Namuliira, Phionah; Kasirye, Ibrahim; Okillong, Philemon et al.

Book

Skills acquisition in Uganda : bridging the gap between education and employment in the era of digital transformation

Provided in Cooperation with:
Economic Policy Research Centre (EPRC), Kampala

ECONOMIC POLICY RESEARCH CENTRE

SKILLS ACQUISITION IN UGANDA:

BRIDGING THE GAP BETWEEN EDUCATION AND EMPLOYMENT IN THE ERA OF DIGITAL TRANSFORMATION.

Phionah Namuliira, Ibrahim Kasirye, Philemon Okillong, Blessing Atwine,
Sheila C. Nakkazi, Pauline Nakitende, and Mary M. Kajumba

RESEARCH
SERIES
NO. 164
September 2024

The Economic Policy Research Centre (EPRC) is an autonomous not-for-profit organization established in 1993 with a mission to foster sustainable growth and development in Uganda through advancement of research –based knowledge and policy analysis. Since its inception, the EPRC has made significant contributions to national and regional policy formulation and implementation in the Republic of Uganda and throughout East Africa. The Centre has also contributed to national and international development processes through intellectual policy discourse and capacity strengthening for policy analysis, design and management. The EPRC envisions itself as a Centre of excellence that is capable of maintaining a competitive edge in providing national leadership in intellectual economic policy discourse, through timely research-based contribution to policy processes.

Any enquiries can be addressed in writing to the Executive Director on the following address:

Economic Policy Research Centre
Plot 51, Pool Road, Makerere University Campus
P.O. Box 7841, Kampala, Uganda
Tel: +256-414-541023/4
Fax: +256-414-541022
Email: eprc@eprcug.org
Web: www.eprcug.org

TABLE OF CONTENTS

List of Table

List of Figures

ABSTRACT

This study examines the dynamics of skills acquisition in Uganda, focusing on enhancers and barriers within the context of a rapidly evolving labour market. Against a backdrop of significant unemployment challenges, where 12 percent of the population is unemployed and 41 percent of youth are not in employment, education, or training (NEETs), the research provides a comprehensive analysis of skills development initiatives and labour market dynamics. The study employs a mixed-methods approach, combining extensive desk review with a quantitative analysis of secondary data from the Uganda National Labour Force Surveys. Key findings highlight that Uganda's labour market is undergoing a substantial transformation driven by technological advancements, the Fourth Industrial Revolution (4IR), and COVID-19 pandemic impacts. Despite achieving an average GDP growth of 5.3 percent, the country experiences jobless growth, largely attributed to mismatches between labour supply and demand.

Research reveals significant challenges in skills acquisition, including a persistent disconnect between educational outcomes and market needs. This study shows that despite the government's implementation of various initiatives—including the Skilling Uganda Strategy, the Uganda Skills Development Project (USDP), and the Youth Livelihood Program—significant gaps persist in addressing skills mismatches. A particular concern is that 30 percent of graduates work in jobs unaligned with their qualifications. The analysis emphasizes the critical role of digital, socio-behavioral, and analytical/technical abilities in the modern workplace while identifying key barriers such as the digital divide, inadequate educational infrastructure, and societal norms. The study concludes by recommending strategic interventions focusing on bridging the digital divide through infrastructure investment, curriculum revision, enhanced support for vulnerable groups, and strengthened public-private collaboration. This research contributes to the existing body of knowledge by providing evidence-based insights for policymakers to develop effective strategies bridging the gap between skills acquisition and productive employment in Uganda, ultimately supporting the country's economic growth and development goals.

Keywords: Skills acquisition, labour market dynamics, employment, digital transformation, educational reform, Uganda

LIST OF ABBREVIATIONS

AfDB	African Development Bank
BMAU	Budget Monitoring and Accountability Unit
CCT	Coordinating Centre Tutors
CPD	Continuing professional development
EAC	East African Community
EPR	Employment-to-Population Ratio
EPRC	Economic Policy Research Centre
FUE	Federation of Uganda Employers
GDP	Gross Domestic Product
GII	Gender Inequality Index
GoU	Government of Uganda
HEI	Higher Education Institutions
ICED	International Centre for Evidence in Disability
ICT	Information and Communications Technology
IFC	International Finance Corporation
ILO	International Labour Organisation
IMF	International Monetary Fund
IOM	International Organization for Migration
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of All Economic Activities
IYF	International Youth Foundation
MGLSD	Ministry of Gender, Labour and Social Development
MIS	Management Information Systems
MNL	Multinomial Logit
NCHE	National Council for Higher Education
NDP	National Development Plan
NEET	Not in Employment, Education or Training
NLFS	National Labour Force Survey
NSPSD	National Strategy for Private Sector Development
OECD	Organisation for Economic Co-operation and Development
PEAP	Poverty Eradication Action Plan
PSFU	Private Sector Foundation Uganda
SDF	Skills Development Facility
TVET	Technical Vocational Education and Training
UBOS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UMA	Uganda Manufacturers Association
UNBS	Uganda National Bureau of Standards
UNCDF	United Nations Capital Development Fund
UNDESA	United Nations Department of Economic and Social Affairs

UNDP	United Nations Development Programme
UNHS	Uganda National Household Survey
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDP	Uganda Skills Development Project
UVQF	Uganda Vocational Qualifications Framework
VSLA	Village Savings and Loans
WOUGNET	Women of Uganda Network
YLP	Youth Livelihood Program
YSP	Youth Skilling Pathways

1 INTRODUCTION

Skills acquisition is critical in fostering economic growth and development, particularly in developing economies (Agarwal, 2017; Sanchez et al., 2015). To remain economically competitive and foster development amid globalisation and technological advancement, countries must continually upskill their workforce. The role of skills has been amplified by technological advancement, globalisation and economic liberalisation (OECD, 2013). According to Omene (2021), skill acquisition is the practical training by individuals or groups to gain self-sustaining knowledge. More succinctly, skills acquisition enables individuals to develop capabilities and values that will benefit them, others, and society through gainful employment generation (Uka & Ogide, 2019).

Developing countries face significant challenges of high unemployment rates, underemployment, and vulnerable employment, especially among the youth. Uganda, for instance, exemplifies these challenges. According to the 2021 National Labour Force Survey (NLFS) report, unemployment increased to 12 percent from 9 percent in 2019/20 (Uganda Bureau of Statistics [UBOS], 2021). While this figure may seem modest, it masks a more significant issue which is the high number of youth Not in Employment, Education, or Training (NEETs). The NLFS report indicates that 41 percent of the youth (approximately 4 million Ugandans aged between 18 and 30) are not engaged in any productive activity.

Underemployment and informal employment pose additional challenges. Of the 87 percent of the working population, 40 percent are in subsistence employment, characterised by underemployment and vulnerability (UBOS, 2021). Additionally, about 10 percent of the employed population did not possess any formal education, while 67 percent did not have any trade or technical skills or specialisation (ibid). This significantly hampers the productivity and competitiveness of the labour force. Therefore, skills acquisition presents a viable solution to these employment challenges.

Notably, Uganda has achieved an average growth in its Gross Domestic Product (GDP) at 5.3 percent, albeit this growth has not translated into the creation of jobs; hence, jobless growth (MFPED, 2023). A mismatch between labour supply and demand, among other factors, has largely caused this jobless growth, underutilising the existing workforce (World Bank, 2023). In addition, evidence has shown that mismatches between the skills possessed by job seekers and the requirements of employers are a significant contributor to unemployment in Uganda. Studies by Khamis (2019) and Teera (2020) highlight that the curriculum in many educational institutions does not align with the practical skills needed in the labour market. Consequently, graduates often find themselves ill-prepared for available job opportunities, exacerbating the unemployment problem. Furthermore, inadequate infrastructure, especially in vocational training centers, and outdated equipment characterize poor quality education and training, thus hindering skills acquisition (Guloba et al., 2023).

Relatedly, the private sector in Uganda also finds that workers in the labour market across all sectors are inadequately prepared for employment. For instance, in manufacturing, the Uganda Manufacturers Association (UMA) reports that 68 percent of manufacturing firms faced difficulties hiring workers with the necessary technical skills, affecting productivity and growth (UMA, 2022). The agricultural sector, which employs a significant portion of the population, also lacks modern farming skills and techniques, limiting productivity and income potential.

Skills acquisition is a gendered phenomenon. Notably, women and girls in Uganda often face greater barriers to accessing education and training opportunities critical for employment. Cultural norms, early marriages, and high dropout rates among girls hinder them from continued training education which affects the level of skills acquisition for employment. According to UBOS, only 45 percent of girls' complete secondary education compared to 55 percent of boys, and women represent just 30 percent of students in technical and vocational training programs (UBOS, 2022). This gender disparity

in skills acquisition exacerbates the economic inequality between men and women, limiting the overall potential for economic growth.

Uganda has strived to enhance skills acquisition through various education and training initiatives, policies, and programs to address these challenges. For instance, the Skilling Uganda Strategy 2011-2020 was a major initiative aimed at transforming the Technical and Vocational Education and Training (TVET) system to be more responsive to the needs of the labour market. The Uganda Skills Development Project (USDP) 2016-2020, funded by the World Bank, aimed to enhance the capacity of institutions to deliver high-quality, demand-driven training programs. Additionally, the government implemented the Youth Livelihood Program (YLP) to provide skills and start-up capital to unemployed youth, enabling them to create jobs.

Despite these efforts, significant challenges remain in skills acquisition and productive employment[1]. Many educated and trained people end up unemployed, working in professions that do not utilise their skills, or emigrating to other countries. For example, a survey conducted by the Uganda Investment Authority (UIA) in 2021 indicated that 30 percent of graduates worked in jobs that did not match their qualifications (UIA, 2021). Furthermore, the emigration of skilled labour to other countries for better opportunities is a growing concern. The International Organization for Migration (IOM) reported that between 2015 and 2020, Uganda experienced a 15 percent increase in the number of skilled workers leaving the country (IOM, 2021).

Given this background, the study aims to assess the enhancers and barriers to skills acquisition in Uganda. Specifically, the study;

a) Examines the key factors influencing skills acquisition for productive employment and the interactions between Uganda's labour supply and demand.
b) Critically reviews Uganda's various initiatives, interventions and programs to address skills challenges.
c) Identifies and assesses the skills demand and supply in the labour market. This will provide insights into the skills gaps in the job market and explore the mismatches in Uganda's labour market.
d) Provides insights into the best practices, lessons learned, and potential solutions to enhance skills acquisition for productive jobs in Uganda.

By providing evidence around the above specific objectives, the study contributes to the evidence that enables policymakers to make informed decisions on effective strategies and policies to bridge the gap between skill acquisition and productive employment in Uganda, thereby contributing to the country's overall economic growth and development.

This research report is organised as follows: Section one presents a brief background to the study and its objectives. Section two discusses the related literature. Section three provides the methods used and the data sources. Section four discusses the study findings, while section five concludes the study and provides the policy implications of the findings.

2 REVIEW OF RELATED LITERATURE

The International Labour Organization (ILO) defines productive employment as work that yields returns sufficient to lift workers and their dependents above the poverty line.[2] Skills acquisition is crucial in facilitating access to such productive employment and enhancing economic growth, job opportunities, income levels, and living standards (Sanchez et al., 2015). Furthermore, productive employment is essential for integrating the poor into society, lifting them out of poverty, and promoting ongoing skill development and community engagement (Szirmai et al., 2013). This underscores the critical interplay between skills and employment, sparking an ongoing debate about whether skills precede jobs or vice versa.

1 The International Labour Organization (ILO) defines productive employment as work that yields returns sufficient to lift workers and their dependents above the poverty line

2 Matt Ripley & Steve Hartrich (2017). Measuring productive employment: A 'how to' note

In many developing countries, possessing skills is often a requirement for securing employment, with minimal on-the-job training being provided later. However, an opposing view suggests that on-the-job training enhances productivity, leading to higher earnings and productive employment. Unfortunately, only educated individuals who already possess some skills tend to benefit from such training, leaving less-educated individuals, particularly those in smaller and informal enterprises, disadvantaged (Hentschel, 2017). Implementing on-the-job training could potentially build the less-educated individuals' technical skills, offering them productive employment prospects.

Despite the evident correlation between skills and employment outcomes, a challenge of skills mismatch persists across various nations. For example, in India, a significant portion of university graduates hold degrees are under employed in fields that exceed the requirements of employers, leading to underutilisation of their skills. Similarly, over 50 percent of graduates in Tunisia find themselves in roles unrelated to their acquired skills. In Lebanon, many wage earners and self-employed individuals are engaged in occupations that do not capitalise on their skill sets, reducing productivity and economic growth (Sanchez et al., 2015).

In less developed countries, individuals with advanced degrees sometimes lack the essential high-level analytical and interactive skills needed to succeed in the labour market. Hentschel (2017) highlights the importance of possessing basic skills, such as numeracy and literacy, as foundational prerequisites for entering the workforce and achieving productivity. Today's work environment increasingly recognises social skills as essential to cognitive abilities for achieving productive employment. A strong base of fundamental skills among the citizens is essential for countries to guarantee the trainability of their workforce and attract low-tech manufacturing, which is crucial for job creation and economic growth. Combined with essential lifelong learning abilities, basic skills are a driving force for shifting to more advanced activities (ILO, 2008).

Low-income countries like Uganda have especially high unemployment rates among highly educated individuals. Specifically, whereas the number of educational institutions has grown on account of privatisation of the educational sector, the quality of graduates is still low and partly explains their unemployment in the job market. This underscores the necessity of aligning educational curricula to the changing needs of the labour market, thus equipping graduates with relevant skills for jobs and economic participation. Additionally, the budget allocation to the education sector primarily focuses on primary education, with a notable absence of emphasis on skills acquisition which is prevalent at secondary and tertiary level (Nuwagaba, 2012).

Youth unemployment is a pertinent issue in developing countries, closely linked to economic growth and structural dynamics (Akileswaran et al., 2023; Kilimani, 2017). As economies experience GDP growth, they shift towards more capital-intensive industries and a higher demand for quality goods (Kniivilä, 2007). Consequently, there is a decreasing need for low-skilled labour and a corresponding increase in demand for high-skilled labour. This shift worsens youth unemployment, as many lack the technical and technological skills required for these evolving job markets. As a result, a significant portion of the youth population finds employment in the informal sector, where jobs are often unproductive (Szirmai et al., 2013).

Research across various sectors, including tourism and agro-processing, reveals a skills mismatch among youth (Engineering Management and Innovation Institute, 2024; Nkwatsibwe, 2023; Apunyo, 2022). While possessing adequate basic, social, and technical skills, young individuals in Uganda often lack problem-solving abilities essential for specific productive jobs (Guloba et al., 2021). To address the issue of skills mismatch, various countries have embraced the dual model where learners obtain classroom knowledge while receiving hands-on training. However, several factors have hindered the dual model's effectiveness. One challenge is inadequate employer support in providing on-the-job training to facilitate long-term employment prospects in productive jobs. Additionally, a negative perception

exists surrounding apprenticeships, particularly regarding their lower earnings, which often leads to them being disregarded by the youth as a viable means of skill acquisition. Lastly, limited collaboration among vocational institutions, governmental bodies, employers, and trade unions limits the delivery of training that aligns with productive job requirements (Hentschel, 2017).

Studies focusing on specialised fields such as ICT and business education highlight the critical importance of equipping graduates with entrepreneurial skills such as innovativeness, business management, and effective communication (Nafuna et al., 2022; Utebor & Chukwunonyelim, 2021). While studies emphasise technical competencies as primary drivers of employability, others demonstrate that graduates with employability skills (communication skills, problem solving and decision-making skills and teamwork skills) are more likely to secure employment (Kraja et al., 2024; Fajaryati et al., 2020; Menon et al., 2018; Suarta, et al., 2017). Appropriate teaching methods and materials are essential to equip teachers to facilitate student skills acquisition. Collaborative efforts between educational institutions and industries play a crucial role in addressing this need. Through close collaboration, institutions can tailor their curricula to incorporate practical training, knowledge, and the development of an entrepreneurial mindset. This prepares graduates for productive employment, fostering economic growth through innovation and entrepreneurship.

In conclusion, skills acquisition for productive employment is multifaceted, with various factors influencing the ability of individuals to secure meaningful and sustainable jobs. The review above highlights the persistent skills mismatches across nations, particularly in developing countries. The literature also stresses the critical role of industry-education collaboration and the importance of aligning educational curricula with the evolving needs of the labour market to ensure that graduates possess the relevant skills of an employer's demand. Moreover, various scholars attribute unique skills that is, entrepreneurial capabilities, social skills, technical competencies, and hard skills to the likelihood of securing employment, although the majority highlight technical competencies as key for this changing world of work. However, there is still a lack of significant knowledge about the extent of skills mismatches, what predicts skills acquisition, and the progress of existing interventions designed to improve skills acquisition. This study addresses these gaps by examining the enhancers and barriers of skills acquisition, identifying and assessing skills demand and supply, highlighting the mismatches in the labour market and reviewing Uganda's skills acquisition initiatives as well as the best practices in other countries.

3 METHODS

This section presents the data and methods used to achieve the stated objectives.

3.1 Data sources and desk reviews

First, the study uses nationally representative secondary data from the Uganda National Labour Force Survey (NLFS—2021, 2016/17), the National Council for Higher Education (NCHE), and UBOS statistical abstracts. The relevance and reliability of these data sources for Ugandan labour outcomes guided our selection, ensuring our findings are based on the most current and accurate information.

The study undertakes a desk review of past literature to identify the factors that impede and enhance the acquisition of critical skills in demand. This allows for gathering existing information and data on the subject and offers insights into the labour market's fundamental and unique aspects. It also reviews relevant government policy documents and project reports. For objectives one, two, and four, we thoroughly reviewed the existing literature, including academic studies, reports, and policy documents. This comprehensive approach allows us to synthesise existing knowledge of skills acquisition, relevant initiatives in Uganda and globally, and best practices, providing a solid foundation for our findings.

3.2 Empirical model specification

The study explores trends in labour supply and demand and economic sectors and occupations experiencing growth to answer objective three. In addition, it analyses the determinants of skills mismatches in the labour market using multinomial logistic regression.

