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## EPICA: USING AN EPORTFOLIO TO REDUCE THE SKILLS GAP IN SUB-SAHARAN AFRICA

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### Abstract

Consistent research has identified that a marked skills gap exists in sub-Saharan Africa (SSA). This skills gap results in high youth unemployment rates in a competitive market which has seen an increase in employers seeking specific skills when recruiting. To provide better opportunities for students entering the workforce the African HE system should adapt and search for innovative ways to respond to market demands. Universities can redesign the curriculum to focus on the key skills required by employers such as technical skills, transferable skills, and digital skills to address the skills gap in an attempt to reduce youth unemployment rates. EPICA, a strategic partnership between African and European institutions and organizations, highlights the important role that technology plays by introducing an innovative ePortfolio in universities aimed at showcasing graduates' employability skills. This project consisted of an empirical study demonstrating the implementation of the ePortfolio used to assess and present graduates' skills. The core findings suggested that a marked skills gap exists in graduate students' employability skills in SSA and that the ePortfolio provides a viable solution to reduce it. Results, strengths and limitations as well as ideas for future research are interpreted in the discussion.

**Keywords:** higher education, technology in higher education, skills gap, ePortfolio, online learning, eAssessment

### Introduction

Research has consistently attempted to understand the digital divide and extend the reach of education in developing countries of SSA, yet unemployment and informality remain a core issue. A combination of a skills shortage and mismatch, particularly among younger generations, appear to be at the root of this ongoing challenge (Betcherman & Khan, 2015). This skills gap, which is also closely related to the concept of employability, is the mismatch between the skills in demand by employers and those that potential graduate student

employees possess. Technological innovation in education has the potential to address this skills gap and provide students with further opportunities as it acts as a transformative complementary tool to traditional educational methods (Goh et al., 2020).

It is important to reflect upon the skills that employers consider as a basic requirement when recruiting. A recent report (Abedaki et al., 2015) highlighted the skills most demanded by employers in Nigeria: risk management skills, analytical skills, problem solving skills, decision making skills, leadership skills, communication and interpersonal skills, and proficiency in English. These results were echoed in Ghana, Senegal, Egypt, Botswana and Namibia (African Development Bank, 2017). There is also increasing demand for specialized skills such as in science, technology, engineering and mathematics (STEM; Leopold et al., 2017) and ICT skills (McCowan et al., 2016) in the African market. Despite a clear consensus in the skills required, there is a lack of sufficiently trained graduates in these areas (Leopold et al., 2017). Kalei (2016) reported that Kenyan graduates and young people do not meet the requirements set by employers in terms of skills. Adding to these problems are the data suggesting that the working population in the SSA is set to increase by 105 million people with 94 million of them living in the SSA region (International Labour Organization, 2017). It is vital then that these people do not become a part of the existing problems and solutions are found to help reduce the skills gap in this young and growing workforce (Africa-America Institute, 2015). Education provides a means to affront these problems, given that the level of education obtained is negatively correlated with unemployment rates, i.e. as education levels go up, unemployment rates are reduced.

### ***Unemployment in sub-Saharan Africa***

Recent graduates face a significant challenge when searching for employment due to a lack of work experience in a professional environment which impacts upon their ability to gain competence in the skills required by potential employers. Furthermore, employers often prefer to retain experienced, skilled workers instead of hiring recent graduates which increases competition for the available roles (Jiboku, 2018). Also, many employers report high dissatisfaction rates in terms of graduates' skills (Martin et al., 2017). Unemployment rates remain high, but this fluctuates depending on the industry with students of business and/or information technology offered more opportunities upon graduation (Leopold et al., 2017). Inevitably so, many companies fail to offer high skilled positions to recent graduates, increasing the skills gap further as those with experience gain further expertise, and those without being left behind (World Economic Forum, 2017). For those graduates that do find employment, many find themselves in positions that do not match their actual qualification level and competencies.

