized skills required in the country's job market country (Fernández-Sanz et al., 2017). Therefore, this study addresses the following research question: How can ICTs impact youth employability in underserved communities? To address this question, the quantitative method was used for the data collection process.

## ABOUT THE STUDY

### Scope

Efforts have been made to bridge the digital divide in developing countries, especially when many African countries struggled to incorporate ICT infrastructure into poor communities (Lediga & Fombad, 2018). Studies have shown that integrating ICT use into South African communities is not irrelevant because the country has made considerable efforts to integrate ICT infrastructure into different poor communities (Ojedokun & Lumande, 2005; Akinsola et al., 2005). This action has made tremendous progress in encouraging information integration into communities of sub-Saharan Africa (Yeo, 2022). Consistent access to ICTs in underserved communities is crucial for youths to have digital skills development for improved employability (Booi et al., 2019). We investigated how ICTs can be used to overcome youth unemployment in underserved communities. There has been increased demand for ICTs in poor communities in South Africa, and local municipalities have made efforts to make ICTs available in public libraries (Booi et al., 2019). The aim is to provide community people with access to information on employment and economic opportunities and to promote ICT skills development to bridge the digital divide gap in rural communities (Lediga & Fombad, 2018).

The digital divide is a phenomenon that results from unequal application and access to ICTs, leading to a global knowledge gap between information *haves* and *have-not* (Lediga & Fombad, 2018). The gap in South Africa between the poor and wealthy threatens to create an information-poor underclass of people at risk of further marginalization in society. Instances where digital skills open the doors to economic success and personal advancement, entry to good careers and education opportunities, as well as full access to social networks and opportunities for civic engagement are not available to underserved communities (Booi et al., 2019). Therefore, a digital skill set can be an advantage to youth development, because it improves their chances with job market opportunities since the lack of a digital skill set can contribute to a high unemployment rate (Azmuk, 2016; Garrido et al., 2009). To further mitigate the digital divide gap in South Africa, the provincial and local governments established the South African National Government Information and Communication Technology strategy that aims to ensure the continuous development of ICT infrastructure in underserved communities of South Africa (Attwood et al., 2013).

The organization has established projects that aim to promote communities with information communication technology infrastructure and networks. Other ICT initiatives established by the South African government include the Wi-Fi pilot project, Cape Access project, SA Connect broadband rollout, Smart Cape, and Cape Access (Alao et al. 2021). The goal was to implement a stable and reliable service that will be available and accessible to people in South Africa (Alao et al. 2021). The

ICT initiative distributed broadband connection infrastructure that will allow South African citizens to have global connectivity in poor communities (Booi et al., 2019). Private organizations such as Datatec Foundation offer affordable computer skills training to youths providing programs that allow upskilling of youths from underserved communities, allowing young people to obtain technical skills for improved employability and entrepreneurship.

### **Youth Deprivation of ICT Usage**

ICT access in underserved communities can positively enhance digital skills and improve youth employability in these communities. With the assistance of provincial and local governments, we should provide access to ICT resources that youths can use to source information about labor market requirements for job opportunities in underserved communities (Booi et al., 2019). ICTs can be used to develop soft and hard digital skills relevant in the labor market that can enhance the economic standard of the youths residing in these communities (Remedios, 2012). The emergence of ICTs such as the Internet is a significant information tool to help youths overcome unemployability challenges (Booi et al., 2019). The provision of ICTs allows youths to overcome unemployment (Booi et al., 2019; Azmuk, 2016). Also, ICT-related intervention, such as ICT development initiatives, can be a positive government intervention that can be used to tackle the lack of ICT access, especially as the provision of ICTs can have relevant effects on the lives of the youths (Booi et al., 2019; Azmuk, 2016).