We conduct data analysis in two steps. First; we present descriptive statistics for the key dependent variables (skill levels, education and qualification mismatch) and the relationship between each dependent variable and the socio-demographic variables. Then, we undertook a multivariate analysis to establish the combined effects of the explanatory variables on education mismatch, qualifications mismatch, and skill levels.

The study also estimated the determinants of education mismatch, qualifications mismatch and skill levels using the multinomial logit, whose specification is as follows:

$$Y_i = \beta_0 + \beta_i X_i + U_i$$

Where Y_i represents the dependent variables (skill levels and education mismatches) and X_i represents the independent variables including the socio-demographic and employment characteristics identified in Li et al. (2024), Botezat et al. (2024), Rikala et al. (2024), and Pholphiru (2017). The MNL model essentially compares any given outcome with a reference outcome and thus has response probabilities given as,

$$P(y = j|x) = exp(x\beta_j) / \left[1 + \sum_{h=1}^{J} exp(x\beta_h)\right], j = 1, \ldots, J \quad (1)$$

where β_j is a $(K \times 1)$, $j = 1, \ldots, J$. In addition, to ensure model identification, β_j is set to zero ($\beta_j = 0$) for one of the categories, and coefficients are then interpreted with respect to that category, termed the base category, where $J = 1$, is the base category and $\beta_1 = 0$ is the identification condition. Following Li et al. (2024), Botezat et al. (2024), and Pholphiru (2017) the study specifies the three multinomial logistic regression models are written in the form:

$$Yij = f(Age, Marital\ status, Sex, Residence, Status\ of\ employment, job\ satisfaction, household\ size, relation\ with\ the\ household\ head, region).$$

Where Yij captures individual $i's$ skill level, education mismatch/match, or qualification mismatch/match. All model variables are specified, measured, and presented in Table 1 below.

Table 1 Definitions and measurement of variables

Variable name	Definition and Measurement
Dependent variables	
Skill levels	This is a classification of occupations based on the complexity and range of tasks performed in that occupation. 1= Highly skilled occupation 2= Skilled occupation 3= Low skilled occupation
Education mismatch	This is a situation in which the individual's le'el of education does not correspond to the required level of education for that occupation. 1= Over educated 2= Matched 3= Under educated
Qualifications mismatch	An individual working in an occupation in which s/he has an educational attainment below (above) the modal qualification is deemed underqualified (overqualified) 1= Overqualified 2= Matched 3= Under qualified
Explanatory variables	

Variable name	Definition and Measurement
Age	Self-reported age of the respondent Measured by dummies 1. 14 to 17 (1=Yes, 0 otherwise) 2. 18 to 30 (1=Yes, 0 otherwise) 3. 31 to 64 (1=Yes, 0 otherwise)
Sex	Self-reported sex of the respondent Dummy 1=Male, 0=Female
Marital status	Self-reported current marital status of the respondent Measured by dummies 1. Never married (1=Yes, 0 otherwise) 2. Currently married (1=Yes, 0 otherwise) 3. Divorced/ Separated (1=Yes,0 otherwise) 4. Widow/ Widower (1=Yes, 0 otherwise)
Status of employment	1. Classification of jobs in employment for pay or profit based on self-reported occupations. 2. Measured by dummies 3. Employer/ Own account worker (1=Yes, 0 otherwise) 4. Independent workers without employers (1=Yes, 0 otherwise) 5. Independent contractors (1=Yes, 0 otherwise) 6. Employees (1=Yes, 0 otherwise) 7. Contributing family workers (1=Yes, 0 otherwise)
Relationship with the household head	Measured by dummies 1. Head (1=Yes, 0 otherwise) 2. Spouse (1=Yes, 0 otherwise) 3. Biological child (1=Yes, 0 otherwise) 4. Other (Stepchild/ adopted child, Grandchild, Parent of the head or spouse, brother/sister, Other relative, other non-relative) (1=Yes, 0 otherwise)
Residence	Dummy 1=Rural, 0=Urban
Job satisfaction	Self-reported level of satisfaction with the current job Measured by dummies 1. Very satisfied (1=Yes, 0 otherwise) 2. Somewhat satisfied (1=Yes, 0 otherwise) 3. Neither (1=Yes, 0 otherwise) 4. Somewhat unsatisfied (1=Yes, 0 otherwise) 5. Very unsatisfied (1=Yes, 0 otherwise)
Region	Measured by dummies 1. Kampala (1=Yes, 0 otherwise) 2. South Buganda (1=Yes, 0 otherwise) 3. North Buganda (1=Yes, 0 otherwise) 4. Busoga (1=Yes, 0 otherwise) 5. Bukedi (1=Yes, 0 otherwise) 6. Bugisu (1=Yes, 0 otherwise) 7. Teso (1=Yes, 0 otherwise) 8. Karamoja (1=Yes, 0 otherwise) 9. Lango (1=Yes, 0 otherwise) 10. Acholi (1=Yes, 0 otherwise) 11. West Nile (1=Yes, 0 otherwise) 12. Bunyoro (1=Yes, 0 otherwise) 13. Tooro (1=Yes, 0 otherwise) 14. Ankole (1=Yes, 0 otherwise) 15. Kigezi (1=Yes, 0 otherwise)
Education level	Self-reported highest level of educational attainment Measured by dummies 1. Primary or less (1=Yes, 0 otherwise) 2. Secondary (1=Yes, 0 otherwise) 3. Tertiary (1=Yes, 0 otherwise)

Source: Authors' construction, 2024.

4 FINDINGS

This section highlights the findings on the factors that hinder or support skills acquisition, the programs and initiatives designed to promote the development of in-demand skills, the demand and supply of skills in Uganda's labour market, the mismatches between them, and the best practices and strategies for improving skills development.

4.1 Skills Acquisition

This subsection highlights the key emerging issues in Uganda's labour market, the skills that are most in demand and the facilitators and challenges in acquiring these skills.

4.1.1 Key emerging issues in Uganda's labour market

Uganda has witnessed significant development in labour relations in recent years, reflecting the evolving economic landscape and global shifts. Technological advancements and the Fourth Industrial Revolution (4IR) are changing how work is organized (Zervoudi, 2020; 2018). The gig economy, digital platforms, and remote work reshape traditional labour dynamics. Employers are adapting to new work structures, and employees are navigating changes in job roles and expectations (ILO/ Federation of Uganda Employers-FUE, 2022). Thus, the traditional labour market and social policies, which were adequate for decades, are facing challenges in adapting to the rapidly evolving world of work.

The COVID-19 pandemic brought about profound changes that reshaped the landscape where employers and employees interact (ILO/FUE, 2022; Ng, 2021). The pandemic has acted as a catalyst for accelerated work and workplace changes. Enterprises nationwide have undergone significant structural transformations, embracing digital tools and new technologies (Ministry of ICT & National Guidance, 2023). These innovations have prompted a fundamental reassessment of how work is conducted, disrupting long-standing norms and practices. One notable impact has been in the working space, as remote work gained prominence, with an average of 28 percent of employees working remotely during the pandemic (ILO/FUE, 2022). The traditional office setting is being redefined, and some enterprises are still reconsidering the need for physical spaces. This shift has implications for workplace relations, altering how employers and employees interact. Virtual collaboration tools and remote communication methods are becoming integral to the new work landscape.

The changes in the world of work extend to skills development, knowledge sharing, and productivity. The Fourth Industrial Revolution (Industry 4.0) plays a pivotal role, rendering some jobs obsolete and necessitating continuous training for the workforce (Mugume, 2023; World Bank, 2020). The global threat of retrenchments looms large, emphasising the shift from a focus on "long-term employment" to "long-term employability" (Ssebulime et al., 2020). This underscores the importance of upskilling and reskilling workers to adapt to technological advancements and fit into emerging job profiles (Mugume, 2023). The Fourth Industrial Revolution brings opportunities and challenges to Uganda's labour market. Embracing digitalisation, automation, and artificial intelligence can enhance efficiency and competitiveness. Therefore, policies that support innovation, entrepreneurship, and a tech-savvy workforce are critical in navigating the transformative impact of the 4IR.

Other noteworthy aspects of Uganda's labour market relations are trade unions' continued vital role, the prevalence of the informal sector, and the need to address youth unemployment. First, trade unions continue to play a crucial role in advocating for workers' rights in Uganda (Schminke & Fridell, 2021). These unions operate within the framework of the 2006 Labour Union Act, which outlines the legal procedures for their establishment and operation. Collective bargaining remains a common practice, enabling workers and employers to negotiate terms encompassing wages, working conditions, and benefits (Schminke & Fridell, 2021). Second, the informal economy engages a significant portion (91.9 percent) of the workforce in Uganda (UBOS, 2021). However, while this sector

offers employment opportunities, it also poses challenges in regulation and ensuring workers' rights. Balancing the needs of this informal workforce with formal regulations is an ongoing consideration in the evolving labour landscape (Prospects, ILO, 2021).

Thirdly, given the country's youthful demographic, addressing youth unemployment is a focal point in Uganda. According to findings of the 2021 National Labour Force Survey (NLFS), only 37 percent of the youth aged 18 to 30 years were in employment, and worse still, 41 percent were in NEET (UBOS, 2021). Additionally, aligning educational programs with industry needs is crucial for preparing the younger generation for the evolving job market. Lastly, collaboration between the government, employers, and educational institutions is essential in shaping a workforce that meets the demands of a dynamic economy.

In summary, Uganda's labour landscape is undergoing a profound transformation shaped by technological advancements, the Fourth Industrial Revolution, and the impacts of the COVID-19 pandemic. This evolution challenges traditional labour market norms and underscores the need for adaptive policies. Embracing the opportunities presented by 4IR requires a strategic focus on skills development and continuous training to navigate the changing job market. As Uganda navigates these shifts, addressing the vital role of trade unions, regulating the informal sector, and tackling youth unemployment remain imperative for fostering a balanced and dynamic labour market.

4.1.2 Vulnerable groups in Uganda's labour environment

In Uganda, some groups are particularly vulnerable in the labour environment. Economic, social, and educational disparities may account for this. These vulnerable groups include the youth, women, rural communities, Persons with Disabilities (PWDs), the informal sector, refugees and Internally Displaced Persons (IDPs). In particular, the youth face challenges in accessing quality education and employable skills training, thus limiting their ability to meet the demands of the evolving job market (Mugume, 2023; Gage, 2018; UNDESA, 2015). In addition, the economy has limited capacity to create as many jobs as needed by the unskilled youth and the ever-increasing population (Nakirijja et al., 2019). This partly explains why the youth unemployment rate is high and why there is a risk of a growing skills mismatch, especially with the fourth industrial revolution (4IR) technologies.

Women persistently face gender disparities in access to education, employment opportunities, and equal pay for equal work. Notably, UBOS (2021) reveals that nearly 16 percent of females have no formal education compared to their male counterparts (8 percent). In addition, the employment-to-population ratio (EPR) for females is only 33.8 percent compared to 51.9 percent for males. Similarly, the median monthly pay for females is UGX 140,000 versus UGX 250,000 for males. The gender digital divide limits women's access to and use of digital tools and technology-related job opportunities (Namakula, 2021; Women of Uganda Network -WOUGNET, 2020).

Rural communities are also among the most vulnerable groups. They often lack infrastructure, access to quality education, and opportunities for skills development. Limited access to information, technology, and formal employment opportunities implies this, which may contribute to higher rates of underemployment and poverty in rural communities.

People with Disabilities (PWDs) face discrimination, physical barriers, and limited access to inclusive education and employment opportunities (ICED, 2023; MGLSD, 2020; Ministry of Education and Sports, 2019). This results in a risk of exclusion from the formal labour market due to a lack of accommodative infrastructure and awareness of the capabilities of persons with disabilities.

UBOS (2021) classified a significant portion (92%) of Uganda's informal sector workforce as vulnerable. Workers in the informal sector and those who are low-skilled lack job security, social protection, and access to formal training. Therefore, these workers may not directly benefit from the advancements of the 4IR,

face challenges in adapting to new technologies and be more vulnerable during economic downturns (Fox & Signé, 2021).

Lastly, the refugees and Internally Displaced Persons (IDPs) also fall under the vulnerable groups. Refugees and IDPs often face displacement due to conflict, limiting access to stable employment and education (Schuettler & Caron, 2020). Specifically, refugees face significant barriers to employment, including lack of official documentation and work permits, non-recognition of their educational credentials, limited proficiency in local languages, and restricted mobility rights (Lindrio, 2023; Beltramo et al., 2020). The absence of social networks in host communities and the disproportionate lack of information on labour markets further compounds their difficulties in finding employment opportunities (Schuettler and Caron 2020). Consequently, limited access to skilling and opportunities hinders their integration into the labour market, making them vulnerable to poverty and exploitation in informal work arrangements.

4.1.3 Skills that are most in demand and their implications for educational and training institutions

In the context of Uganda's evolving labour market amidst the fourth industrial revolution (4IR), three fundamental categories of skills are notably in demand: Digital Skills, Socio-behavioural Skills, and Analytical and Technical Skills (Mugume, 2023; ILO, 2022; Rasool, 2021; Guloba & Kakuru, 2021; Napolitano et al., 2021; IFC, 2019). Digital Skills encompass the adeptness in utilising technology and computer literacy, which is crucial for navigating the increasingly digitised occupations. This includes proficiency in digital devices, communication applications, and networks, as the World Development Report (2019) and the International Finance Corporation (IFC, 2019) highlighted. Socio-behavioural Skills, often regarded as soft skills, are imperative for successful engagement in the 4IR labour market. These skills entail effective communication, leadership, collaboration, problem-solving, and flexibility (Guloba and Kakuru 2021; Napolitano et al., 2021). Lastly, analytical and technical skills, encompassing critical thinking, problem-solving, and STEM-related competencies, are essential as the 4IR generates new job opportunities in technical fields. The International Labour Organization (ILO, 2022) and the World Bank (2016) stress the significance of these skills in meeting the demands of the evolving job market.

The demand for these skills has significant implications for educational and training institutions, necessitating adaptations into curricula and learning approaches. To adequately prepare individuals for the 4IR labour market, institutions must prioritise the development of digital, socio-behavioural, analytical, technical, entrepreneurial, and language skills. This involves curricula enhancement, incorporating practical experiences, and fostering lifelong learning approaches to ensure continuous skill upgrading. Collaboration between the government and the private sector is essential for successfully implementing upskilling and reskilling programs, as emphasised by the African Development Bank (AfDB, 2019) and the ILO (2022). Additionally, increased budget allocation to sectors such as ICT and education is crucial for adequate investment in educational programs, infrastructure, and technology, as recommended by various studies, including those by the World Bank (2019) and the AfDB (2019).

4.2 Barriers and Facilitators of Acquisition of the Skills most Demanded

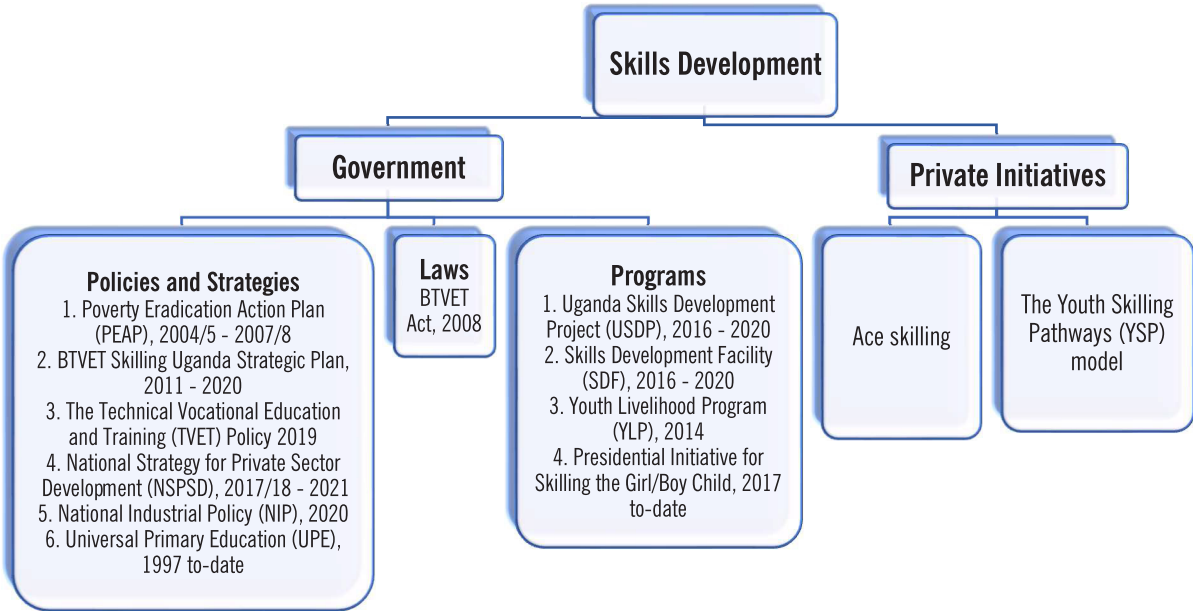
In today's rapidly evolving global environment, acquiring digital skills, socio-behavioral skills, and analytical and technological abilities is imperative. Therefore, it is essential to comprehend the barriers and facilitators of skills in demand to develop practical tactics that enable individuals to prosper in a knowledge-based economy. To develop a more skilled and adaptive workforce, the discussion examines the main barriers and facilitators that affect the acquisition of these skills that are most in demand, as shown in Table 2.