Equally, the pressure to meet the demands of the student body puts strains on the strategic and organizational planning of the courses. Employability skills are seldom the core focus in the curricula as a result with universities focusing on theory over practical skills (McCowan, 2015) which impacts on the development of transferable skills from the academic environment to the workplace (Leopold et al., 2017). This lack of focus on the practical application of skills via practices such as internships and volunteering are frequently referenced as a shortcoming in HE (Oluwatobi et al., 2017). Reports suggest that many students feel as though the skills they are being exposed to as part of their studies are irrelevant (McCowan et al., 2016). This perceived irrelevance is supported by the fact that students prioritise receiving high grades over developing the necessary employability skills (Kalei, 2016). Therefore, the African HE system should find innovative methods to adapt to the needs of this growing market and ensure that curricula design focuses on providing the necessary education in terms of theory and skills to meet the demands of the labour market to reduce the existent skills gap. Integrating a skill-based approach in the curricula via skill development programmes (African Development Bank, 2019) alongside an environment that aligns different stakeholder groups (WEF, 2019) could provide a solution to overcome the current challenges faced in the SSA.

### ***Reducing unemployment***

Given the challenges of unemployment in SSA, it is important to highlight potential factors that could reduce it.

The transition from HE to work is a complex one, influenced by an abundance of different factors including prior professional experience and development of the necessary skills to complete the job role (Fenta et al., 2019). But, how can education work towards fostering employability in recent graduates helping them meet the labour market demands? Firstly, universities can contribute to the development of job-specific skills and competencies given their importance in the consideration of graduate students' employability. Teaching a combination of both general and technical skills is highly valuable and universities can focus on this area to adapt to the market demands (World Bank, 2019). This encourages flexibility among learners who can engage in lifelong learning to keep up with the demanding pace of market demands. Thus, the role of the university is vital in providing students with the necessary skills to prepare them for current and future labour markets. Secondly, transferable skills for graduates seeking employment are a reliable predictor of future employability. Universities can develop these skills by providing a curriculum dedicated to their teaching and acquisition and by certifying the level of competence of these skills (World Bank, 2019). Transferable skills, particularly those related to cognition and adaptability are becoming increasingly more valuable to employers (World Bank, 2019). The University Qualification Framework (UQF, Tanzania Commission for

Universities, 2012) states that at national level graduates must demonstrate skills in problem solving, communication, decision-making and self-regulation. Similar expectations are seen in the Kenyan Qualifications Framework (UNESCO, 2015), highlighting the growing importance of skill development in African HE to reduce the unemployment rate. Thirdly, developing digital skills is of increasing importance as jobs tend to require ICT-related skills in developing countries (Broadband Commission for Sustainable Development, 2017). In Kenya, The Digital Economy Blueprint (2019) has focused on a conceptual framework to capitalize on the advantages found in digital technologies to improve Kenya and Africa's economic growth which creates jobs for works from a wide variety of backgrounds.

### ***The relevance of technologies in reducing the skill gap***

Advances in technology provide a significant opportunity to reduce the skills gap as evident in the so-called "digital disruption" which has impacted HE (de Wit et al., 2015; p.77). In Africa and Europe there has been a call to drive innovation using technology to improve HE. The African Union Commission details in its Agenda 2063 a need to focus on skill development, technology, research and innovation. Similarly, the European Commission proposed its Skills Agenda for Europe (EC, 2016) in which it highlights similar societal and educational needs as those mentioned in Africa. Accordingly, the EPICA project, co-funded by the H2020 Research and Innovation Programme of the European Union, was established in 2018. A strategic partnership between Africa and Europe EPICA was launched by an international consortium of European organisations (ICWE – Integrated Communications, Worldwide Events, International Council for Open and Distance Education, MyDocumenta, Open University of Catalonia) and sub-Saharan institutions (Africa Virtual University, Makerere University, Maseno University, and Open University of Tanzania). The overall goal of the project was to create a collaboration between these institutions and organizations to design an innovative ePortfolio to increase visibility of graduate students' employability skills and thus reduce the skills gap. The fundamental goals of the EPICA project were to encourage universities in their use of new active and blended pedagogical methodologies to meet the needs of employers seeking better-skilled employees, promote the students' visibility and awareness of the skills gained in the academic environment as well as in other applicable areas, and aid companies in recruiting candidates sufficiently skilled based on their needs.