### **Factors Affecting Youths Access to ICT**

The youths are expected to be drivers of Internet users, but the usability of the Internet is not optimal for the youths living in underserved communities (Booi et al., 2019). This is due to certain factors such as lack of access, infrastructure, digital knowledge or skills, technology affordability, language barriers, and lack of income or unemployment are pending issues that youths from townships and other underserved communities are struggling to overcome (ICTWorks, 2022; Alao & Brink, 2020; Booi et al., 2019). This study highlights the factors that hinder youths' access to ICTs as follows:

- **Lack of ICT Infrastructure:** This includes electricity which is a major problem in underserved communities. Many youths face challenges using or using ICTs to seek employment, as there is an assumption that fundamental infrastructure, such as a lack of electricity, restricts the use of ICTs in many underserved communities.
- **Lack of Technology Affordability:** Many youths living in underserved communities cannot afford to own or purchase technologies with Internet access. This hinders them from access to information on advertised job opportunities.
- **Lack of Access:** Many youths are hindered from using ICTs due to lack of ICT resources, as many townships lack sponsored ICT community development initiatives. Therefore, the lack of access restricts some youths from accessing possible job opportunities.
- **Lack of Digital Knowledge or Skills:** Some local youths cannot afford computer training colleges due to poverty. This obstructs them from using ICTs to seek employment opportunities. Others lack digital knowledge due to the complexity of using some technologies. For example, smartphones, computers, or iPad.
- **Language Barriers:** Computer programs are written in the English language instead of their local dialects. Many local youths do not want to use ICTs to seek job opportunities because they prefer to communicate in their local language instead of speaking the English language.
- **Lack of Income:** The lack of income due to unemployment and poverty are major causes that affect the youths from accessing ICTs to seeking employment opportunities online.

## Framework: Sustainable Livelihood Theory

The sustainable livelihoods (SL) approach enables the use of capital expenditure or assets and activities for sustainability purposes using various types of capital (Rosario, 2019). The theory is used to identify how development projects can affect the decisions people make toward livelihood, given the risks they face and the assets that can be accumulated to improve their livelihood (Parkinson & Ramirez, 2007). SL theory focuses on the concepts of employment and income, considering the different attributes of human and environmental systems. People can choose their livelihood outcome using their *capital assets*, which include human, social, natural, physical, and financial assets (Khagram et al., 2003). ICT community development initiatives can have a positive impact on livelihood assets in many ways, depending on the local context in which they are introduced (Molema & Quan-Baffour, 2019). The provision of ICTs allows access to technology infrastructure and information flow to youths living in underserved communities to reduce poverty and improve livelihoods (Alao & Brink, 2020).

### Sustainable Livelihood Assets

This study examines the livelihood assets that can be used to influence youth sustainability using technology. ICTs can have a positive impact on the economic development of youths by using the five livelihood assets to implement digital knowledge as an intervention to improve youth employment (Molema & Quan-Baffour, 2019). According to Alao and Brink (2020), the five categories of livelihood assets are explained as follows:

- **Human Capital:** This includes the youths having information resources on the development of skills available to produce the capability to work for improved livelihood. ICTs can provide access to broad-based information access on employability opportunities and personal development.
- **Financial Capital:** This includes income generation, available funds for investment, and financial savings attained from other activities to attain certain means. Youths should have access to private and government institutions that can deal with issues that affect them in the community. Also, funds can be sourced from *crowd sourcing*, also known as *crowdfunding*, which is defined as small investments from a crowd of people cumulating to a larger amount using the Internet as a transaction platform instead of traditional financial intermediaries like banks and other institutional investors (Gunawardana, 2020). This financial source provides ideas, solutions, and feedback to people who use this means to source financial resources from the public and charities (Gunawardana, 2020).
- **Social Capital:** This includes youth participation in social networks and mutually beneficial relationships that can enhance their livelihood, thereby increasing rural–urban migration. This includes the youths having a mutual network within their community and other wider communities. This will allow youths to develop new social networks at the local and provincial levels to address issues that may relate to youth unemployment and access to ICTs (Alao & Brink, 2020).
- **Physical Capital:** This includes ICT initiatives, buildings, and infrastructures such as power, water, and productive tools. The youth can use ICT community development initiatives in their communities to access information on local and new markets on the sale of goods, demand for products, prices, techniques, and processes for production and processing, and marketing of products (Alao & Brink, 2020).
- **Natural Capital:** This refers to the youths having access to communication channels that can address issues that involve natural resources management, and administrative and legal information. Youths should share personal experiences and information on how to develop strategies to address problems and conflict situations that affect the improved employability of youths in the communities (Alao & Brink, 2020).