Table 2 A brief review of the facilitators and barriers to acquisition of the most in demand skills

Skills	Barriers	Facilitators
Digital Skills	• Digital divide: Rural-urban digital divide (Gillwald et al., 2019; Neto & Rogy, 2021) and the gender digital divide (WOUGNET, 2020) • Educational barriers: Outdated curriculum lacking comprehensive digital skills training, absence of a national digital skills framework (GOU, 2020). • Resource shortage: Insufficient computers, unreliable internet (Mulamba, 2023). • Economic issues: High cost of devices and internet access (Gillwald et al., 2019). • Cultural attitudes: Resistance to the adoption of new technologies. • Language barrier: Predominance of English in digital content.	• Access to resources: Online learning and resources access (GOU, 2023). • Entrepreneurial empowerment: Enable recognition of emerging technologies for business growth (Desirée, 2016). • Overcoming geographical barriers (Busiinge, 2023). • Adaptability: Continuous education for workforce competitiveness. • Development of tech hubs and innovation centres (GoU, 2023). • Social and economic inclusion: Empowering marginalized groups (UNCDF, 2022).
Socio-behavioural Skills	• Lack of trained educators (Dolev & Leshem, 2016). • Cultural Norms: Some traditions discourage assertiveness and critical thinking (Maryville, 2021). • Economic instability: Poverty and instability are affecting social and emotional development. • The inability of young people to globally recognise or acquire the skills required for the modern workforce (UNICEF, 2021).	• Enhanced teacher training programs: Improved training programs for teachers (Ahmed et al., 2021). • Employer Investment: Employer training programs in teamwork, communication, problem-solving, and leadership (Kumar, 2024). • Community-based Programs focused on empowering young people: Life skills training, mentorship, and peer support (Luwangula et al., 2021).
Analytical and Technical Skills	• Resource shortages: Lack of adequate equipment such as computers and infrastructure in many schools and tertiary institutions (GOU, 2020). • High Costs: Tuition fees, materials and equipment can be prohibitive for many learners (Nangayi, 2023). • Gender disparity: Underrepresentation of women in STEM fields due to low self-esteem and lack of role models (Dickerson et al., 2015). • Educational Mismatch: Disconnect between education and market demands (Muhammad & Zahida, 2013).	• Continuing Professional Development programs for teachers (MoES, 2017). • Access to online education platforms (Kamraju et al., 2024). • Utilization of digital tools in education: (Abid et al., 2022). • Internship and apprenticeship programs (IYF, 2015). • Investment in training programs and scholarships (MoES, 2011).

Source: Authors construction, 2024

Figure 1 Government policies, strategies, Laws and programs and private initiatives



In conclusion, a multifaceted approach that addresses economic, educational, and cultural barriers while leveraging available resources and partnerships can significantly enhance the acquisition of these critical skills. This, in turn, will foster greater employability, social inclusion, and economic development in Uganda.

4.3 Efforts to Enhance Skills Acquisition

This subsection explores the efforts by both the government and the private sector to enhance skill acquisition in Uganda. These encompass a wide range of strategies, laws, policies, programs, and initiatives specifically designed to boost skills development across the country, as highlighted in Figure 1 and discussed in Appendix 2.

A summary of some of the strategies, policies, and initiatives for boosting skills acquisition (see Appendix 2)

The government of Uganda has undertaken significant efforts to address youth unemployment and align education with labor market demands through targeted strategies and initiatives. One of the key frameworks was the Poverty Eradication Action Plan (PEAP) (2004/5–2007/8), which prioritized vocational education. Under this plan, the government aimed to increase the transition rate from secondary education (Senior Four) to Business, Technical, Vocational Education and Training (BTVET) from 10% to 50% through the Uganda Vocational Qualifications Framework (UVQF) (MoFPED, 2004). In 2008, the government enacted the BTVET Act to further enhance coordination and promotion of BTVET.

Another significant initiative was the Uganda Skills Development Project (USDP) (2016–2020), which focused on strengthening institutions to develop centres of excellence in agriculture, construction, and manufacturing through curriculum development. Under the USDP, the Skills Development Facility (SDF) supported short-term, employer-led training programs and recognized prior learning. This program benefitted over 49,000 participants, including persons with disabilities.

In 2014, the government launched the Youth Livelihood Programme (YLP), providing over 10,000 youth with vocational skills in areas such as carpentry, tailoring, agro-processing, and ICT. Similarly, the National Strategy for Private Sector Development (NSPSD) (2017/18–2021/22) facilitated the approval of 580 vocational training institutions to strengthen workforce

skills and foster private-sector growth.

On the private sector front, initiatives such as Youth Skilling Pathways (YSP) by CARE International have enhanced financial literacy through village savings and loan programs. Other notable contributions include the Technical Vocational Education and Training (TVET) Policy (2019) and private programs like MTN's Ace Skilling and the Presidential Initiative for Skilling the Girl/Boy Child, which have collectively promoted vocational training and skills development. Broader education initiatives such as Universal Primary Education (UPE) and Universal Secondary Education (USE) have also aimed to equip students with essential skills like problem-solving, formal reasoning, and occupation-specific knowledge.

However, despite these efforts, significant challenges persist. People often consider TVET a less prestigious alternative to traditional academic pathways; this leads many to see it as a "last resort" for students who do not excel academically (MoES, 2021). This stigma is reinforced by cultural biases that prioritize white-collar professions over technical and vocational careers. Additionally, many BTVET institutions suffer from inadequate funding and infrastructure, which raises concerns about the quality of training and limits the practical skills and resources available to students (MoES, 2021; Okumu & Bbaale, 2018; MoFPED, 2019). These issues continue to hinder the effectiveness of vocational education and training programs, despite the comprehensive strategies and initiatives in place. Overall, Uganda has yielded significant advancements in skills development, but there is still a need for continued efforts to overcome these persistent challenges.

4.4 Skills Demand, Supply and Mismatches

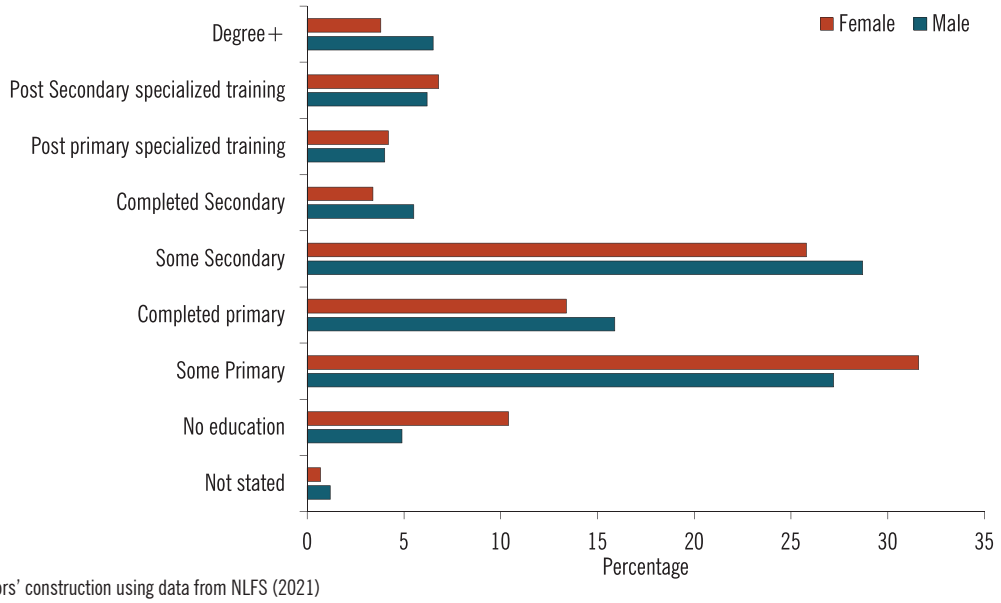
This subsection delves into Uganda's labour market's critical skills demand and supply. It highlights the mismatches in qualifications, education, and skill levels and presents the drivers of these mismatches.

4.4.1 Skills supply

This sub-section provides an overview of skills supply (proxied by different levels of educational attainment) and the potential skills supply reflected by enrolment in Uganda's Higher Education Institutions (HEIs). More succinctly, the study focuses on HEIs as a critical stage of human capital development along Uganda's entire education pathway. This way, this sub-section seeks to provide a foundation to assess whether Uganda is continuously developing its knowledge and skills base to respond to the current and potential demand and close the skills mismatches and shortages being experienced.

Figure 2 provides educational attainment by gender, highlighting significant gender disparities across various education levels. A larger proportion of females have inadequate higher-level formal education than their male counterparts, indicating a substantial gap in foundational skills among women. However, females have a higher percentage of some primary education (31.6 percent), and fewer complete it than males, suggesting improved retention strategies to ensure skill development. The lower secondary education completion rates for females (i.e., 3.4 percent and 5.5 percent for males) and the disparity in higher education attainment (i.e., 3.8 percent of females and 6.5 percent of males with degrees) illustrate the uneven distribution of skills acquisition. This uneven educational attainment implies that males are more likely to possess higher skill levels, affecting the overall skills supply in Uganda. Addressing these educational gaps through targeted policies and programs is essential for developing a more balanced and inclusive skills supply, which is crucial for Uganda's socio-economic progress.

Figure 2 Education attainment disaggregated by gender (2021)

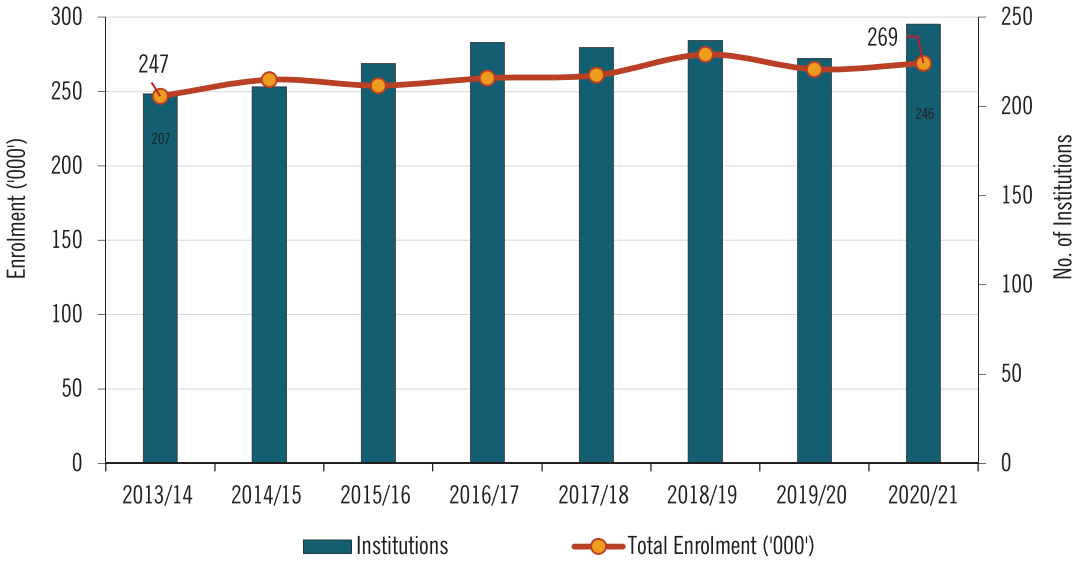


Source: Authors' construction using data from NLFS (2021)

We can best understand the potential skills gained for Uganda's labour market by exploring enrolment trends in HEIs, including universities and TVETs. Notably, the amended 2006 Universities and Other Tertiary Institutions Act recognises three broad categories of HEIs in Uganda: Universities, Other Degree Awarding Institutions (ODAIs) and Other Tertiary Institutions (OTIs). ODAIs receive accreditation from the National Council for Higher Education (NCHE) to offer specialized degree programs in several areas; however, OTIs mainly offer diplomas and certificates focusing on agriculture, teacher training, technical courses, business, management, and social development.

Figure 3 provides an overview of Uganda's higher education sub-sector, highlighting the nexus between the number of HEIs and total gross enrolment. The figure shows that the number of HEIs in Uganda increased by 19 percent (from 207 to 246 institutions) between FY2013/14 and FY2020/21.

Figure 3 An overview of the Higher Education Sub-sector in Uganda



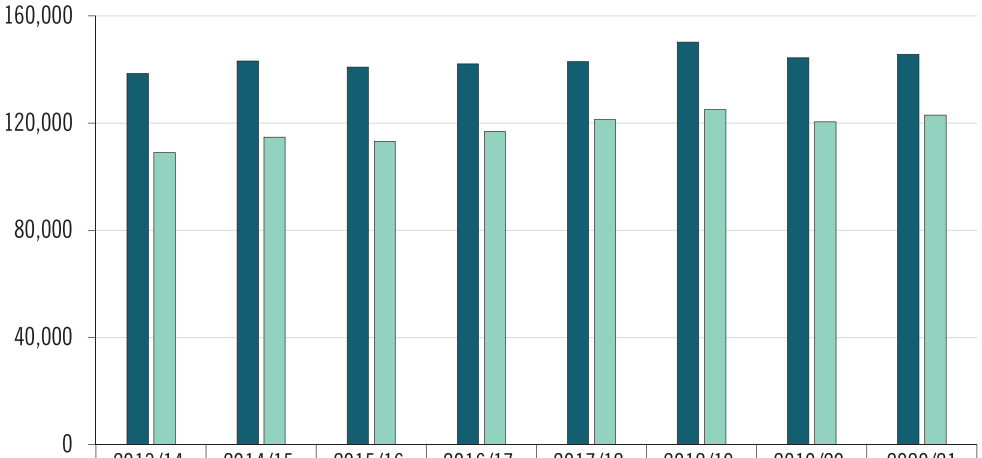
Source: Authors construction using data from UNCHE

Similarly, there was a minimal increase in the enrolment in Uganda's HEI from 247,473 in FY2013/14 to 268,686 during FY2020/21 (nearly an 8.5 percent increase), reaching a peak of 275,254 before the COVID-19 pandemic in FY2018/19. Remarkably, despite increasing HEIs, their total enrolment has stagnated or declined, especially between 2019/20 and 2020/21. Various factors, including the adverse effects of the COVID-19 pandemic and its subsequent prolonged lockdown containment measures, could explain this.

In addition, Figure 4 reveals that the enrolment of male students is relatively higher than that of their female counterparts during 2013/14 – 2020/21. In 2020/21 alone, the number of male and female students enrolled in HEIs was 145,695 and 122,991, respectively. However, it is important to note that the gender enrolment gap has declined over the years, with more females enrolling in HEIs. This could be attributed to the initiatives, policies, and programs implemented by the government (such as affirmative action) and other non-state actors, which aim to address gender disparities in Uganda's education system. Despite the rise in enrollment, McCowan (2014) notes that there are too few graduates that gain the skills needed to find work and overall, their employability has been challenging globally (Iyioke & Iyioke, 2020).

To further explore the potential skills supplied for Uganda's labour market, the study disaggregates the enrolment by gender in the different HEIs categories, as shown in Table 3. The table shows that in FY2020/21, there were more male students enrolled in universities (55 percent), Technical Colleges (81 percent), Teachers Colleges (60 percent), ICT & Media (65 percent), Art & Design (70 percent), Agriculture, Fisheries and Forestry institutions (68 percent). On the other hand, female enrolment was dominant among the institutions that fall under the category of Health (52 percent), Hotel and Tourism (60 percent), Business, Management, and Social Development (53 percent), and Other Degree Awarding.

Figure 4 Trends in HEIs enrolment disaggregated by gender, 2013/14 – 2020/21



	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Enrolment - Male	138,500	143,212	140,833	142,069	142,839	150,190	144,347	145,695
Enrolment - Female	108,973	114,643	113,210	116,958	121,248	125,064	120,561	122,991

Source: Author construction using data from NCHE, 2022

Table 3 Disaggregation of enrolment by institution category 2020/21

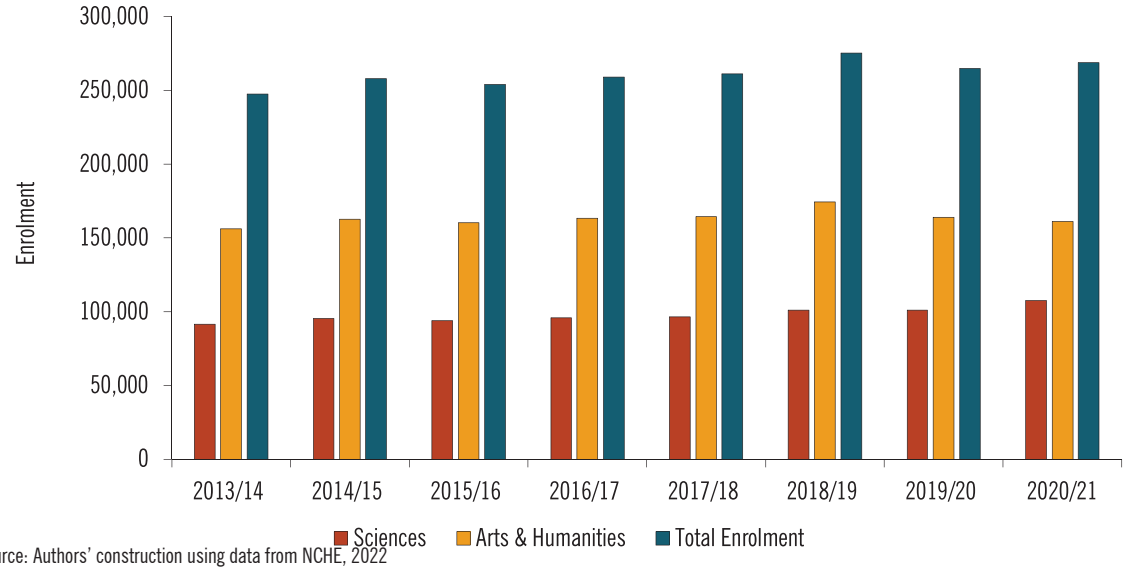
	Overall (Both Ugandans & foreigners)			Ugandan		
HEI Category	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Universities	107,885	89,818	197,703	95,730	84,054	179,784
Business/Mgt/Social Dev't	11,269	12,694	23,963	10,810	12,267	23,077
Other Degree Awarding	4,472	6,571	11,043	4,231	6,445	10,676
Agric./Fisheries/Forestry	1,619	771	2,390	1,619	768	2,387
Health	6,279	6,814	13,093	6,225	6,728	12,953
Technical Colleges	6,388	1,538	7,926	6,386	1,538	4
Teachers Colleges	4,512	2,957	7,469	4,512	2,957	7,469
Theology	1,079	275	1,354	944	212	1,156
ICT & Media	649	351	1,000	636	340	976
Hotel & Tourism	416	636	1,052	416	636	1,052
Art & Design	228	97	325	220	93	313
Others	912	456	1,368	910	455	1,365
Grand Total	**145,708**	**122,978**	**268,686**	**132,639**	**116,493**	**249,132**

Source: Authors construction using data from NCHE, 2022

Concerning the central discipline of study, Figure 5 reveals that student enrolment in *arts and humanities* disciplines significantly exceeds that in *science* disciplines between 2013/14 – and 2020/21. However, it is essential to note a gradual shift in the enrolment from the *arts* and humanities to the science disciplines. Over the period between 2013/14 and 2020/21, whereas the share of enrolment in the Arts & Humanities category declined from 63.1 percent to 60.0 percent, the enrolment shares in sciences slightly increased from 36.9 percent to 40.0 percent. The government's deliberate efforts to promote and prioritize skills acquisition in STEM-focused programs likely caused this. These programs aim to equip students with skills relevant to the opportunities presented by the Fourth Industrial Revolution and the dynamic job market. In addition, Kakooza et al. (2019) reveal that science graduates have a slightly larger impact on value added productivity of labour compared to arts graduates.