To meet these goals, four universities (Maseno University, Makerere University, Open University of Tanzania, Open University of Catalonia) took part in a study which involved the use of specifically designed methodology for employability skills visibility, assessment and micro-credentialization. These were supported by a competency-based ePortfolio, implemented as a transition tool.

### ***EPICA methods and key findings***

EPICA used a mixed-methods exploratory approach which was implemented during the first year of the project. Firstly, a literature review was conducted. An empirical research study was designed and conducted with the aim of further understanding the perceptions of employers, civil servants, and academics towards recent graduates' employability skills based on the findings of the literature search. Quantitative data was obtained regarding these perspectives using a survey focusing on graduates' skills and identifying the skills least developed. This was then distributed at the Open Days in African Universities in 2018. During this event, 12 focus groups were held with regional stakeholders from the scientific and educational community, members of the business sector and the public sector. The perceived skill gap was discussed and qualitative data regarding this were obtained and analysed using Principal Component Analysis.

The key results identified in the project highlight the existing skills gap among graduate students' employability skills in SSA. Specifically, results suggested that said skills gap was particularly notable in terms of general knowledge employability skills (proactivity, technological knowledge, competences for working in a culturally and linguistically diverse context) as well as uncertainty management skills (ability to maintain performance under personal and environmental uncertainty). The role of the HE sector was also highlighted as the demand for quality HE, a lack of quality infrastructure, the use of rigid traditional methods over active educational approaches, a need for training for lecturers to support them in the practical application of skills, an overfocus on exams and grades over skills acquisition and poor communication between HE institutions and employers in the labour market appear to be core causes behind the skills gap.

### ***Discussion***

The skills gap in SSA is an area of great concern that can be addressed between HE institutions, the labour market, and businesses who must collaborate to adjust the curriculum and methodologies to develop the competencies proposed by university programs and subsequently meet the demand for professional roles. In this way, the stakeholders involved in this collaboration can act as agents of social change as they identify problems and promote education for a positive impact. This approach is thus a necessity in the long term goal of increasing employability and reducing the skills gap. This was demonstrated via the EPICA project which demonstrated the relevance of the aforementioned collaboration and fostered the integration of educational technologies to support graduate students in reflecting upon and demonstrating the valuable, transferable skills that they possess.

An important contribution of the EPICA project is the identification of an ePortfolio solution that supports the exploration of technology and digital tools as part of the academic experience and thus encourages a shift from traditional pedagogical models to learning experiences focused on employability and the development of the necessary skills associated with it (Palmer et al., 2017).

Despite the strengths of the EPICA project, limitations were identified. Firstly, shortcomings were revealed in terms of maturity in many of the universities that partook in the study when implementing the ePortfolio, particularly evident in the divide between human and technical readiness. Specifically, in the East-African universities ePortfolios are rarely implemented and there is a lack of support to encourage this implementation. This suggests that certain aspects of technology are not yet consolidated in the HE institutions which requires improvement. Secondly, teachers' maturity in terms of implementing educational technologies highlights another limitation which is supported by the extant literature (Aksit et al., 2017). Third, up to a fifth of students who participated in the project felt they did not possess the relevant digital skills to set up the ePortfolio, reflecting a perceived lack of digital competence among the target group of this project and potential barrier to the successful implementation of the ePortfolio itself. Overall, these limitations underline the need for an overhaul of the current educational system, modernizing it by focusing on practical and digital skills, to support graduates' needs in gaining the relevant skills necessary to find employment. The ePortfolio, as a strategic and transitional tool to follow up and evaluate the skills developed while showcasing their level of competence, which in turn increases employment opportunities can aid in this modernization to drive transformation beyond traditional pedagogical methodologies.

In light of these limitations, ideas for future research are considered. Going forward, institutions should look to adapting innovative practices to provide solutions to the problems identified. Specifically, an innovative pedagogical transformation is needed as it can address the skills gap. To achieve this, the following solutions are proposed: provide training courses for teachers to support adoption of active pedagogies, implement ePortfolios to enhance digital fluency, include stakeholders in the innovation process, and modernize the existing curricula with a specific focus on developing skills. Research should continue to investigate ways to include this focus both at local and national level to provide specific solutions for graduates and their skill development with the long term goal of reducing the skills gap while providing them with employment opportunities.

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