## Conceptual Model Development

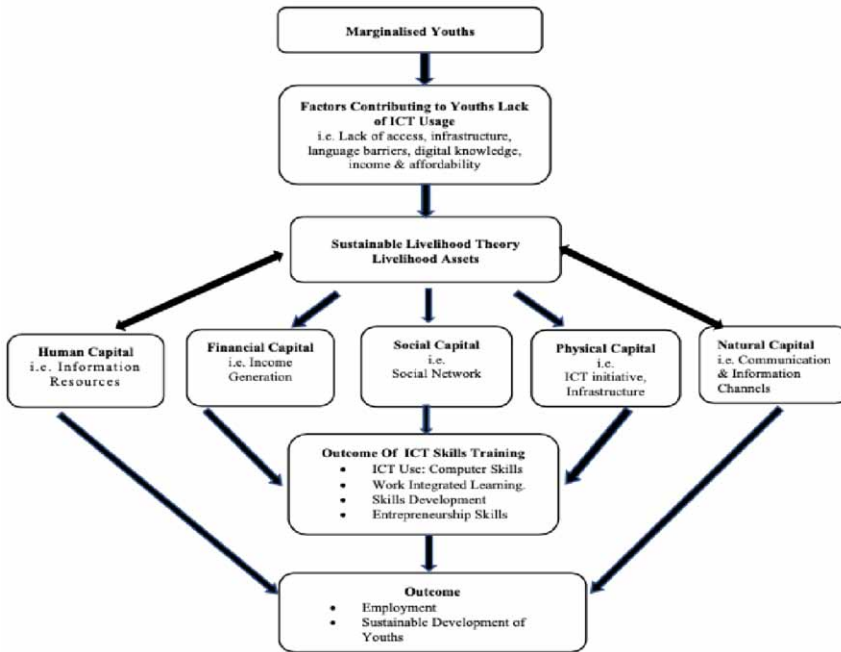
This study developed a conceptual model to explain how universal access to ICTs can provide positive outcomes for youth development using the five livelihood assets to improve the livelihood of youth living in underserved communities. This study presents the process of sustainable development of youth employability by developing a conceptual model. The model was used to emphasize the significance of ICTs for youth development in deprived communities. Youths living in deprived communities are referred to as a marginalized group and are deprived of resources that can be used for their self-development (Booi et al., 2019). These youths are affected by factors such as lack of access, ICT infrastructure, language barriers, digital knowledge, income, and affordability due to high unemployment (Alao & Brink, 2020).

The sustainable development livelihood model was used to explain how ICT assets namely, human capital, financial capital, social capital, physical capital, and natural capital—can be used to increase ICT access for improved youth employability. This study discussed the usefulness of the five livelihoods ICT assets on youth development as follows. Youths can use human capital assets to access information relating to human development and improved youth employability, such as youths engaging in ICT skills training and entrepreneurship skills development prospects to enhance job market opportunities (Alao & Brink, 2021), while financial capital shows how youths can use ICTs to generate income. Also, crowd sourcing is a means of generating income because it provides financial resources using the Internet as a transaction market (Gunawardana, 2022). The model was used to explain how social capital can be advantageous to youths using social media to access online recruiters and professional networks such as LinkedIn to access job market opportunities. This study explained how physical capital, such as ICT initiatives and infrastructures, can help youths achieve ICT skills development. Youths can use technology to access local and international markets and ideas about goods and services that can support their small business start-ups and entrepreneurship endeavors (Verma, 2022). The model was used to explain how youths can use ICT assets for natural capital to connect to communication channels such as traditional media to access resources management, and administrative and legal information to disseminate information to develop strategies to solve and manage conflicts affecting youths (Alao & Brink, 2021). The study model shows the expected outcome of using ICTs to attain entrepreneurship and ICT skills development which can be obtained through work integrating learning through practical work training. Also, the model shows that ICT skills training can be derived at educational institutions and grassroots digital centers to improve the sustainable development of youth employability. The study shows the conceptual model for sustainable youth employability (adapted by Alao & Brink, 2020; see Figure 1).