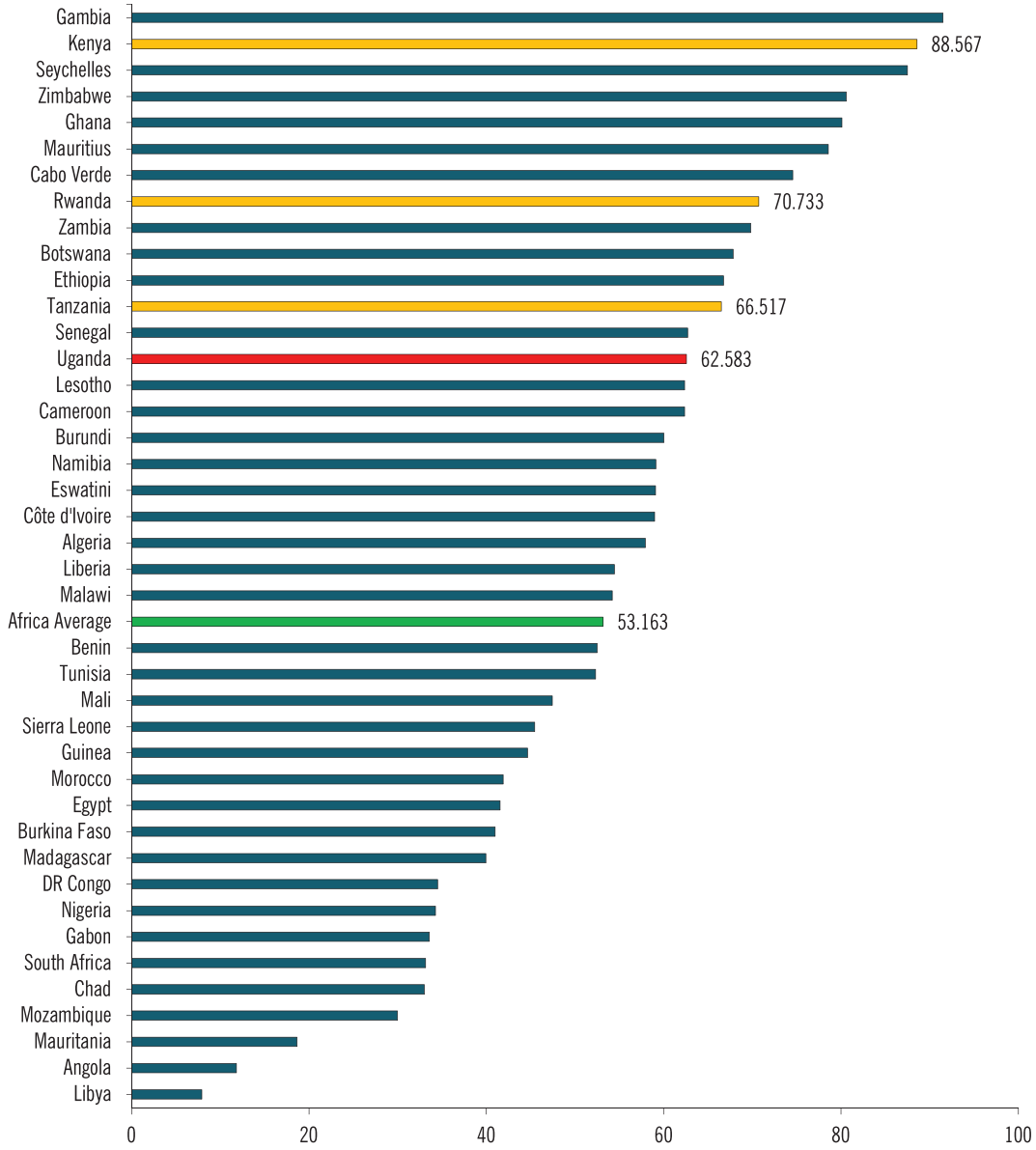
In addition, Figure 6 provides an overview of education alignment with market needs in Africa. Education alignment with market needs shows how well educational institutions and programs meet labour

Figure 5 Trends in enrolment disaggregated by major discipline of study (2013/14 – 2020/21).



Source: Authors' construction using data from NCHE, 2022

Figure 6 A comparison of education alignment with market needs in Africa (average 2016-2021)



Note: Scale 0 - 100 (where 100 implies that education is perfectly aligned with market needs)
Source: Authors' construction using data from the Ibrahim Index of African Governance, 2023.

market demands and requirements. The figure shows that, on a scale of 0 to 100, Uganda's education system and curriculum are relatively well-aligned with market needs. 62.58), which lies above the African average value of 53.2. Despite this, Uganda performs lower than her peers within the East African region, with Kenya (88.5), Rwanda (70.7) and Tanzania (66.5) having higher scores. Therefore, this creates an impetus for Uganda to strive and ensure that the skills, knowledge, and competencies imparted through education are relevant, up-to-date, and aligned with the current and future needs of employers, industries, and the economy.

In conclusion, the above analysis highlights advancements and ongoing challenges in Uganda's educational landscape, with significant implications for skills acquisition. While the country has increased the number of Higher Education Institutions (HEIs) and made progress in narrowing the gender gap in enrolment, disparities in educational attainment persist,

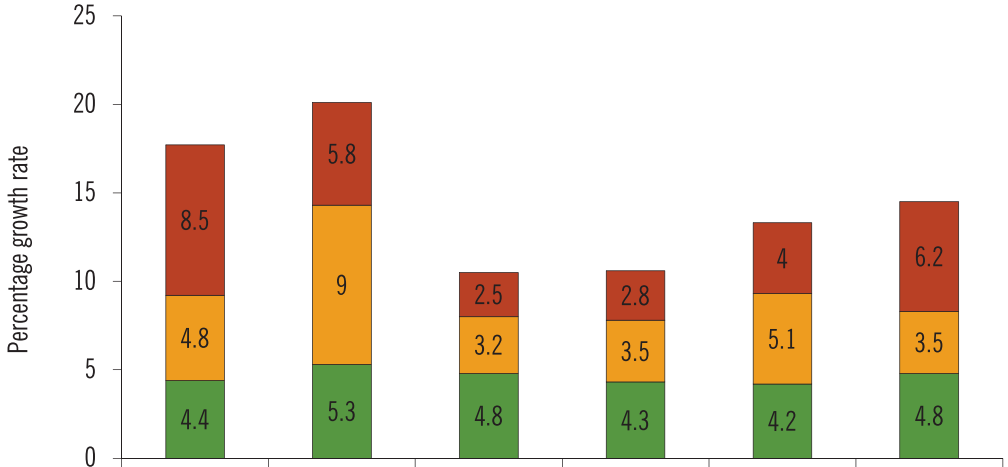
particularly between males and females. Furthermore, the positive shift towards science and technology disciplines suggests an alignment of education with market demands, which is crucial for effective skills acquisition. However, continuous efforts are still essential to ensure that the skills and competencies imparted through education are relevant, up-to-date, and inclusive.

4.4.2 Skills demand

This sub-section analyses the demand for skills by exploring the changes in Uganda's occupational structure over the past five (5) years. Initially, the study explores the growth of the key broad sectors and highlights their contribution to employment. Additionally, It proceeds to investigate the employment shifts between occupations (classified by the International Standard Classification of Occupations - ISCO). This subsection aims to depict the demand for occupations and skills, highlighting areas where skills acquisition should be prioritized.

Figure 7 shows trends in Uganda's sectoral growth rates, as a percentage of GDP, between 2017/18 and 2022/23. Although there was a reduction in the growth rate from 8.5 percent to 6.2 percent, the service sector remains the fastest-growing sector in Uganda, with the agriculture and industry sectors coming in second and third places, respectively. As the service sector remains the fastest growing, there is an increasing need for skills in customer service, sales, and digital literacy. The slower growth in agriculture and industry suggests a decreased but still significant demand for traditional agricultural and technical skills. To align with these trends, educational and training programs must adapt, emphasising service-oriented skills while

Figure 7 Trends in sector growth rates as a percentage of GDP (2017/18 – 2022/23)

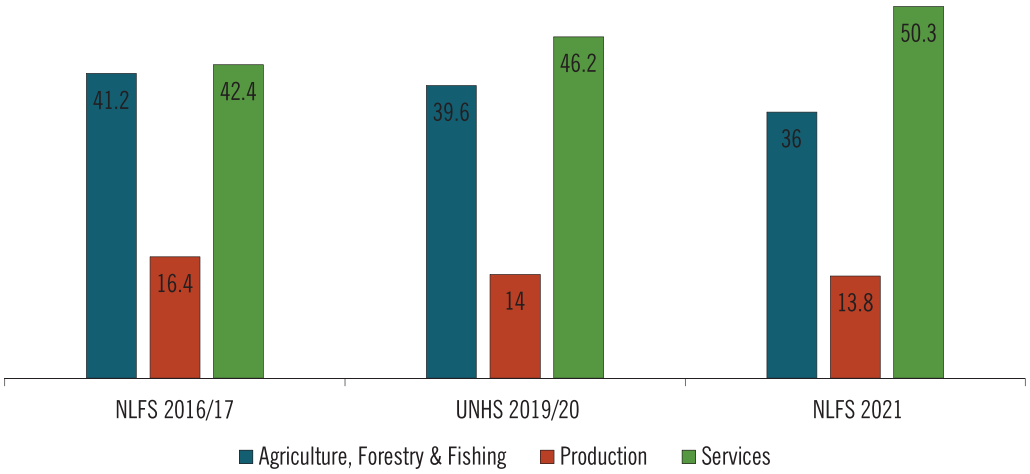


	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Services	8.5	5.8	2.5	2.8	4	6.2
Industry	4.8	9	3.2	3.5	5.1	3.5
Agriculture, forestry & fishing	4.4	5.3	4.8	4.3	4.2	4.8

Source: Authors' construction using data from UBOS, 2023

maintaining support for agricultural and industrial expertise. Also, it is important to note that despite the negative consequences of COVID-19 and its containment measures on the economy's growth performance, the growth of sectors in 2021/22 and 2022/23 shows a glimpse of potential to bounce back to their pre-pandemic levels gradually.

Figure 8 Trends in employment disaggregated by sector (%)

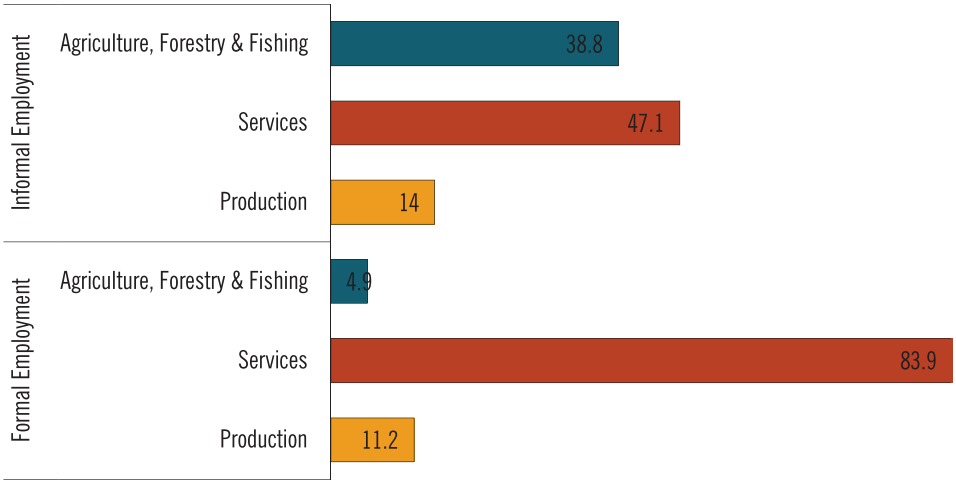


Source: Authors' construction using data from NLFS (2016/17), UNHS (2019/20) and NLFS (2021)

Between 2016 and 2021, Uganda's labour force experienced a notable shift towards the services sector, which saw its share of employment increase from 42 percent to nearly 50 percent, as shown in Figure 8. This growth in the services sector coincided with a decline in employment in the agricultural sector. The country's employment landscape is significantly transitioning, as a growing proportion of the workforce shifts from traditional sectors (agriculture and production) to service-oriented roles, thus increasing demand for service sector skills. This transition necessitates realigning educational and vocational training programs to equip the workforce with the necessary skills to thrive in the formal service sectors.

Relatedly, Figure 9 reveals that Uganda's "services" sector employed more of the labour force than other sectors, encompassing formal and informal employment settings. In 2021 alone, the services sector employed approximately 47.1 percent and 83.9 percent of the labour force in informal and formal employment, respectively. This broad reach across formal and informal employment underscores the sector's critical role in Uganda's labour market. It highlights the need for diverse skills and training programs to support workers in various employment conditions within the services sector.

Figure 9 Nature of employment by sector in 2021 (%)



Source: Authors' construction using data from NLFS, 2021.

Employment shifts in Uganda's labour market

Employment shifts reflect the changes in the patterns and structure of employment over time. This subsection explores the occupational employment shifts in Uganda's labour market during the period 2016 and 2021. Noticeably, significant changes have occurred in the types of occupations within Uganda's labour market. Technological advancements, educational attainment, and evolving labour market needs, among others, have influenced these occupational shifts. Table 5 shows changes in employment shares across various occupational categories in Uganda from 2016 to 2021, using ISCO categorisation codes. There was a decline in the share of professionals, dropping from 6 percent to 5.3 percent, and agricultural, forestry, and fishery workers decreased from 31.3 percent to 28.8 percent. Elementary occupations also saw a slight reduction from 15 percent to 14.2 percent. Conversely, service and sales workers experienced a significant increase, rising from 23.2 percent to 27.1 percent, indicating a shift towards more service-oriented employment.

Overall, the growing demand for skills in service-oriented roles, as evidenced by the increase in service and sales workers, indicates a need for skills in customer service, sales, and interpersonal communication. The modest gains in technicians, associate professionals, and plant and machine operators suggest a rising demand for technical and vocational skills, as well as digital skills. On the other hand, the decline in professionals and agricultural workers points to a reduced demand for traditional expertise and manual labour, underscoring the importance of adapting educational and training programs to meet evolving market needs.

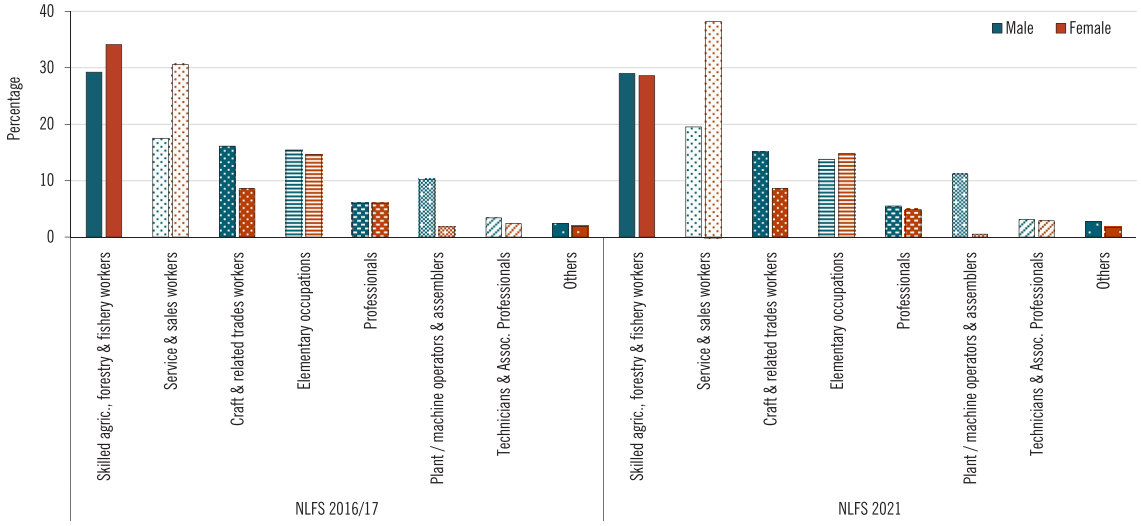
In addition, Figure 10 compares the distribution of employment across different occupational categories

Table 4 Employment Shifts by occupational structure between 2016 and 2021

Main Category - ISCO code	Shares of employment in 2016 (%)	Shares of employment in 2021 (%)	Employment gain or Loss
Professionals	6	5.3	-0.7
Technicians & associate professionals	2.9	3	0.1
Service & sales workers	23.2	27.1	3.9
Agricultural, forestry & fishery workers	31.3	28.8	-2.5
Craft & related trades workers	12.8	12.4	-0.4
Plant / machine operators & assemblers	6.5	6.8	0.3
Elementary occupations	15	14.2	-0.8
Others	2.2	2.3	0.1

Source: Authors construction using data from NLFS (2016/17) and NLFS (2021)

Figure 10 Gender disaggregation of employment by occupations (%)



Source: Authors construction using data from NLFS (2016/17) and NLFS (2021)

for males and females in Uganda. In 2016/17, skilled agricultural, forestry, and fishery workers constituted the largest employment share for males (29.2 percent) and females (34.1 percent). By 2021, this category saw a slight decrease for both genders (males: 29 percent, females: 28.6 percent). The most significant change was observed among service and sales workers, which increased markedly for females from 30.6 percent to 38.2 percent, and grew for males from 17.5 percent to 19.5 percent. Craft and related trades workers remained relatively stable for females, but slightly decreased for males. These shifts indicate a growing trend towards service and sales roles, particularly for women, and a slight decline in traditional agricultural occupations for all genders.