## METHODOLOGY

We used quantitative methods such as correlation and regression analysis to check the relationship between two variables, namely high or low employability, because of the scarcity or availability of ICTs. The relationship will generally tell us whether our proposed hypothesis is true or false. The positivist research philosophy allowed a clear formulation of a research theme, theory, and the selection of a suitable research method. Quantitative data is associated with numbers as the unit of analysis (Bourenkov & Popov, 2006). This approach allows the collection of genuine individual feedback from selected participants because it supports the collection of a large sample of quantitative data using a structured questionnaire to understand how Tembisa's youths can use ICTs to overcome unemployment in their communities. Furthermore, by using a structured questionnaire, this study will have a clear distinction between the number of youth members using ICT to attain education and employment purposes. It assumed that people seeking jobs using ICTs have more job opportunities because the use of ICTs, such as the Internet, provides diverse job opportunities. We used a deductive approach using deductive reasoning to raise logical arguments using proven facts and information to conclude our study (Evans, 2012).

Figure 1. Conceptual model for sustainable youth employability (Aloa & Brink, 2020)



### Study Population Location

This study was conducted in Tembisa Township, an underserved community in Gauteng Province. The distance between Tembisa and Johannesburg is 29 km. Tembisa township is a large township in the Ekurhuleni Metropolitan Municipality, located north of Kempton Park on the East Rand, Gauteng (Statistics South Africa, 2019). The town was established in 1957 after the Black population resettled from Alexandra, Midrand, Edenvale, Kempton Park, and Germiston (Statistics South Africa, 2019). The town population has a high poverty and inequality rate of 31% and a high crime rate of 85.42% (Statistics South Africa, 2019). The township has a population of 463,109, with a 34.5% unemployment rate (Statistics South Africa, 2019). The study location was chosen because of the poverty existence in many households and the high rate of youth unemployment. The population target was youths seeking employment opportunities. We focused on the youths with high school diplomas, postsecondary certificates, and high school certificate qualifications living on the northern side of Kempton Park of the East Rand region of Gauteng, South Africa.

### Data Collection

This study used socio-economic factors that contribute to the digital divide causing uneven distribution of digital tools among underserved youths. We adopted a quantitative study using a structured questionnaire consisting of questions formulated from known facts that relate to the use of ICTs for employment. The structured questionnaire was drafted using both closed-ended and open-ended questions. The closed-ended questions provided clear answers to the questions posed, and the open-ended questions provided more detailed responses from the participants (Alexandra & Maldonado, 2007). This study was cross-sectional, allowing data to be collected using a structured questionnaire at a single point in time.

The sample size of 60 participants was randomly sampled to provide an unprejudiced representation of data from the entire population to provide quality and in-depth data (Acharya et



al., 2013). The population sample used for this study was limited because we conducted a pilot study known as a *feasibility study*, which allows the researcher to gather a small population size. The pilot study was conducted to test the groundwork of the fundamental stage of a prospective preliminary study which is expected to adopt a quantitative research methodology to evaluate the possibility of a full-scale future project. Furthermore, the study gathered data from the structured questionnaire to identify the correlation between variables. The questionnaire was divided into sections to capture various data inaccuracies and reliable answers received from the participants used for the study. Thereafter, questions were created into Google Forms, and the link was distributed on various social media platforms to distribute to participants.

## Data Analysis

We extracted and analyzed data gathered from the Google form to examine the results derived from the study site. This is to evaluate if the results contradict or supported the research hypothesis. Google was used to create a questionnaire in an encrypted password-controlled format for the data collection process. Thereafter, the gathered data was transferred into Microsoft Excel to represent the participant information collected to generate the percentage in graphical illustration, which was used to explain the data in meaningful information. The analysis was conducted to identify existing relationships in the dataset to justify and answer the research questions. This paper was used to assess the use of ICTs for sustainable youth employability in Tembisa Township.