4.4.3 Mismatches in the labour market

In contemporary labour markets, the mismatch between the workforce's skills and those demanded by employers has emerged as a critical concern. This subsection, therefore, delves into various mismatch indicators, shedding light on individuals' educational and qualification mismatches and skill levels as per the requirements of their occupations. By examining education and qualification mismatches alongside analysing skill levels across different occupational categories, we aim to uncover nuanced insights into the evolving landscape of employment.

a. Education mismatch (Horizontal mismatch)

This refers to the situation where a worker's level of education (International Standard Classification of Education – ISCED) does not correspond to the required level of education for that occupation under the ISCO classification (Morsy & Mukasa, 2019; UBOS 2021). The determination of education mismatch is grounded in the ISCO-ISCED correspondence method that matches one's education level attained with the appropriate occupation (Flisi et al., 2017). Specifically, this matching process entails aligning individuals' educational qualifications with the educational requirements specified for their respective occupations, as shown in Table 5.

This comparison yields three classifications: education match, over-education, and under-education. Where one is considered over-educated (under-educated) if their education level surpasses (falls short of) the education level required for their occupation. If the education level aligns with the level required for their job, then this is an education match.

Table 5 Mapping of the ISCO major groups to skill levels and ISCED levels of education

ISCO major groups	ISCED groups
1=Managers, senior officials and legislators 2=Professionals 3=Technicians and associate professionals	6=Second stage of tertiary education (leading to an advanced research qualification) 5=First stage of tertiary education, 1st degree (short and medium duration)
4=Clerks 5=Services and sales workers 6=Skilled agricultural and fishery workers 7=Craft and related trade workers 8=Plant and machinery operators and assemblers	4=Post-secondary, non-tertiary education 3=Upper secondary level of education 2=Lower secondary level of education
9=Elementary occupations	1=Primary education or less

Source: Authors construction using ILO (2012).

Figure 11 shows the proportion of the population with mismatches and their skill levels. The findings reveal that 55 percent of the population experience an education mismatch. This means a considerable portion of the workforce needs to better utilise their skills or faces barriers to advancement, suggesting potential labour market inefficiencies. Following Morsy and Mukasa (2017), we can attribute this mismatch to several factors, including rapid technological advancements, shifting job demands, and disparities in education and training opportunities. Additionally, the presence of over-educated (11 percent) and undereducated individuals (44 percent) underscores potential inefficiencies in the labour market, with implications for productivity and economic growth.

b. Qualification mismatch (Vertical mismatch)

The qualification mismatch is determined by computing the modal qualification for each occupation (Rasool, 2021). If an individual's educational attainment is below (above) the modal qualification for their occupation, they are considered underqualified (overqualified). Figure 11 reveals that nearly 41 percent of the population has a qualification mismatch (both under-qualification and overqualification), suggesting a substantial portion of the workforce faces discrepancies between their qualifications and job requirements. This signifies a skills gap, where the education system is not effectively equipping graduates with the specific skill sets demanded by employers. Alternatively, there might be a shortage of jobs that align perfectly with the qualifications of the workforce, which could be due to a mismatch between the degrees offered and the industries that are growing in the economy.

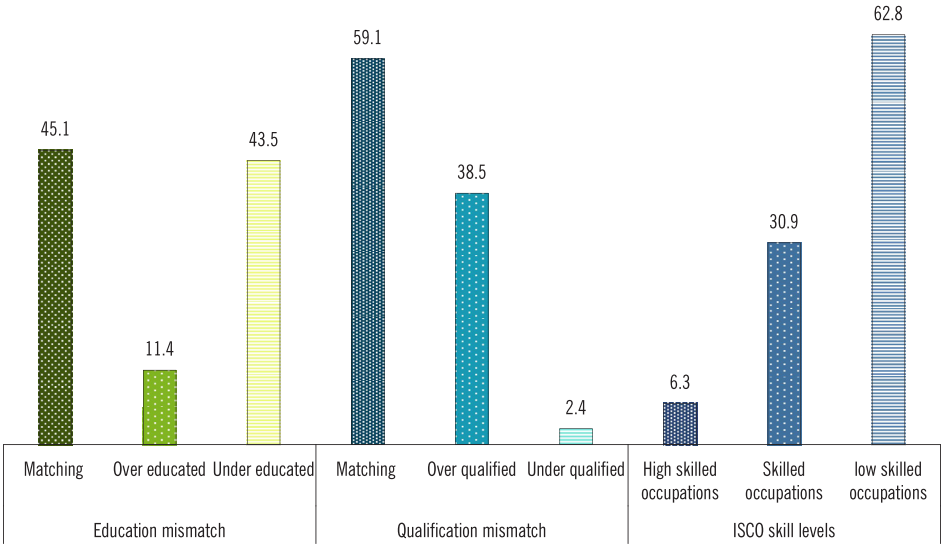
4.4.4 Categorisation of skill levels

Following Guloba et al. (2021), the study adopted three skill-level categories.[31] The ISCO skill levels range from low-skilled jobs requiring minimal education and training to high-skilled occupations that demand advanced education, training, and expertise. While ISCO skill levels provide a general indication of the skill requirements of different occupations, they may not directly measure skill acquisition. However, ISCO skill levels indirectly reflect aspects of skill acquisition, especially when considering career progression and advancement within occupations.

Notably, Figure 11 reveals that 6.3 percent of the workforce is in high-skilled occupations, indicating a smaller proportion of individuals engaged in roles

3 The skill levels include Highly skilled (Managers and Professionals), Skilled (Technicians and associate professionals; clerical support workers; and sales workers) and Low skilled occupations (Skilled agricultural, forestry and fishery workers; craft and related workers; plant and machine operators and assemblers; and elementary occupations).

Figure 11 Proportion of the population by mismatches and skill levels



Source: Authors' construction using data from NLFS (2021).

requiring advanced or specialised. Skilled occupations account for a larger share of the workforce (nearly 30.9 percent), while the majority (62.8 percent) are in low-skilled occupations. This distribution suggests a concentration of the workforce in roles with lower skill requirements, which affects productivity, economic growth, and income inequality.

4.4.5 Incidence of mismatches in the labour market

Table 6 provides insights into the incidence of mismatches across education, qualification, and skill dimensions within the labour force. Notably, whereas 17.9 percent of individuals have both their education level and qualifications matching the requirements for their occupation, a substantial 27.0 percent have the required level of education but possess qualifications higher than what is typically required. Conversely, nearly 10.85 percent are over-educated and over-qualified. Additionally, a sizable portion (41.3 percent) of the population is under-educated but has qualifications matching the modal qualification for their occupations.

Table 6 Incidence of mismatches

Variables	Percentage
Education mismatch and Qualification mismatch	
Education match + Qualification match	17.9
Education match + Over-qualified	27.0
Education match + Under-qualified	0.2
Over-educated + Qualification match	0.5
Over-educated + Over-qualified	10.9
Over-educated + Under-qualified	0.0
Under-educated + Qualification match	41.3
Under-educated + Over-qualified	0.0
Under-educated + Under-qualified	2.2
Total	**100**
Education mismatch and Skills	
Education match. + Skilled occupation	14.3
Education match + Highly skilled occupation	5.8
Education match + Low-skilled occupation	25.1
Over-educated + Skilled occupation	3.7
Over-educated + Highly skilled occupation	0.0
Over-educated + Low-skilled occupation	7.7
Under-educated + Skilled occupation	13.9
Under-educated + Highly skilled occupation	1.1
Under-educated + Low-skilled occupation	28.4
Total	**100**
Qualification mismatch and Skills	
Qualification match + Skilled occupation	15.5
Qualification match + Highly skilled occupation	5.8
Qualification match + Low-skilled occupation	37.9
Over-qualified + Skilled occupation	15.3
Over-qualified + Highly skilled occupation	0.1
Over-qualified + Low-skilled occupation	23.2
Under- qualified + Skilled occupation	1.2
Under-qualified + Highly skilled occupation	0.0
Under- qualified + Low-skilled occupation	1.1
Total	**100**

Source: Authors' construction using data from NLFS (2021).

Focusing on the education mismatch and skill levels labour force linkages, a significant proportion (25.1 percent) of individuals with matching education levels work in low-skilled jobs, whereas some work in skilled (14.3 percent) or highly skilled (5.8 percent) occupations. Moreover, there are instances of over-educated individuals occupying skilled (3.7 percent) or low-skilled (7.7 percent) positions, indicating a misalignment between education levels and the skill requirements of their jobs. This mismatch between education and skill levels in the labor market is further highlighted by the presence of under-educated individuals in both skilled (13.9 percent) and low-skilled (28.4 percent) occupations. These mismatches lead to reduced job satisfaction, lower wages, and reduced productivity which in turn has a long-term impact on the country's workforce as well as economic growth (Kaharudin et al., 2023).

Table 7 reveals that although some individuals with qualifications matching their occupation's modal qualification hold skilled (15.5 percent) or highly skilled (5.8 percent) jobs, a substantial percentage (37.9 percent) occupy low-skilled positions. Additionally, there are instances of over-qualified individuals occupying skilled (15.3 percent) or low-skilled (23.2 percent) positions, indicating a misalignment between qualifications and the skill requirements of their jobs.

Conversely, a small percentage of skilled (1.2 percent) and low-skilled (1.1 percent) occupations employ under-qualified individuals.

4.4.6 Population characteristics by ISCO skill levels, education, and qualification mismatch

Appendix 1 provides a comprehensive overview of the incidence of education and qualification mismatches across various demographic and socioeconomic variables.

The statistics provide evidence of a high proportion of employment in low-skilled occupations across all variables analysed, except for the individual's field of study. The results on sex differentials show (i) a disparity in occupational distribution: a higher proportion of females (41.7 percent) work in skilled occupations than males (23.5 percent), while a more significant percentage of males (69.8 percent) work in low-skilled occupations than females (52.6 percent). The gender disparities observed in occupational distribution and educational alignment are influenced by several factors especially cultural norms, gendered perceptions and societal expectations that often channel men and women into different professions, leading to occupational segregation (Bordoloi, 2023).

Focusing on marital status, divorced/separated individuals exhibit the highest proportion of employment in skilled occupations (44.4 percent) compared to other categories. More than 50 percent of individuals across all the marital categories are well matched in terms of qualifications, with individuals who are currently married or divorced/separated having higher rates of over-qualification compared to those who are widowed/widower or never married. Individuals who are never married exhibit the highest rate of education match (51.8 percent), while the widowed/widows have the highest rate of under-education (55.9 percent). This partly suggests that marital status may impact an individual's access to education and job opportunities.

The findings also show that skilled (37.2 percent) and high-skilled (36.3 percent) occupations employ many individuals with tertiary education, in contrast to those with primary or secondary education. Most individuals with primary or less (74.1 percent) and Secondary (57.7 percent) education are in low-skilled occupations. In addition, tertiary-educated individuals experience considerable overqualification (46.4 percent) compared to other categories, although the majority (53.6 percent) are well-matched in job qualifications. Regarding education mismatches, more individuals with secondary education (84.3 percent) are well-matched compared to those with tertiary education (50.3 percent). In comparison, 81 percent of those with primary or less education are undereducated for their jobs. This highlights the necessity of ensuring that educational qualifications align with the demands of the labour market to reduce mismatches and enhance employment outcomes.

Age groups also reflect variations in mismatch incidences, with more youth (18 to 30 years) in low-skilled occupations (64 percent), experiencing higher rates (44.4 percent) of over-qualification, and a large proportion being well matched in terms of education compared to 31-to-64-year category. Among individuals over 30 years, 47 percent are under-educated, and this group has the lowest rate of educational match (43.1 percent) compared to other age groups. This could indicate several factors, such as limited access to continuous education or training programs, technological advancements outpacing their skill development, or structural barriers hindering career advancement opportunities. Targeted interventions may thus be necessary to realign youth employment, address skill gaps, and promote lifelong learning initiatives for older workers to enhance employability and career progression.

Regarding the relationship with the household head, the results reveal that children and other household members exhibit slightly higher rates of being well-matched (education match) for their jobs (46.2 percent and 55.9 percent, respectively) compared to the household head and spouse (44.9 percent and 41.7 percent respectively). Conversely, the head and spouse demonstrate a higher incidence of undereducation (44.1 percent and 49.2 percent respectively) than

children and other members. Moreover, children and other members display a higher overqualification rate (42.3 percent and 40.4 percent, respectively) than the parents. This suggests that parents play a pivotal role in fostering educational achievement among their children, potentially guiding them toward levels of education that surpass their own.

Rural-urban disparities are also evident in mismatches, with urban individuals experiencing higher over-qualification rates (48.1 percent) than those in rural areas (32.3 percent). Furthermore, 51 percent of individuals in rural areas are undereducated, contrasting with 31.6 percent of their urban counterparts experiencing undereducation. Results on the sector of work also reveal disparities in employment and educational patterns, with over 90 percent of individuals employed in the agricultural sector, as well as those in production working in low-skilled occupations. Conversely, 60 percent of those in the services sector are in skilled occupations and demonstrating higher rates of being well educationally matched in their employment (50.8 percent) compared to those in agriculture (37.3 percent) or production (42.6 percent) sectors. This highlights the importance of sector-specific policies and strategies to address skill gaps, promote job creation, and enhance productivity across different sectors of the economy.

More individuals employed in written contracts are well-matched in terms of education (70.7 percent) and qualification (63 percent) compared to those with oral agreements (education (57.5 percent) and employment (59 percent), respectively. Nearly 79 percent of individuals with oral agreements are employed in low-skill occupations. A further investigation into the contract's duration shows that more individuals hired on contracts of more than three years (54.2 percent) and those hired on contracts of 1 to 3 years (24.1 percent) are in high-skilled occupations. In contrast, over 90 percent of individuals hired on contracts of less than six months are in low-skilled occupations. It is also important to note that there are relatively higher levels of education and qualification match among individuals with contracts of less than one month (over 70 percent are well matched) and those hired on contracts of more than three years (over 60 percent) as compared to other categories as shown in Appendix 1. Regarding experience, the statistics highlight that individuals with no experience are the most under-educated (54 percent), with 80 percent of these employed in low-skilled occupations. Regarding education match, 49.6 percent of individuals with 1 to 5 years of experience and 50.8 percent of those with 6 to 10 years of experience show a good match compared to other experience categories.

Regional data indicates that a higher proportion of Kampala workers hold skilled jobs (52.7 percent), possess education appropriate for their positions (56.5 percent), and are overqualified (57.3 percent) for their current employment. Additionally, relatively higher proportions of the workforce in northern and western Uganda exhibit higher under-education levels than those in Central and some parts of Eastern Uganda (Appendix 1). This indicates a need for further investment in education and skills development initiatives in these regions to enhance the employability and productivity of the workforce.

Regarding the individual's field of study, the results reveal that many individuals who studied education (58.5 percent) and natural sciences, mathematics, and statistics (65.2 percent) are in high-skilled occupations. Over 70 percent of those in health, welfare, and services and over 50 percent in social sciences, journalism, information, business administration, business law, and ICT are in skilled occupations. Additionally, individuals in health and welfare, natural sciences, mathematics, statistics, and education exhibit the lowest rates (less than 24 percent) of educational and qualification mismatches compared to other study fields.

4.5 Drivers of mismatches and skill levels

Table 7 presents the average marginal effects of multinomial logit models to estimate the drivers of mismatches and skill levels, as shown in Equation (2). The study estimates three (3) models, including education mismatch, qualification mismatch, and skill

levels. The results demonstrate the significant impact of various covariates on the probability of an individual experiencing mismatches in the Ugandan labour market.

The findings reveal that being female decreases the likelihood of being in a low-skilled occupation by 0.867, reduces the likelihood of being overqualified by 0.372, and weakly reduces the likelihood of being underqualified by 0.348 compared to being male. These findings align with Berggren (2011), who noted that women tend to be careful in selecting qualifications and are more likely to secure jobs matching their skills.