## Ethical Permission

The ethical permission for this research was granted by the College of Business and Economics, Research Ethics Committee (CBEREC) at the University of Johannesburg, Gauteng, Province, South Africa. This study was conducted in the Applied Information Systems Department. The researcher considered the privacy and data integrity, impartiality, and respect of the participants used for the study. An informed consent form was used to facilitate voluntary participation in the research conducted.

## RESULTS

We carefully examined the data gathered and realized that despite the various barriers that hindered Tembisa's youth from having access to a wide range of ICTs, most of the youth in the community have basic ICTs, such as mobile phones and laptops, which were used extensively to search for employment opportunities which influenced their level of employability. ICTs provided youths with information about job opportunities and various methods to increase their chances of being identified by job recruitment agencies. The data results from the study show how ICTs influenced youths to acquire basic information about job market specifications. The data shows that youth's access to technologies has increased their rate of ICT skills development, while many youths living in deprived areas are now computer proficient and have the knowledge to use various digital tools and Microsoft packages software to draft documents required for job applications such as curriculum vitae and motivation letters and social media professional networks like LinkedIn. This study further highlights participants' use of ICTs in the data analysis discussed below.

## Human Capital

The results support the hypothesis proposed to address the research problem. ICTs can potentially bridge both the information gap and the digital divide existing in underserved communities. Results show that 84.7% of ICT use increased participants' digital skills, 83.1% of participants used ICTs for educational opportunities, 88.1% of participants used ICTs for job market opportunities, 52.5% of participants used ICTs to seek government grant opportunities for entrepreneurship purposes, 71.2% of participants used ICTs for social networks platforms, and 69.5% of participants used ICTs to communicate with family members.

In the digital age, information is a crucial asset. ICTs are crucial assets because they serve as a driving force of information that allows people with access to ICTs and Internet connectivity to communicate with current affairs and developments that affect their livelihoods and environments (Blanas, 2019). This shows that ICTs can provide the youth of Tembisa with the digital skills required in the labor market. Furthermore, the availability of ICTs allows the youths of Tembisa to seek job opportunities online to help them reduce travel expenses and allow quick feedback from employers. The study presents the benefits of using ICTs (see Figure 2).

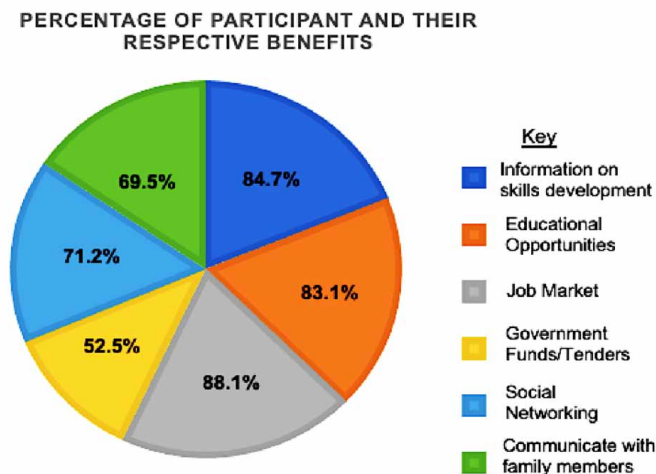
### Financial Capital

The financial capital allows youths to use ICTs to search for information about organizations that can provide a better and improved livelihood. Results show 91% of participants have used various ICTs to search for available job advertisements on various job recruitment sites such as LinkedIn, Career Junction, and Indeed; 30% of participants were able to pursue their interest in entrepreneurship by using ICTs to acquire advice and insight; 84.7% of many participants have used various ICTs to acquire information on skills development; 88.1% of participants used various ICTs to assess job markets and opportunities; 13.6% of participants have embarked on entrepreneurship, and 8.5% of participants were employed, thereby gaining financial capital. The data illustrates that most participants in the community of Tembisa have embraced and adopted various ICTs, and this has positively affected their level of employability. Access to ICT infrastructure will provide information on how to implement strategies that can be used to address issues about the high rate of youth unemployment in Tembisa Township. The study shows how participants use ICTs for employment opportunity prospects (see Table 1).