Table 7 Drivers of mismatches and skill levels

	Skilled occupation (1)		Matched (2)		Qualification match (3)	
VARIABLES	**High_skilled_ occup**	**Low_skilled_ occup**	**Over_ educated**	**Under_ educated**	**underqualified**	**overqualified**
Female	-0.027	-0.867***	0.014	-0.070	-0.348*	-0.372***
	(0.137)	(0.061)	(0.096)	(0.065)	(0.206)	(0.064)
Marital status (Never married)						
Currently married	-0.078	0.160*	0.036	0.087	-0.280	0.063
	(0.195)	(0.090)	(0.122)	(0.095)	(0.278)	(0.086)
Divorced/Separate	-0.874***	0.010	-0.408**	0.182	-0.076	-0.111
	(0.264)	(0.110)	(0.166)	(0.116)	(0.343)	(0.109)
Widow/widower	-1.025***	0.709***	-0.596**	0.422***	-0.606	-0.539***
	(0.394)	(0.156)	(0.285)	(0.159)	(0.539)	(0.169)
Age group (14 to 17)						
18 to 30	1.542**	-0.495***	1.417***	-0.261	1.844	1.541***
	(0.733)	(0.121)	(0.377)	(0.168)	(2.915)	(0.219)
31 to 64	2.705***	-0.474***	1.320***	-0.128	2.229	1.106***
	(0.742)	(0.133)	(0.385)	(0.176)	(3.638)	(0.225)
Relationship with the household head (Head)						
Spouse	0.022	0.192**	-0.146	0.069	-0.141	-0.009
	(0.159)	(0.075)	(0.123)	(0.076)	(0.248)	(0.077)
Biological child	-0.470*	0.484***	0.538***	-0.078	-0.739**	0.304***
	(0.244)	(0.102)	(0.143)	(0.107)	(0.376)	(0.099)
Other relative	-1.106***	0.751***	0.342**	-0.203*	-0.341	0.126
	(0.289)	(0.111)	(0.148)	(0.117)	(0.331)	(0.107)
Hsize	0.064***	0.049***	-0.047***	0.008	0.046	-0.016*
	(0.020)	(0.010)	(0.015)	(0.010)	(0.028)	(0.009)
Urban	-0.434***	-0.698***	0.422***	-0.433***	0.343**	0.619***
	(0.110)	(0.053)	(0.080)	(0.056)	(0.165)	(0.052)
Status of employment (Employer/ own account worker)						
Independent workers without employers	-1.371***	-0.429***	-0.326***	0.537***	-0.522*	-0.563***
	(0.252)	(0.082)	(0.118)	(0.079)	(0.313)	(0.075)
Independent contractors	-1.649	0.313*	-0.632*	0.501***	-14.664	-0.720***
	(1.032)	(0.180)	(0.331)	(0.159)	(801.487)	(0.165)
Employees	2.470***	-0.066	-0.458***	-1.053***	0.974***	-0.962***
	(0.208)	(0.089)	(0.117)	(0.085)	(0.291)	(0.081)
Contributing family workers	-1.081	0.081	-0.185	0.522***	0.272	-0.351**

	Skilled occupation (1)		Matched (2)		Qualification match (3)	
VARIABLES	**High_skilled_ occup**	**Low_skilled_ occup**	**Over_ educated**	**Under_ educated**	**underqualified**	**overqualified**
	(1.033)	(0.144)	(0.271)	(0.179)	(0.781)	(0.173)
Job satisfaction (Very satisfied)						
Somewhat satisfied	-0.421***	0.064	-0.041	0.026	0.007	0.041
	(0.106)	(0.054)	(0.083)	(0.055)	(0.160)	(0.053)
Neither	-1.434***	0.237***	-0.133	0.012	-0.711**	-0.008
	(0.216)	(0.079)	(0.125)	(0.082)	(0.293)	(0.079)
Somewhat unsatisfied	-0.567***	0.405***	0.053	-0.046	-0.581*	-0.158
	(0.212)	(0.098)	(0.143)	(0.098)	(0.347)	(0.097)
Very unsatisfied	-2.032***	0.600***	0.174	0.011	-1.122*	-0.004
	(0.439)	(0.131)	(0.181)	(0.129)	(0.599)	(0.125)
Region (Kampala)						
Buganda South	0.171	0.552***	-0.211	0.485***	0.080	-0.255**
	(0.207)	(0.111)	(0.145)	(0.133)	(0.307)	(0.110)
Buganda North	0.136	0.878***	-0.510***	0.404***	-0.256	-0.487***
	(0.246)	(0.123)	(0.173)	(0.141)	(0.357)	(0.119)
Busoga	-0.043	0.359***	-0.489***	0.267*	0.278	-0.187
	(0.238)	(0.126)	(0.181)	(0.147)	(0.338)	(0.124)
Bukedi	-0.001	0.147	-0.268	0.235	0.064	-0.348**
	(0.284)	(0.159)	(0.232)	(0.179)	(0.418)	(0.158)
Elgon	-0.187	0.235*	0.027	0.453***	-0.510	-0.390***
	(0.279)	(0.142)	(0.203)	(0.163)	(0.454)	(0.142)
Teso	-0.586**	0.818***	-0.063	0.569***	-0.616	-0.630***
	(0.296)	(0.132)	(0.184)	(0.149)	(0.417)	(0.130)
Karamoja	0.271	0.827***	-2.055***	0.394***	-0.309	-1.901***
	(0.283)	(0.135)	(0.346)	(0.148)	(0.398)	(0.159)
Lango	0.097	0.905***	0.412**	0.942***	-1.110**	-0.872***
	(0.298)	(0.143)	(0.197)	(0.161)	(0.536)	(0.142)
Acholi	0.703***	0.949***	0.340**	0.496***	-1.056**	-0.535***
	(0.241)	(0.130)	(0.164)	(0.148)	(0.469)	(0.126)
West Nile	-0.274	0.362***	-0.172	0.762***	-0.379	-0.823***
	(0.247)	(0.130)	(0.192)	(0.150)	(0.378)	(0.134)
Bunyoro	0.043	0.748***	-0.332*	0.604***	-0.376	-0.594***
	(0.266)	(0.130)	(0.184)	(0.147)	(0.386)	(0.126)
Toro	-0.140	0.559***	-0.466**	0.608***	-1.589***	-0.826***
	(0.253)	(0.128)	(0.187)	(0.145)	(0.524)	(0.127)
Ankole	-0.135	0.643***	-0.164	0.576***	-0.371	-0.605***
	(0.238)	(0.122)	(0.165)	(0.142)	(0.356)	(0.121)
Kigezi	-0.185	0.801***	-0.087	0.734***	-1.370***	-0.806***
	(0.276)	(0.144)	(0.196)	(0.158)	(0.529)	(0.140)
Constant	-4.509***	0.827***	-2.177***	-0.297	-1.886	-0.637**
	(0.796)	(0.189)	(0.426)	(0.231)	(2.211)	(0.260)
Observations	10,739	10,739	9,503	9,503	9,577	9,577

Note:Robust standard errors in parentheses

**** p<0.01, ** p<0.05, * p<0.1*

Source: Authors construction using data from NLFS (2021)

Focusing on marital status, divorce or separation reduces the likelihood of being in a high-skilled occupation and overeducation by 0.874 and 0.408, respectively. Similarly, being widowed decreases the likelihood of being in a high-skilled occupation by 1.025 percentage points. These results suggest widowed individuals may prioritise spending time with family, managing household responsibilities and businesses, or addressing personal matters over career ambitions. Widowed individuals are also less likely to be overeducated (0.596) and overqualified (0.539) and more likely to be in low-skilled occupations (0.709) and undereducated (0.422) compared to those who have never married. These results suggest that marital status significantly influences education-skill-qualification matching, as supported by Moore and Rosenbloom (2016).

Considering age, being in the 18 to 30 age bracket (compared to the 14 – 17 age bracket) increases the likelihood of being in a high-skilled occupation by 1.542 and being over-educated by 1.417, while reducing the likelihood of being in a low-skilled occupation by 0.495. Being in the 31- 64 age group increases the probability of being in a highly skilled occupation and being over-educated by 2.705 and 1.32, respectively. It reduces the probability of being overqualified by 1.106 percentage points. Extensive work experience, specialised skills, and advanced qualifications make these individuals highly desirable for high-skilled occupations, thus reducing their likelihood of low-skilled employment.

Results regarding the relationship with the household head indicate that being a household's biological child is associated with an increased likelihood of being over-educated (0.538) and over-qualified (0.304) compared to being the head. This could suggest that being a household head's biological child may imply better access to educational resources or more substantial encouragement to pursue higher education (Boser-Duker et al., 2021; Darko & Carmichael, 2020). As a result, they may attain higher levels of education. Being a household's biological child and spouse is also associated with an increase in the probability of being in a skilled occupation by 0.484 and 0.192, respectively, compared to being the head of the household. Other household members are more likely to be in low-skilled occupations (0.751).

An increase in household size is associated with a decrease in the likelihood of being over-educated and overqualified by 0.047 and 0.016 percentage points, respectively. Compared to smaller household sizes, it increases the probability of being in either a low-skilled or high-skilled occupation by 0.049 and 0.064 percentage points. This result may suggest that individuals from larger households have access to more resources or support networks that facilitate skills development and career advancement. However, it reduces the likelihood of over-education and over-qualification by 0.047 and 0.016 percentage points, respectively.

Urban residence decreases the probability of being in high-skilled and low-skilled occupations by 0.434 and 0.698, respectively, making urban residents more likely to be in skilled occupations. Urban residents are also more likely to be over-educated (0.422) and overqualified (0.619). The nature of the urban job market, often offering a mix of opportunities from entry-level to mid-level roles requiring moderate skills and experience, partly explains this.

Regarding employment status, being an employee increases the likelihood of being in a high-skilled occupation and being over-qualified by 2.47 and 0.974, respectively. Similarly, it lowers the likelihood of being over-educated and over-qualified by 0.458 and 0,962, respectively, compared to being an employer/ own account worker. This likely results from employers screening for skills that match job requirements. Contributing family workers are 0.522 percent more likely to be under-educated for the jobs they hold and less likely (0.351) to be overqualified. This may be because family businesses hire them without strict educational requirements, focusing instead on their familiarity with the business and using the position as part of their management training. Job satisfaction also impacts employment. The results for job satisfaction show that somewhat satisfied individuals are 0.421

less likely to be employed in high-skilled occupations compared to being very satisfied. Meanwhile, those who are somewhat unsatisfied or unsatisfied are 0.405 and 0.600 percent respectively more likely to be in low-skilled occupations.

Concerning the Kampala region, the marginal effects for the different regions indicate varied findings for the skill levels, education, and qualification mismatches. However, there is consensus regarding regional effects on skill levels and the incidences of education and qualification mismatches. Specifically, the results reveal that the workforce in other regions is more likely to be in low-skilled occupations, more likely to be under-educated, less likely to be overqualified and less likely to be over-educated compared to their Kampala counterparts. These findings can be attributed to Kampala's status as the capital city, which offers more excellent economic opportunities, better access to education and training, urbanisation trends, and the concentration of government and administrative functions, collectively resulting in a higher proportion of skilled workers and lower incidences of education and qualification mismatches in Kampala compared to other regions.

4.6 Best Practices and Strategies for Skills Acquisition

This subsection presents a review of regional and global best practices and successful strategies used to enhance skills acquisition. We aim to benchmark effective practices that Uganda can adopt to overcome major challenges impeding skill acquisition. Considering the current trends in globalisation, Uganda's labour market has consistently been affected by rising skills and education qualification mismatches between what

Table 8 A summary of best practices in skills acquisition

Country	Main Drive on Skills Acquisition	Key strategies and initiatives	Success stories	Limitations	Takeaways for Uganda
Kenya	Structured policy reforms and increased TVET enrolment	Implementation of various legal frameworks, public-private partnerships, Female Future Leadership Programme	Increased enrolment, especially in TVET, curriculum reform, and public-private partnerships	Inadequate funding, shortage of personnel, weak linkages between research and industry	Standardise workplace-based training, harmonise education and industrial policies and provide adequate training equipment.
Sierra Leone	Coordinated and standardised training	National TVET policy, establishment of National TVET Agency, decentralisation of higher-level TVET institutions	Improved quality of TVET programs, employment opportunities in agriculture	Uncoordinated training from private institutions	Detailed research on TVET status, decentralised TVET institutions, and established a coordinating agency.
India	National priority on skill development and entrepreneurial initiatives	Creation of the Ministry of Skills Development, collaborations with international and national players, focus on informal education	Upscaling of labour force, inclusive economic growth	Lower labour productivity compared to other economies	Establish a Ministry of Skills and Entrepreneurship, map existing skills and certifications, and foster partnerships between educational institutions and businesses.
Germany	Dual training education system combining practical work experience with theoretical instruction	Public-private solid collaboration, intermediary institutions, on-the-job training	High employment rates among graduates, production of in-demand skills	Potential misalignment with higher education	Adopt a dual vocational education system, create a robust governance system, and combine practical and theoretical training.

Source: Authors construction, 2024

the labour market demands and what the education and training institutions produce. Rising unemployment and underemployment, especially among the youths, force many into low-paying and non-decent work as a means of survival. As such the absence of a harmonised approach to linking education and training institutions' outcomes to the country's development priorities, low production, and productivity, among others.

We select four countries: Kenya, India, Germany, and Sierra Leone. We choose Kenya because it is within the East African community and has best practices in policy reforms (Republic of Kenya, 2018a); Germany- to get a European-based experience in strengthening the TVET. Germany is renowned for its best practices in strengthening TVET. India, because of its strength in skilling the youth, given that it has a high population of poverty-stricken youth, and Sierra Leone, for strengthening the TVET and African experience (OECD, 2013).

There are critical lessons that Uganda can draw from the 4 country case studies. First, Kenya's success in TVET highlights the importance of standardising workplace-based training and harmonising education and industrial policies to ensure that skills developed to meet the current and future needs of the economy. Furthermore, the establishment of National TVET Agency coupled with decentralization of higher-level TVET institutions underscores the need for Uganda to have a coordinated approach to skills development and increasing access to TVET programs. India's prioritisation of skill development through a dedicated Ministry of Skills Development and fostering strong partnerships between educational institutions and businesses can guide Uganda in aligning training programs with Labour market demands. Germany's dual vocational education system, which combines practical work experience with theoretical instruction, demonstrates the effectiveness of integrating real-world training with classroom learning, supported by strong public-private partnerships.

Governance and institutional quality of the education sector (although not highlighted in the table) emerge as critical drivers of success across all these countries. Kenya's TVETA ensures standardization and oversight, while Sierra Leone's National TVET Agency coordinates training efforts and regulates institutions to improve quality and access. India's Ministry of Skills Development centralizes policy implementation and fosters accountability, enhancing collaboration among stakeholders. Intermediary institutions, such as chambers of commerce, strengthen Germany's governance framework. These institutions align vocational education with labour market demands and maintain high-quality standards. These governance structures ensure that the TVET systems in these countries are well-coordinated, sustainable, and aligned with national development goals. Thus, Uganda can significantly enhance its skills acquisition framework by adopting best practices from the above case studies of Kenya, Sierra Leone, India, and Germany. By addressing the limitations and leveraging the success stories of these countries, Uganda can create a more robust and dynamic skills development system, ultimately driving economic growth and reducing unemployment.

5 CONCLUSION AND POLICY IMPLICATIONS

Skills acquisition is vital for economic growth, particularly in developing economies like Uganda, which face high unemployment, underemployment, and a skills mismatch between educational outcomes and market needs. Despite efforts like the Skilling Uganda Strategy and Youth Livelihood Program, significant gaps remain. This study aims to explore the factors that enhance or impede skills acquisition, assess the effectiveness of existing initiatives, and provide insights into bridging skills demand and supply mismatches. Additionally, it examines best practices from other countries.

Key findings highlight that Uganda's labour market is transforming due to technological advancements, the Fourth Industrial Revolution (4IR), and impacts of the COVID-19 pandemic. These shifts have

redefined traditional labour market dynamics and highlighted the need for adaptive policies. The most in-demand skills include digital, socio-behavioural, and analytical/technical abilities. However, barriers hinder acquisition of these skills such as the digital divide, inadequate education infrastructure, economic disparities, and societal norms. Conversely, policy initiatives, community programs, and private-sector involvement facilitate skills acquisition. Bridging the digital divide through investments in infrastructure, revising curricula to incorporate the in-demand skills, supporting vulnerable groups, and enhancing public-private collaboration are key for an inclusive labour market.

While vocational and technical training initiatives have laid a foundation for skills development, challenges like resource constraints and negative perceptions persist. Raising awareness about the importance of vocational education, aligning training with market demands, and strengthening links between training institutions and employers through internships and showcases can improve employment outcomes.

Findings also reveal significant disparities in education, qualifications, and job requirements in Uganda's labour market, leading to the underutilisation of skills and reduced productivity. Factors such as rapid technological advancements, shifting job demands, and unequal access to education contribute to these mismatches.

Comparative analysis of best practices from Kenya, Sierra Leone, India, and Germany offers valuable insights. Kenya's structured policy reforms, Sierra Leone's standardised training, India's focus skill development and entrepreneurship, and Germany's dual vocational education system provide actionable lessons for Uganda.

Policy implications include:

- **Vocational and technical education programs need to be enhanced to align with the skills most in demand. The MoES should oversee this effort, integrating digital, socio-behavioural, and analytical/technical competence-enhancing** modules into the curricula. Regular consultations with industry experts, curriculum developers, and educational stakeholders can achieve this, ensuring relevant and up-to-date content. This will help bridge the gap between education and employment, increasing job readiness and productivity.
- **Strengthening public-private partnerships will help identify relevant skills demanded in the labour market and develop appropriate skilling and training programs.** The MoES and the MGLSD should work closely with private sector actors and firms (e.g.PSFU, UMA, and others) should provide insights on emerging skill needs and industry trends to ensure curricula align with market needs and improve employability. Holding regular labour market stakeholder meetings between demand stakeholders (e.g., employers and firms) and supply side (e.g., education institutions) can actualise this recommendation.
- **There is a need to promote continuous/lifelong learning and upskilling initiatives to address regional and demographic disparities in skills acquisition.** The MGLSD, MoES and the MoFPED should prioritise the implementation of the TVET policy and other skilling initiatives and appropriate more resources to support their implementation.
- **Policymakers should develop and implement special support programs to include marginalised groups in the labour market.** These groups include women, PWDs, the youth in rural areas, and the widowed. For instance, by drawing on global best practices such as Kenya's Ajira Digital program for rural youth or Germany's incentives for disability-friendly workplaces, Uganda can adapt and implement similar initiatives to effectively empower these groups.

REFERENCES

Abid, H., Mohd, J., Mohd, A. Q., & Rajiv, S. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers, Volume 3, 2022. Pages 275-285, ISSN 2666-4127. https://doi.org/10.1016/j.susoc.2022.*

Akileswaran, K., Mazumdar, J., & Perez Albertos, A. (2023). Youth Unemployment in the Developing World Is a Jobs Problem. *Stanford Social Innovation Review*. https://doi.org/10.48558/C6V0-YB62

Anindo, I., Mugambi, M., & Matula, D. (2016). Training equipment and acquisition of employable skills by trainees in public technical and vocational education and training institutions in Nairobi County, Kenya. *Training, 3(4), 103-110*.

Apunyo, R., White, H., Otike, C., Katairo, T., Puerto, S., Gardiner, D., ... & Obuku, E. A. (2022). Interventions to increase youth employment: An evidence and gap map. *Campbell Systematic Reviews*, *18*(1), e1216.

AU, & AUDA. (2020). COVID-19 and its implications for skills development. Special Edition, Skills Initiative for Africa. *African Union & African Union Development Agency*. https://au.int/sites/default/files/documents/38988-doc-sifa_special_newsletter_english.pdf

Beltramo, T., Fix, J., & Sarr, I. (2020). Using socioeconomic data to promote employment solutions for refugees in Uganda. https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.unhcr.org/sites/default/files/legacy-pdf/61371d364.pdf&ved=2ahUKEwjC9oDT2KSJAxXe3wIHHRIdM28QFnoECBUQAQ&usg=AOvVaw3vXSvfgxn0hkQ7zegnsIDR

Bennett, F., Escudero, V., Liepmann, H., & Podjanin, A. (2022). Using 14 Online Vacancy and Job Applicants' Data to Study Skills Dynamics. *(Iza Discussion Paper No. 15506). https://papers.ssrn.com/sol3/papers. cfm?abstract_id=4198744*.

BMAU. (2013). Enhancing Opportunities through Skills Development in Uganda: What are the Challenges? . *Budget Monitoring and Accountability Unit BMAU BRIEFING PAPER (3/13)*.

Bordoloi, M. (2024). Gender based occupational segregation: A barrier for women's economic empowerment. Institute for What Works to advance gender equality (IWWAGE) https://iwwage.org/gender-based-occupational-segregation-a-barrier-for-womens-economic-empowerment/?

Boser-Duker, T., Henry, M., & Strobi, E. (2021). Children's resource shares: Male versus Female-Headed Households. https://link.springer.com/article/10.1007/s10834-020-09743-3

Busiinge. (2023). Bridging the Gaps: Unveiling Challenges in Digitalizing Ugandan Education. https://examiner.co.ug/op-eds/bridging-the-gaps-unveiling-challenges-in-digitalizing-ugandan-education/

Botezat, A., Incaltarau, C., Diac, S. A., & Grosu, A. C. (2024). Having your career path decided too early: the effects of high school track on education-occupation mismatch. *International Journal of Manpower*.

Compassion-International. (2024). Effects of Poverty on Child Development. https://www.compassion.com/poverty/effects-of-poverty-on-children.htm#:~:text=Poverty%20negatively%20affects%20a%20child%27s,Poverty%20destroy%20children%27s%20dreams.

Dickerson, A., McIntosh, S., & Valente, C. (2015). Do the maths: An analysis of the gender gap in mathematics in Africa. *Economics of Education Review, 46, 1-22*.

Darko, C. K., & Carmichael, F. (2020). Education of biological and fostered children in Ghana: The influence of relationships with the household head and household structure. *Journal of International Development*, *32*(4), 487-504. https://doi.org/10.1002/jid.3465

Engineering Management and Innovation Institute (2024). Unveiling the challenges and opportunities in skilling of Youth.

Understanding Youth unemployment in Uganda and the region. https://www.emi.ac.ug/2024/05/11/unveiling-the-challenges-and-opportunities-in-skilling-of-ugandas-youth/

EPRC. (2023). Despite challenges, schools have embraced the new curriculum. *Economic Policy Research Centre. https://eprcug.org/press-releases/despite-challenges-schools-have-embraced-the-new-curriculum/#:~:text=The%20issues%20include%20inadequately%20trained,pointed%20out%20by%20the%20stu*.

Fajaryati, N., Budiyono, Akhyar, M., & Wiranto. (2020). The employability skills needed to face the demands of work in the future: Systematic literature reviews. *Open Engineering*, *10*(1), 595-603. https://doi.org/10.1515/eng-2020-0072

Fox, L., & Signé, L. (2021). The fourth industrial revolution (4IR) and the future of work: Could this bring good jobs to Africa. *Evid. Synth. Pap. Ser, 51*.

Gage, A. (2018). The demographic dividend and youth in sub-Saharan Africa. *Bill and Melinda Gates Foundation. https://www.gatesfoundation.org/ideas/articles/goalkeepers2018-essay-gage*.

Gillwald, A., Mothobi, O., Ndiwalana, A., & Tusubira, T. (2019). The state of ICT in Uganda. Policy Paper Series No. 5 After Access: Paper No. 8 The State of ICT in Uganda. *https://researchictafrica.net/2019_after-access-the-state-of-ict-in-uganda/*.

GOU. (2011). Skilling Uganda. BTVET Strategic Plan 2011-2020. Ministry of Education and Sports. *Ministry of Education and Sports*.

GOU. (2013). A Comprehensive Report on the Universal Post Primary Education & Training (UPPET /USE) & Universal Post O' Level Education & Training (UPOLET) National Headcount . *Ministry of Education and Sports. Exercise 2013 https://www.education.go.ug/wp-content/uploads/2019/08/UPPET-and-UPOLET-National-Headcount-2013.pdf*.

GOU. (2013). Youth Livelihood Programme (YLP): Program Document. *Ministry of Gender Labour and Social development*.

GOU. (2017). Continuous Professional Development (CPD) framework and costed implementation plan. Ministry of Education and Sports. *Ministry of Education and Sports*.

GOU. (2018). Education Response Plan for Refugees and Host Communities in Uganda. *Ministry of Education and Sports*.

GOU. (2019). The Technical Vocational Education and Training (TVET) Policy. *Ministry of Education and Sports*.

GOU. (2020). Digital agenda for the Education and Sports sector . *Ministry of Education and Sports*.

GOU. (2020). National Industrial Policy: A Framework for Uganda's industrialization, Employment and Wealth Creation . *Ministry of Trade, Industry and Cooperatives. NIP Report (mtic.go.ug)*.

GOU. (2020). Situational Analysis of Persons with Disabilities in Uganda. *Ministry of Gender, Labour and Social Development* .

GOU. (2020). Uganda Skills Development Project (USDP) Achievements (2016-2020). *Minisry of Education and Sports*.

GoU. (2021). Process Evaluation Of The National Strategy For Private Sector Development 2017/18-2021/22 . *https://opm.go.ug/wpfd_file/final-mtr-report-national-strategy-for-private-sector-development-nspsd/*.

GOU. (2021). Summary Update of Programme Implementation: Youth Livelihood Programme (YLP). *Ministry of Gender Labour and Social Development*.

GOU. (2023). Digital transformation roadmap (2023/24 – 20217/2028. *Ministry of ICT & National guidance*.

GOU. (2023). Pilot Digital Skills Acceleration Program 2023/2024 - 2025/2026. *Ministry of Education and Sports*.

GOU, & World-Bank. (2016). Uganda Skills Development. *Ministry of Education and Sports* .

Guloba, M. (2023). Skills Development and Economic Transformation in Uganda: Challenges and Policy Options. *Kampala: Economic Policy Research Centre*.

Guloba, M. M., Atwine, B., & Ssewanyana, N. S. (2023). Strengthening education and learning systems to deliver a 4IR-ready workforce: Youth, Employment, and Skills (YES) . *https://eprcug.org/publication/strengthening-education-and-learning-systems-to-deliv*.

Guloba, M., & Kakuru, M. (2021). Leveraging IWOSS and Soft Skills to Address Slow Structural Transformation and Youth Unemployment in Uganda. Brookings. *Brookings. https://www.brookings.edu/blog/ africa-in-focus/2021/08/03/leveraging-iwoss-and-soft-skills-to-address-slow-structural-transformation-and-youth-unemployment-in-uganda*.

Hafiz, N. A., Ali, R. P., & Munawar, M. (2021). The Role of Teacher Training Programs in Optimizing Teacher Motivation and Professional Development Skills. *Bulletin of Education and Research April 2021, Vol. 43, No.2 pp. 17-37*.

Hicks, R., & Maina, L. (2018). The Impact of Refugees on Schools in Uganda. Kampala: British Council.

Huxtable, J., & Gillingham, S. (2019). CARE Uganda Knowledge Model Paper: Youth Skills Development . *https://care.at/wp-content/uploads/2023/05/Knowledge-Model-Paper_YS_FINAL.pdf*.

ICED. (2023). Disability-inclusive education and employment: understanding the context in Uganda. . *International Centre for Evidence in Disability, MRC/UVRI & LSHTM Uganda Research Unit, Mastercard Foundation. London, UK.*

ILO. (2017). Qualification and Skill Mismatch: Concepts and Measurement. *International Labour Organization, ILO (2017)*. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_emp/%40ifp_skills/documents/presentation/wcms_554348.pdf

ILO. (2021). Diagnosis on informality in targeted intervention areas of the PROSPECTS programme in Uganda. *International Labour Organisation PROSPECTS*.

ILO, & FUE. (2022). The Next Normal: The changing workplace in Uganda. *International Labour Office and Federation of Ugandan Employers* .

ILO, & World-Bank. (2021). Skills development in the time of COVID-19: Taking stock of the initial responses in technical and skills development programmes and training. *Geneva- ILO*.

Isabel, N., & Michel, R. (2021). Too many Africans cannot access the technology they need. A World Bank initiative aims to help reverse that. *World Bank Blogs*.

Iyioke, I. V., & Iyioke, I. C. (2020). Work-Based Learning in Nigeria's Higher Education: What Now?. *Work Based Learning e-Journal International*, *9*(1), 61-95.

Jabulani, M., & Lulama, Q. (2008). Integrating Socio-Cultural Knowledge in life skills education for the prevention of Health and Social Pathologies: A Social Work Perspective.

Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in higher education, 40(2), 350-367*.

Jjuuko, R. (2021). Youth transition, agricultural education and employment in Uganda: freeing individual agency. https://doi.org/10.33612/diss.192191164

Kaharudin, I. H., Ab Rahman, M. S., & Zin, W. N. S. W. (2023). The Literature Review on Job Mismatch and Unemployment Among Graduates. http://dx.doi.org/10.6007/IJARBSS/v13-i11/19149

Kakooza, V., Wamala, R., Wokadala, J., & Bwire, T. (2019). Are Graduates from the Arts-Related Academic Disciplines More Productive than Those from the Science-Related Disciplines? *International Journal of Higher Education*, *8*(3), 226-234. https://doi.org/10.5430/ijhe.v8n3p226

Kamraju, M., Krishnaiah, J., Durgesham, G., Noor, S., Syeda, A. B., Nazneen, F., & Madhuri, Y. (2024). Exploring the Impact of Online Education on Higher Education. *ASEAN Journal of Educational Research and Technology 3(1) (2024) 27-36*.

Khamis, M. (2019). Uganda Skills and Jobs Analysis. *World Bank*. https://documents1.worldbank.org/curated/en/138001589172722260/pdf/Uganda-Skills-and-Jobs-Analysis.pdf

Khuraisah, M. N., Khalid, F., & Husnin, H. (2020). Preparing graduates with digital literacy skills toward fulfilling employability need in 4IR era: a review. International . *Journal of Advanced Computer Science and Applications, 11(6), 307-316. https://doi.org/10.14569/IJACSA.2020.0110641*.

Kilimani, N. (2017). Youth employment in developing economies: Evidence on policies and interventions. https://bulletin.ids.ac.uk/index.php/idsbo/article/view/2867/ONLINE%20ARTICLE

Kniivilä, M. (2007). Industrial development and economic growth: Implications for poverty reduction and income inequality. *Industrial development for the 21st century: Sustainable development perspectives*, *1*(3), 295-333. https://doi.org/10.1080/13583883.2018.1444195

Kraja, Y. B., Bejleri, E., & Saraçi, P. (2024). Examining the Relationship Between Technical Competencies, Personal Skills, and Employment Opportunities. Case of Albania. *International Journal of Religion*, *5*(8), 161-171. http://dx.doi.org/10.61707/kf8ej064

Kumar, S. (2024). Employees And Organisational Development (E&Od). *Educational Administration: Theory and Practice 30(5),2283-2289. ISSN:2148-2403. https://kuey.net/*.

Li, B., Zu, X., Chen, M., Wang, S., Li, J., Nie, W., & Shen, G. (2024). Comparative Research of Factors Influencing Education Mismatch and Skill Mismatch in Vocational Education. https://doi.org/10.21203/rs.3.rs-3920213/v1

Lindrio, P. (2023). Safe but Sidelined: Qualified Refugees Are Being Turned Away From Jobs in Uganda. https://globalpressjournal.com/africa/uganda/safe-sidelined-qualified-refugees-encounter-barriers-employment-uganda/

Luwangula, R., Walakira, E. J., Larok, R., Matovu, F., Agaba, A. B., Kasalirwe, F., & Nyeko, J. P. (2021). Empowering Vulnerable Youth in Uganda: Learning from Vijana AVSI Life Skills Programme and Selected Actors.

Menon, M. E., Argyropoulou, E., & Stylianou, A. (2018). Managing the link between higher education and the labour market: perceptions of graduates in Greece and Cyprus. *Tertiary education and management*, *24*(4), 298-310.

McCowan, T. (2014). Can higher education solve Africa's job crisis? Understanding graduate employability in Sub-Saharan Africa. Going Global 2014. https://www.britishcouncil.org/sites/default/files/graduate_employability_in_ssa_final-web.pdf

Ministry of Education and Sports. (2021). TVET communication, marketing and rebranding startegy- 2021/22 – 2025/26. https://www.education.go.ug/wp-content/uploads/2024/08/FINAL-SIGNED-TVET-CMR-STRATEGY-2022-2026.pdf

Ministry of Finance Planning and Economic Development (MoFPED). (2019). Business, Technical and Vocational Training: Are the objectives being met? BMAU Briefing Paper 26/19. https://www.finance.go.ug/sites/default/files/archive-files/Publications/BMAU%20Policy%20Brief%2026-19-Business%2C%20Technical%20and%20Vocational%20Training-%20Are%20the%20objectives%20being%20met.pdf

MoFPED. (2000). Poverty Reduction Strategy Paper Uganda's Poverty Eradication Action Plan Summary and Main Objectives. *Ministry of Finance Planning and Economic Development*.

MoFPED. (2004). Poverty eradication action plan (2004/5-2007/8). *Ministry of Finance Planning and Economic Development. IMF Country Reports https://www.imf.org/external/pubs/ft/scr/2005/cr05307.pdf*.

Mugabi, R. D., Nakijoba, R., Nakirijja, D. S., & Sengendo. (2021). Formal and Non-formal Skills Improvement for the Marginalised Youth in Uganda. *Advanced Journal of social sciences. ISSN: 2581-3358 Volume 9, Issue 1, pp. 10-26, 2021. DOI: https://doi.org/10.21467/ajss.9.1.10-26*.

Mugume, R. (2023). Skilling Uganda's youth for the fourth industrial revolution. *Southern Voice Policy brief No. 18*.

Muhammad, U.-u.-H., & Zahida, N. (2013).

Educational Mismatch between Graduates Possessed Skills and Market Demands in Pakistan. *International Education Studies; Vol. 6, No. 11; 2013 ISSN 1913-9020 E-ISSN 1913-9039 Published by Canadian Center of Science and Education*.

Mulamba, J. J. (2023). The disruptive impact of AI Tools on the Uganda's new education system addressing challenges and opportunities for adoption.

Musiimenta, M. K. (2023). Competency based curriculum – a magic bullet for skilling youths in Uganda? https://stireducation.org/competency-based-curriculum-a-magic-bullet-for-skilling-youths-in-uganda/

Nakirijja, D., Kasirye, R., & Nabulya, A. (2019). Access to Job Market: Findings from A Venture Development Program for Marginalized Unemployed Youth in Kampala Uganda. *Advanced Journal of Social Science. 6. 26-37. 10.21467/ajss.6.1.26-37*.

Namakula, P. (2021). Matters of gender digital divide in Uganda and recommendations for policy. *https://thecfma.org/matters-of-gender-digital-divide-in-uganda-and-recommendations-for-policy/*.

Ng, M. A., Naranjo, A., Schlotzhauer, A. E., Shoss, M. K., Kartvelishvili, N., Bartek, M., Silva, C. (2021). Has the COVID-19 Pandemic Accelerated the Future of Work or Changed Its Course? Implications for Research and Practice. *International journal of environmental research and public health, 18(19), 10199. https://doi.org/10.3390/ijerph181910199*.

Nkwatsibwe, R. (2023). Tackling the Youth Unemployment in Uganda. A review of selected government initiatives for youth employment across Uganda (Doctoral dissertation). https://s-space.snu.ac.kr/handle/10371/194477

Nuwagaba, A. (2012). Toward Addressing Skills Development and Employment Crisis in Uganda: The Role of Public Private Partnerships. *Eastern Africa Social Science Research Review, Volume 28, Number 1, January 2012, pp. 91-116 (Article)*.

OECD. (2013). Indicators of skills for employment and productivity: A Conceptual Framework and approach for Low-Income Countries. *Organisation for Economic Co-operation and Development*.

OECD. (2014). Education at a Glance 2014: OECD Indicators . *https://www.oecd.org/education/Germany-EAG2014-Country-Note.pdf*.

OECD. (2018). OECD Skills Outlook 2018: Adapting to Changing Skills Needs. *Paris: OECD Publishing*.

Ojok, D., Mukhone, B., & Enywaru, P. (2018). Managing the 4th Industrial Revolution in East Africa: Insights from the First Kampala Digitalization Forum.

Okorafor, A. O., & Nnajiofo, F. N. (2017). TVET policies and practices in Nigeria: Why the gap . *European Journal of Education Studies*.

Okoye, K. R. (2013). Private-public partnership and technical vocational Education and training (TVET) in a developing economy. *Arabian Journal of Business and Management Review (Oman Chapter), 2(10), 51*.

OPM. (2016). Process Evaluation Report of Universal Primary Education Programme in Uganda. *Office of the Prime Minister*.

Osidipe, A. (2017). Prospects for TVET in developing skills for work in Nigeria. *Prospects, 8(21), 101-108*.

Otuku, M. (2013). Real World Africa – Independent Evaluation of Uganda's PEAP. *https://www.afdb.org/fileadmin/uploads/opev/Documents/Evaluation%20Matters%20March%202013%20Essay%202%20-%20EN.pdf*.

Peter, D., Robert, D., & Palmer. (2014). Demand and Supply of Skills in Ghana: How Can Training Programs Improve Employment and Productivity? *Project (USDP) https://www.education.go.ug/uganda-skills-development-project-usdp/*.

Pholphirul, P. (2017). Educational mismatches and labor market outcomes: Evidence from both vertical and horizontal mismatches in Thailand. *Education + Training*, *59*(5), 534-546. https://doi.org/10.1108/ET-11-2016-0173

PSFU. (2022). Skills Development Facility (SDF): End of Project Report. *Private Sector Foundation Uganda* .

Rikala, P., Braun, G., Järvinen, M., Stahre, J., & Hämäläinen, R. (2024). Understanding and measuring skill gaps in Industry 4.0—A review. *Technological Forecasting and Social Change*, *201*, 123206. https://doi.org/10.1016/j.techfore.2024.123206

Sandhya, S. (2013). Skill Development Initiatives in India. https://www.files.ethz.ch/isn/166947/ISAS_Special_Report_No__15_-_Skill_Development_Initiatives_in_India_11072013150412.pdf

Schminke, T. G., & Fridell, G. (2021). Trade union transformation and informal sector organising in Uganda: The prospects and challenges for promoting labour-led development. *Global Labour Journal, 12(2).*

Schuettler, K., & Caron, L. (2020). *Jobs interventions for refugees and internally displaced persons*. World Bank Group. https://www.peiglobal.org/sites/pei/themes/pei/kc_files/Schuettler%20and%20Caron%202020.pdfSriram, B. M., Quentin, W., Omer, N., Clarence, T., Innocent, M., & Elizabeth, N. (2016). School Facilities and Challenges in Construction. *World Bank Group*.