### Social Capital

Social capital was used to address the impact of ICTs on youth employability in South Africa. Results show that youths used ICTs for social networking for improved employability. It was realized that 90% of participants used different ICTs to apply for jobs and source relevant job information. However, only 35% of the participants gained employment through this medium. This is because these ICTs made youth job hunting easy. Furthermore, 84.7% of participants have used various ICTs to acquire information on skills development, and 88.1% of participants used ICTs to access various opportunities

Figure 2. Showing the number of participants with respect to the benefit of using ICTs and their representative percentage of the total participants



**Table 1. Showing the number of participants with respect to using ICTs for employment opportunity prospects**

S/L	Description	Frequency	Percentage
1	Participants used ICTs to search for job advertisements on recruitment sites	54	91%
2	Participants used ICTs to seek advice and insights on entrepreneurship interests.	16	30%
3	Participants used ICTs for privately owned businesses.	6	13.6%
4	Participants attested to using ICTs to attain employability and financial capital.	4	8.5%

in the labor market. Through careful analysis of the data collected from a sample size of 60 participants, we realized that many youths continued their education at higher learning institutions (HLIs). A total of 71% of participants used ICTs for social networking, 69% of participants used ICTs to communicate with family members, and 52% of participants used ICTs to connect to the government network for possible livelihood opportunities. The study shows the impact of ICTs on employability (see Table 2).

### Physical Capital

Physical capital allows youths to assess quality ICTs and information about many opportunities. The use of ICTs has increased the level of digital skills among youths, due to the use of ICTs with various software installed. 100% of participants used Microsoft Word, 81.4% of participants used Excel, 86.4% of participants used PowerPoint, 25.4% of participants used Outlook, 42.4% of participants used Access, and 25.4% of participants used OneNote, which made most of the participants' computer literate. Studies have shown that the wide distribution of ICTs in rural areas increased people's levels of digital access and will subsequently enhance their knowledge and ability to effectively use these digital tools to their advantage (Alao, 2019; Yu et al., 2017). The wide range of digital skills required in various industries, especially in the digital age, allows people and businesses to gravitate more toward ICT services and products. The results show that many youths in Tembisa Township adopted various ICTs for different purposes. This positively increased youth employability, as well as their livelihoods. These results show that many participants have ICT access to a wide range of digital tools with various digital software applications, which influences their knowledge of the happenings in South Africa and other parts of the world. The study shows that ICT resources can help youths living in underserved communities enhance their job search in the job market. This result shows that participants with access to digital tools are proficient in using various digital software and applications. The study shows participants' proficiency in using ICTs (see Table 3).

### Availability of Quality ICTs to Access Information

The physical capital ensures that youths can have quality ICT infrastructures in the community they reside. Results show 61% of participants used various ICTs daily, while other participants used

**Table 2. Showing the number of participants with respect to ICT impact on youth employability**

S/L	Description	Frequency	Percentage
1	Own and use different types of ICTs to seek information and apply for jobs	54	90%
2	Participants use ICTs to gain employment and improve their livelihood	17	35%
3	Participants use ICTs to acquire information on skills development	51	84.7%
4	Participants use ICTs to access various opportunities in the labor market	52	88.1%
5	Participants use ICTs for social networking	42	71%
6	Participants use ICTs to develop a network with the government	31	52%

**Table 3. Showing the number of participants with respect to the proficiency of using ICT and their representative percentage among youths**

S/L	Description	Frequency	Percentage
1	Microsoft Word	59	100%
2	Excel	48	81.4%
3	PowerPoint	51	84.4%
4	Publisher Outlook	15	25.4%
5	Access	25	42.4%
6.	OneNote	15	25.4%

ICTs for certain activities. The results further depicted that 54.2% of participants used their mobile phones to access the Internet to access information about employment opportunities, while 37.3% of participants rely on their school’s computer laboratories to use the Internet to access information about job opportunities. Further results show that most youths living in Tembisa are aware of the impact of ICTs and have extensively used technology tools to search for employment, while youths without ICT access lack digital skills training and have not acquired basic computer skills knowledge to search for job market opportunities. Other studies have shown that early exposure to ICTs creates an environment that encourages people to use ICTs to achieve daily activities and evaluate job markets (Lediga & Fombad, 2018; Mukherjee-Das, 2014). Unfortunately, some youths were not exposed to basic ICTs, which has affected their ability to use technology due to the scarcity of ICT facilities in schools and libraries in the community of Tembisa. The study shows participants’ access to quality ICTs for information (see Table 4).