Suarta, I. M., Suwintana, I. K., Sudhana, I. F. P., & Hariyanti, N. K. D. (2017, September). Employability skills required by the 21st century workplace: A literature review of labor market demand. In *International Conference on Technology and Vocational Teachers (ICTVT 2017)* (pp. 337-342). Atlantis Press. https://doi.org/10.2991/ictvt-17.2017.58

Teera, M. J. (2020). Skills Matching, Wages and Productivity gains: Creating a Competitive Advantage for Ugandan Youth in the Labour Market. *Market https://rif.mak.ac.ug/skills-matching-wages-and-productivity-gains-creating-a-competitive-advantage-for-ugandan-youth-in-the-labour-market/*.

Teera, S. (2020). Addressing Skills Mismatches in Uganda: Challenges and Opportunities . *Kampala: Makerere University Press*.

UBOS. (2019). The National Population and Housing Census 2014 – National Analytical Report on persons with disabilities. *Uganda Bureau of Statistics (2019).* .

UBOS. (2021). The National labour Force Survey 2021 . *Uganda Bureau of Statistics- Main Report, Kampala, Uganda.*

UN. (n.d.). Youth population trends and sustainable development: Population facts. *United Nations Department of Economic and Social Affairs. (2015, May). https://www.un.org/esa/socdev/documents/youth/fact-sheets/YouthPOP.pdf*.

UNCDF. (2021). Inclusive Digital Economy Scorecard Report. *United Nations Capital Development Fund*.

UNCDF. (2021). Towards a Digital Learning Culture for Teachers' Continuous Professional Development in Uganda. *United Nations Capital Development Fund*.

UNCDF. (2022). Closing the growing digital skills gap in Uganda. *United Nations Capital Development Fund*.

UNDP. (2015). Human Development Report: Unlocking the development potential of Northern Uganda. *United Nations Development Programme, Uganda*.

UNESCO. (2021). Global Education Monitoring Report: Building Skills for a Resilient Future. *United Nations Educational, Scientific and Cultural Organization*.

UNICEF. (2021). Young people unable to access skills needed for today's job market. *United Nations Children's Fund* .

USAID. (2017). Gender and Social Inclusion Analysis: Uganda. *United States Agency for International Development*.

World-Bank. (2020). Digital transformation in Uganda: A path to recovery. https://www.google.com/url?sa=t&source=web&rct=-j&opi=89978449&url=https://blogs.worldbank.org/en/nasikiliza/digital-transformation-uganda-path-recovery&ved=2ahUKEwj1tsWh_-OKAxXeU0EAHWMQA0MQFnoECB0QAQ&usg=AOvVaw0aNbmn18C4cpY-jMnFdlBr

World-Bank. (2020). The Future of Work: Towards the Fourth Industrial Revolution. *https://openknowledge.worldbank.org/*

handle/10986/34452.

World-Bank. (2020). World Development Report 2020: Trading for Development in the Age of Global Value Chains. *Washington, DC: World Bank Publications*.

World-Bank. (2023). Delivering Growth to People through Better Jobs . *Africa's Pulse, No. 28, October 2023. https://openknowledge.worldbank.org/handle/10986/40388*.

UN Women (2020). Bridging the digital gender gap in Uganda: An assessment of women's rights online based on principles of the African Declaration of internet rights and freedoms. *Women of Uganda Network. https://africaninternetrights.org/sites/default/files/Bridging-the-Digital-Gender-Gap-in-Uganda-WOUGNET.pdf*.

Zervoudi, K. E. (2020). Fourth Industrial Revolution: Opportunities, Challenges, and Proposed Policies. *IntechOpen. doi: 10.5772/intechopen.90412. https://thecfma.org/matters-of-gender-digital-divide-in-uganda-and-recommendations-for-policy/*.

APPENDICES

Appendix 1: Population characteristics by ISCO skill levels, Education and Qualification mismatch

	ISCO Skill levels			Education mismatch			Qualification mismatch			
Variable	**Skilled occup**	**High skilled occup**	**Low skilled occup**	**Well Matched**	**Over educated**	**Under educated**	**Well matched**	**Over qualified**	**Under qualified**	**Total**
Gender	%	%	%	%	%	%	%	%	%	%
Male	23.5	6.7	69.8	46.5	12.0	41.5	56.4	40.9	2.7	100
Female	41.7	5.7	52.6	43.2	10.5	46.2	63.0	35.2	1.8	100
Marital status										
Never married	26.5	3.3	70.3	51.8	16.3	31.9	56	41.9	2.1	100
Currently married	31.1	7.9	61	43.6	10.7	45.7	59	38.5	2.5	100
Divorced/separated	44.4	3.7	51.9	47	8.9	44.1	61.7	36.3	2.0	100
Widow/Widower	33.2	4.0	62.8	37.6	6.5	55.9	72.9	25.3	1.8	100
Education										
Primary or less	25.5	0.4	74.1	19.0	0.0	81.0	98.9	0.0	1.1	100
Secondary	39.4	2.9	57.7	84.3	10.6	5.1	0.0	94.3	5.7	100
Tertiary	37.2	36.3	26.5	50.3	49.7	0.0	53.6	46.4	0.0	100
Age groups										
14 to 17	16.8	0.1	83.2	51.6	4.5	43.9	84.2	15.8	0.0	100
18 to 30	32.5	3.5	64.0	48.0	14.1	38.0	53.5	44.4	2.1	100
31 to 64	31.5	9.1	59.3	43.1	9.9	47.0	61.9	35.5	2.6	100
Relation with head										
Head	31.3	7.9	60.8	44.9	11	44.1	58.7	38.7	2.6	100
Spouse	39.8	7.5	52.7	41.7	9.1	49.2	62.2	35.6	2.1	100
Biological child	23.5	2.1	74.3	46.2	14.7	39.2	56.3	42.3	1.4	100
Other	22.4	2.0	75.5	55.9	16.6	27.5	57.3	40.4	2.3	100
Residence										
Rural	24.7	5.0	70.3	40.8	8.0	51.1	65.7	32.3	2.0	100
Urban	40.8	8.3	50.9	51.8	16.6	31.6	48.9	48.1	3.0	100
Sector of working										
Agriculture, forestry and fishing	0.9	0.3	98.8	37.3	8.2	54.5	68.9	30.7	0.4	100
Production	5.5	1.4	93.1	42.6	17.1	40.3	53.5	45.2	1.4	100
Services	59.5	11.9	28.5	50.8	11.9	37.3	54.5	41.6	3.9	100
Contract type										
A Written contract	35.9	44.6	19.5	70.7	16.3	13	63	28.8	8.2	100
An Oral agreement	18.4	3.2	78.5	57.5	16.8	25.7	59	38.1	2.9	100
Duration of contract										
Less than 1 Month	3.2	2.1	94.7	71.5	15.0	13.6	76.6	21.9	1.5	100
1 month to less than 3 months	13.0	2.1	84.9	51.7	22.7	25.7	59.4	39.9	0.8	100
3 months to less than 6 months	5.9	3.8	90.3	46.4	21.4	32.2	72.8	27.2	0.0	100

	ISCO Skill levels			Education mismatch			Qualification mismatch			
Variable	**Skilled occup**	**High skilled occup**	**Low skilled occup**	**Well Matched**	**Over educated**	**Under educated**	**Well matched**	**Over qualified**	**Under qualified**	**Total**
6 months to less than 12 months	27.0	11.8	61.2	57.1	17.3	25.6	61.6	35.7	2.7	100
12 months to less than 36 months	39.6	24.1	36.3	66.1	19.2	14.7	49.3	42.3	8.3	100
More than 36 months	29.7	54.2	16.1	64.2	17.1	18.7	65.4	19.5	15.0	100
Don‚Äôt know	12.1	9.4	78.5	54.7	18.4	26.9	51.6	42.2	6.2	100
Experience										
No experience	18.9	1.1	80.0	38.6	7.5	54.0	63.0	35.2	1.8	100
1 to 5years	42.4	2.8	54.7	49.6	16.2	34.3	50.2	46.2	3.6	100
6 to 10years	34.4	6.2	59.3	50.8	15.7	33.5	53.5	44.4	2.1	100
10+ years	32.5	5.4	62.1	41.7	13.0	45.3	58.4	40.0	1.5	100
Region										
KAMPALA	52.7	8.6	38.7	56.5	22.9	20.7	41.0	57.3	1.7	100
Buganda South	37.7	7.4	54.9	49.4	12.7	37.9	49.1	47.8	3.0	100
Buganda North	24.3	5.5	70.2	48.0	9.4	42.6	57.6	40.1	2.3	100
Busoga	36.0	8.9	55.1	51.1	9.1	39.8	52.4	43.8	3.8	100
Bukedi	35.5	8.8	55.7	49.1	13.7	37.1	54.4	41.7	3.9	100
Elgon	35.7	5.8	58.5	43.2	10.9	45.9	60.9	37.5	1.6	100
Teso	19.4	2.8	77.7	39.2	8.8	52	66.4	31.9	1.7	100
Karamoja	24.6	4.0	71.4	45.5	1.4	53.1	87.2	10.7	2.1	100
Lango	22.5	4.9	72.6	28.8	13.4	57.9	70.6	28.7	0.8	100
Acholi	21.2	6.4	72.4	40.1	16.1	43.8	63.4	35.5	1.1	100
West Nile	34.7	6.9	58.5	38.5	9.2	52.3	67.5	28.9	3.6	100
Bunyoro	26.3	4.5	69.2	42.3	8.9	48.7	59.8	38.2	2.0	100
Toro	26.7	6.0	67.3	45.1	7.4	47.5	68.7	30.4	0.9	100
Ankole	30.0	6.0	64.1	42.8	13.3	43.9	58.9	38.1	3.0	100
Kigezi	25.1	5.4	69.5	40.2	9.7	50.1	71.4	27.1	1.5	100
Field of study (Degree, Post-Secondary and Post Primary Specialized Training)										
Generic programmes and qualifications	43.7	25.6	30.7	44.5	55.5		49.8	50.2		100
Education	23.2	58.5	18.3	65.7	34.3		66.5	33.5		100
Arts and Humanities	38.3	20.0	41.7	28.7	71.3		32.3	67.7		100
Social sciences, journalism and information	56.2	16.1	27.6	28.1	71.9		29.6	70.4		100
Business, administration and law	51.7	21.9	26.4	28.2	71.8		40.8	59.2		100
Natural sciences, mathematics and statistics	28.4	65.2	6.4	85.4	14.6		85.4	14.6		100
Information and Communications and technologies (ICTs)	52.0	28.0	20.0	36.8	63.2		43.5	56.5		100

	ISCO Skill levels			Education mismatch			Qualification mismatch			
Variable	Skilled occup	High skilled occup	Low skilled occup	Well Matched	Over educated	Under educated	Well matched	Over qualified	Under qualified	Total
Engineering, manufacturing and construction	13.1	14.3	72.6	23.7	76.3		23.7	76.3		100
Agriculture, forestry, fisheries and veterinary	23.7	38.3	38.0	52.0	48.0		52.0	48.0		100
Health and welfare	73.4	19.3	7.2	75.3	24.7		76.0	24.0		100
Services	70.6	22.8	6.5	26.7	73.3		30.6	69.4		100

Source: Authors construction using NLFS (2021)

Appendix 2: A summary of the Strategies, Policies, and Initiatives for boosting skills acquisition

Documents	Achievement	Challenge
Government strategies and plans		
Poverty Eradication Action Plan (PEAP), 2004/5-2007/8: The second version of the PEAP prioritised vocational education in Uganda. A distinctive feature of this initiative was its dual focus on academic education and skills development (MoFPED, 2004). A key objective of the plan was to increase the transition rate from senior four (secondary education) to Business, Technical, Vocational Education and Training (BTVET) from 10 percent to 50 percent. (MoFPED, 2004)	PEAP laid the foundation for the 2008 BTVET Act, which marked a significant step towards promoting and coordinating BTVET initiatives, which are essential for skills development in Uganda (MoFPED, 2004).	The PEAP's human capital development component faced difficulties due to a lack of well-defined plans, detailed implementation strategies, and effective cost considerations (Otuku, 2013).
BTVET Skilling Uganda Strategic Plan (2011-2020).- Skilling Uganda: Skilling Uganda aimed to transform BTVET to improve skills, increase productivity for workers and businesses, and enhance Uganda's competitiveness in global markets for the future (SABER Country Report, 2012)	Established the Uganda Skills Development Project	Lack of an institutional framework; unclear procedures for establishing BTVET institutions; and the absence of transitional provisions for existing institutions governed by different laws, such as the Universities and Other Tertiary Institutions Act, 2001, and the Education (Pre-Primary, Primary and Post Primary) Act, 2008. Additionally, governance structures were deficient for BTVET institutions, and there was a scarcity of trainers with the necessary CBET competencies, limited industry involvement, and insufficient support services for research (MoES, 2019).
Government programs		
The Uganda Skills Development Project (USDP), 2016-2020: The USDP was established to implement the goals outlined in the BTVET Skilling Uganda Strategic Plan. The aim was to enhance the capacity of institutions to provide skilling training programs characterised by quality and alignment with the needs of key sectors, that is, agriculture, construction, and manufacturing (MoES, 2020).	i. Formed a TVET council comprising representatives from diverse sectors, including education, agriculture, health, tourism, construction, manufacturing, oil and gas, and trade and industry. ii. Creation of TVET Policy	The public remains largely unaware of the opportunities afforded by BTVET. It continues to regard this form of education and training as a secondary choice for those who have not thrived in academic settings. In contrast to academically oriented education and training, BTVET is consistently overlooked in popularity and prestige. This unfavourable perception poses a significant obstacle to the effective implementation of government initiatives aimed at skilling the population (MoES, 2020).

Documents	Achievement	Challenge
Government strategies and plans		
Skills Development Facility (SDF), 2016-2020: The third component of the USDP was executed by the SDF under PSFU, concentrating on "employer-led short-term training and recognition of prior learning." Funded by the World Bank, the primary objective was to bridge the skills gaps between the skills acquired through university education and those sought explicitly by employers to ensure productive employment (PSFU, 2022).	1. 49,062 individuals participated in skills enhancement initiatives tailored for the informal sector within micro and small enterprises, among whom 314 trainees were PWDs. 2. Significant strides were made through grants awarded to eight (8) public and three (3) private training institutions. These grants facilitated curriculum development and innovative training across various domains, including cyber security, welding and fabrication, plumbing, aquaculture, silk production, digital skills, and tourism (PSFU, 2022).	1. COVID-19 affected the SDF's granting process, and the closure of training institutions hindered student enrolment and postponed the rollout of skilling interventions. 2. Absence of a standardised trainers' curriculum, insufficient funds for grantees to pursue UNBS certification, and the inability of some trainers to implement the acquired knowledge due to a lack of start-up tools and equipment, particularly for vulnerable groups. 3. Lack of funds to procure necessary complementary machinery and technology, hindering the optimisation of skilling outcomes (PSFU, 2022).
The Youth Livelihood Programme (YLP): Launched in 2014, the YLP is an initiative financed by the GoU to address the prevalent issues of high unemployment rates and poverty among the country's youth.	Over 11,245 individuals across the country received vocational skills training. These skills encompass a variety of occupations, such as masonry, carpentry, metal fabrication, hairdressing, tailoring, leatherworks, agro-processing, electrical repairs, bakery/cookery, video-audio editing, motor mechanics, clay moulding, and ICT. The program also aims to impart business, entrepreneurial, and life skills to empower youth (MoGLSD, 2021).	Negative attitudes among certain youth, insufficient technical capacity in Local Governments, internal conflicts leading to the breakdown of some groups, intentional non-repayment of funds by some youth, including youth leaders, and the misallocation of funds by certain groups have significantly impeded the realisation of the goals set by the YLP (MoGLSD, 2021).
National Strategy for Private Sector Development (NSPSD) 2017/18 – 2021/22: This strategy was structured around three primary pillars. Specifically, one of the objectives within the 'Macro Pillar' was entrepreneurship and skills development, which aimed at several key areas: enhancing the quality of vocational training, education, and entrepreneurship in both schools and vocational training institutions (GoU, 2021).	Numerous vocational training institutions have received government approval. These include 190 business centres, 361 technical centres, and 29 specialised centres, all of which aim to provide essential skills to the workforce to stimulate private sector development.	NSPSD lacked a dedicated budget. It was assumed that implementing MDAs would effectively prioritise and integrate the strategy's initiatives into their budgeting and planning processes, which was ineffective in practice (GoU, 2021).
Private sector-led initiatives		

Documents	Achievement	Challenge
Government strategies and plans		
The Youth Skilling Pathways (YSP) Model: CARE International in Uganda created the YSP model, designed to meet the immediate requirements of young individuals while equipping them with skills for the future. This model, which combines the village savings and loans (VSLA) model with tailored skills and training initiatives, seeks to improve the skills, employment opportunities, and social integration of underprivileged refugees and youth.	Achievement: Nearly 3000 urban youth were reached through the YSP, with 95 per cent applying the knowledge and skills acquired through formal employment or as self-employed entrepreneurs post-graduation. Of these, 67 percent secured employment with the small-medium enterprises where they were placed, while 33 percent initiated their income-generating activities or small-scale enterprises, such as salon and hairdressing, bicycle repairs, tailoring, and motorcycle maintenance and repairs (Huxtable & Gillingham, 2019)	Success in employment and entrepreneurship outcomes, but sustainability challenges.

Source: Authors construction, 2024

Economic Policy Research Centre
Plot 51, Pool Road, Makerere University Campus
P.O. Box 7841, Kampala, Uganda
Tel: +256-414-541023/4, Fax: +256-414-541022
Email: eprc@eprcug.org, Web: www.eprcug.org