### Natural Capital

The natural capital states that youths should have access to relevant resources to source information that can be used to enhance youth employability. However, many youths strongly believe that their access to ICTs has been greatly affected by the factors that contribute to youth unemployment. Only 62.7% of participants claimed that is caused by a lack of ICT infrastructure, 52.5% of participants claimed a lack of resources (e.g., electricity), 62.7% of participants claimed a lack of ICT access, and 57.6% claimed a lack of computer skills. Also, 54.2% of participants claimed socioeconomic barriers, and 50.8% of participants claimed cultural and traditional barriers. Only 1.7% of participants did not respond to the questionnaire, and 1.7% of participants claimed they lack Wi-Fi, data bundles, and digital knowledge. Also, public schools in the community lack ICT resources and cannot provide the youth with quality education (Lediga & Fombad, 2018). Hence, the provision of ICTs in this community can improve digital skills development among youths. The study shows the major factors that hinder participants’ access to ICTs (see Table 5).

**Table 4. Participants access to quality ICTs for information**

S/L	Description	Frequency	Percentage
1	Participants’ daily access to ICTs	36	61%
2	Participants use mobile phones to access information on employment opportunities	32	54.2%
3	Participants use their school computer labs to access information on job opportunities	18	37.7%

**Table 5. Number of participants with respect to the factors hindering ICT access**

S/L	Description	Frequency	Percentage
1	Lack of Infrastructure	37	62.7%
2	Lack of resources e.g., electricity	31	52.5%
3	Lack of ICT access	37	62.7%
4	Lack of computer skills	34	57.6%
5	Socioeconomic barriers	32	54.2%
6	Cultural and traditional barriers	30	50.8%
7	None	1	1.7%
8	Lack of Wi-Fi data	1	1.7%

### Familiarity With ICTs for Job Opportunities

The findings of the study show that many participants have used ICTs to search for job opportunities at a time in their lives. This reveals that youth value the use of ICTs to search for job opportunities for improved economic standards. Only a few participants have not used ICTs to seek possible employment opportunities. Further findings show the youths’ familiarity with ICTs. Only 59 participants responded to the questionnaire addressing the use of computers. Results show 61% of participants were familiar with using ICTs, while 32.2% of participants have used ICTs in their lives. The study shows participants’ use and familiarity with ICTs for improved livelihood (see Table 6).

The results show that participants with access to fully functional ICTs were more computer literate and had access to information about many skills development opportunities. Participants were without access to fully functional ICTs, were not computer literate, and lack access to livelihood opportunities. The study results have shown that the community of Tembisa lacks proper ICT infrastructure, and this has made the adoption and effective use of ICTs difficult for the youth of Tembisa. Other studies have shown that the South African government’s efforts to bridge the digital divide in many poor areas through the implementation of ICT development initiatives in rural and impoverished communities have been unsuccessful (Ojedokun & Lumande, 2005). Further discussions of the study are highlighted in the following section.

### DISCUSSION

This study examined the use of ICTs to improve youth employability in Tembisa Township. We used ICTs to bridge the information gap and digital divide in the community. The research hypothesis proved that ICT infrastructure improved youth employability in Tembisa. The data collected suggest that many youths needed access to ICTs to access all the information that increases awareness of what transpires in South Africa and other countries (Lediga & Fombad, 2018). Studies have shown that information is an essential resource that can be used to provide youth job opportunities in the

**Table 6. Showing the number of participants with respect to familiarity with using ICTs**

S/L	Description	Frequency	Percentage
1	Participants familiar with computers seek job opportunities	36	61%
2	Participants use ICTs sometimes	16	32.2%
3	Participants not using computers	0	0%

labor markets (Lediga & Fombad, 2018; Yu et al., 2017). Therefore, the distribution of ICTs in rural communities can significantly improve people's digital skills (Lediga & Fombad, 2018).

The government's poor efforts to succumb to challenges posed by the establishment and distribution of ICT infrastructure will widen the gap in the digital divide between rural and developed areas (Attwood et al., 2013). This will create a lack of information among lower-class people in the future (Attwood et al., 2013). Digital skills allow people to thrive and compete in daily economic activities and improve the employability of people with digital skills. Studies have shown that people with ICT skills have high demand in the labor market, and this gives them leverage in the labor market. Unfortunately, some youths lack digital skills development and are more likely to struggle (Garrido et al., 2009).

This study shows a new perspective on the relationship between the adoption of ICT use to gain the digital skills required in the labor market, and this has helped increase youth employability. This is because many youths are not only seeking to obtain digital skills but also want to start their entrepreneurial ventures with the digital skills obtained through the continuous use of various ICTs (Remedios, 2012). The research results have shown that continuous access to ICTs increases the rate of digital skills development, information acquisition, and youth employability. However, hard skills are more likely to influence the youth's level of employability. This is because hard skills are more technical and complex (Remedios, 2012). This makes them highly valuable in the labor market, while soft skills are more basic because they are often used to accomplish basic activities, such as typing curriculum vitae, and assignments, and require less effort to apply for job opportunities (Remedios, 2012). Therefore, public libraries and public schools should propagate ICT use at an early age to young people to increase their chances of developing digital skills that can be used for personal development and improved livelihood. Further explanation is highlighted in the data interpretation presented in the following sub-section.

## **Data Interpretation**

The study explores how the youths of Tembisa Township used ICTs for improved employability and to bridge their information gap. The results proved the research hypothesis correct. As ICTs were used to improve youth employability and increase the digital skills development of the youth living in Tembisa Township. It is significant for youths to use digital skills to access information about the relevant skills required in the labor market. Also, the availability and access to ICTs for the youths living in Tembisa Township can be used to provide information about current affairs and employment opportunities that can improve the livelihoods of the youths (Lediga & Fombad, 2018). This means ICTs can provide the youth living in Tembisa with the digital skills required in the labor market and allow the youths to use technologies to send job applications online effectively. The practical contribution of the study is highlighted in the following section.

## **Recommendations**

We recommend that government and private institutions implement strategies that can promote digital skills to youths living in underserved communities. Also, the Department of Higher Education should support educational systems to provide resources for career guidance and information sessions on ways to channel youths to acquire digital knowledge that will enhance their employment opportunities.

Future research should consider ICTs as a positive spinoff to bridge the information gap in underserved communities and increase youth employability, identify measures that can be used to support the provision of ICTs in communities, study how ICTs can support youth employability through the provision of ICT infrastructure to bridge the digital divide in poor communities, focus on how community libraries and public access points can create awareness of the importance of digital skills at an early age for improved youth employability, and seek to identify all the countermeasures that can be used to facilitate and support the establishment of ICTs in underserved communities to allow suitable access to a wide range of ICTs. Additionally, the study data can be used to assess how ICT

infrastructures can be widely distributed through the establishment of community libraries, public schools, and ICT development initiatives like public access points to provide youths with various ICT access that can be used to improve their digital skills knowledge.

## **CONCLUSION**

This study focused on the research design and various methods used for data collection purposes, namely, structured questionnaires and the research approach that will potentially give the study direction and scope. The paper explained how deductive strategies were used to draw and formulate reasons and conclusions around the hypothesis, which states that the youth of Tembisa's level of employability is directly influenced by the access and availability of ICT, information, and communication tools which include but are not limited to computers and telephones.

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## **COMPETING INTERESTS**

The authors declare that there is no competing interest that may have inappropriately influenced this article.

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## **INSTITUTIONAL REVIEW BOARD STATEMENT**

The study was conducted in accordance with the Declaration of the Applied Information Systems and approved by the Institutional Review Board (or Ethics Committee) of the University of Johannesburg.

## **DATA AVAILABILITY**

The data that support the findings of this study are available in the manuscript.

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