

Micro-credentials in higher education institutions: An exploratory study of its place in Tanzania

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ABSTRACT

Micro-credentials represent an alternative approach to career and professional development whereby an individual's skills, achievements, and accomplishments are recognised. They offer the possibility to enhance skills, to manage career pathways as well as adding practicality in the academic content. Moreover, micro-credentials are cost-effective professional development strategies that significantly minimise employees training cost and time. Also, micro-credentials in higher education institutions (HEIs) allows for the integration of digital badges within university curricular and community engagement activities to inspire connected and lifelong learning for the professional development of students, educators and communities in formal learning settings. This paper explores ways in which micro-credentials can be offered in Tanzanian universities. Specifically, we explore educators' perception, readiness and implementation strategies. In-depth interviews with thirty-one lecturers, fifty-four students and twelve educational technologists were deployed. Purposive sampling was used to identify the four Tanzanian universities involved in the study, and theoretical sampling was used to identify lecturers, students and educational technologists. Data were analysed using NVIVO software in accordance with the Strauss and Corbin Grounded Theory. The results suggest that university lecturers and students are optimistic that micro-credentials will stimulate lifelong and connected learning as well as expand the scope of the universities' mandate. However, to leverage from these potentials, multi-level interventions are needed. We recommend the creation of a micro-credentials ecosystem, formulation of strategies and policies, deployment of necessary infrastructure as well as building relevant skill-base. Implications, contributions and limitations of the study are discussed in line with the findings. Finally, the paper contributes to the literature on the implementation of micro-credentials in higher education (HE).

Keywords: *digital badges; micro-credentials; lifelong learning; connected learning; higher education*

INTRODUCTION

Just like other sectors, the education sector is impacted by the revolution brought on by digital technologies in so many ways. Digital technologies are reshaping the way we access learning resources, engage in learning activities, communicate and interact with students as well as fellow educators (Fritschi, Wolf, & others, 2012). To a large extent, digital technologies are redefining

the epistemological positions towards learning as well as the roles of learning institutions. The physical spaces and times that characterised traditional learning institutions are no longer valid: learning no longer depends on the presence of the learners and educators in a pre-defined location and within a specified time (Ally, 2009; Porter et al., 2016). The introduction of portable devices such as smartphones and tablets means learning can take place anywhere and anytime (shuledirect, 2017). Similarly, because of the exponential growth of knowledge databases across the globe backed by the Internet and search engines, educators are no longer the sole source of knowledge (Siemens, 2014). Learning has become a social and network forming process whereby skilled learners can traverse across learning nodes comprised of machines and experts (Siemens, 2014). Thus, learners no longer rely on a single source of knowledge such as learning institutions or educators (Kathleen, 2011).

The digital revolution has facilitated the creation of massive open online courses (MOOCs) offered by various learning institutions such as the Massachusetts Institute of Technology (MIT), Harvard and Stanford. Learners across the globe attend these courses. Also, the Internet is full of skill-based micro-courses that helps professionals to learn specific skills. It facilitates collaborations between educators, students as well as institutions. The democratic model of the Internet means that gender and location barriers can be overcome due to the existence of digital knowledge and infrastructure (Castells, 2004). Other transformations include the existence of digital books and other scholarly resources and online tutorials, forums as well as video course-related blogs and websites such as www.youtube.com, www.coursera.org, www.futurelearn.com and more. Online learning is no longer a mystery (Castells, 2000; Siemens, 2014).

Unfortunately, for decades little has changed in the way education institutions, and employers assess and value education (Fong, Janzow, & Peck, 2016). The traditional systems of assessing learners rely on grading and issuance of transcripts. Transcripts communicate the achievement of learners and performance in a specific subject. Unfortunately, they fall short, first in communicating high-level skills such as critical thinking, learners' innovativeness as well as acquired skills (Fong et al., 2016). Second, conventional transcripts are neither shareable nor inter-operable via digital media (Abramovich, 2016). Third, they lack the evidence and criteria used to award specific grades and categories. Thus, the hiring agents and admission officers are unable to determine exact knowledge, skills and accomplishment achieved by the applicants (Abramovich, 2016; Dowling-Hetherington, 2017).

Thus, micro-credentials are credentialing systems that follow competency-based professional learning, and they make use of digital badges to recognise learner's skills, achievements and accomplishments (Fong et al., 2016). Most of micro-credential activities and certification are presented in visual images; as such digital badges are feature rich. Unlike the conventional transcripts, digital badges are embedded with metadata that provide detailed information about the badges (Dowling-Hetherington, 2017). The information includes the title of the badge, criteria for earning it, the issuer of the badge as well as evidence needed to prove such an accomplishment (Abramovich, 2016). This makes micro-credentials and digital badges more transparent than the traditional counterpart (Fong et al., 2016). Also, digital badges, especially open badges are inter-operable in such a way that they can be shared across different platforms as well as social media sites (Hickey, Iii, & Quick, 2015). These features make it possible for learners to share and display their collection of badges. Thus employers and admission officers of the learning institutions and others have access to a detailed version of the applicant's resume as well as the evidence and criteria used to evaluate and grant a badge (Abramovich, 2016).

The objective of this paper is to explore the position and role of micro-credentials in higher education institutions in Tanzania. Specifically, through the qualitative method we explore stakeholders' attitude, awareness as well as readiness for micro-credentials deployment. It is imperative that the findings presented in this paper be explored by the policy makers, educators

as well as research communities and institutions especially in Africa so as to expand the roles and horizon of the learning institutions.

LITERATURE REVIEW

The rise of micro-credentials and digital badges

The use of symbols to communicate status, achievements, accomplishment and commitment to a cause is a historical fact of human society. The symbols of great hunters, animals, trophies and more were found in all archaeological sites across the globe. More importantly, these symbols are in use today for various purposes. For example, bar-codes are used to authenticate products whereas tattoos are used to affirm individuals' commitment to a social group or movement. In the same way the military and scout symbols represent ranks and accomplishments. The value and meaning of the symbol and how it is used are determined by the responsible communities and issuers of such symbols. Some of the symbols such as those used by the military and scouts are universal with minimal alterations while others are used and understood explicitly by the intended communities. The bottom line for the application of the badge in any society relies on the established common understanding between all stakeholders involved in a complete value chain.

Micro-credentials recognise meta-skills, competencies, achievements and accomplishments achieved by learners, employees, professionals from the issuing agent (Abramovich, 2016; Fong et al., 2016). Also, micro-credentials are digital artifacts that can be used to recognize, display, and transmit information about an individual student's skills, abilities, and knowledge (Fishman, Teasley, Cederquist, 2018). When applied in education, micro-credentials are different from macro-credentials usually offered upon completion of the course. According to Davis and Singh (2015), micro-credentials offer learners a mechanism for displaying and sharing a wider variety of achievements than grade-point averages or typical transcripts. It targets one specific outcome of a substantive course or degree program. For example, in a communication skills course, learners upon fulfilling established criteria can earn a "public speaking" micro-credit in the form of a digital badge. Therefore, a badge is the image or symbol associated with micro-credits issued by the specific issuers in recognition of the efforts and accomplishment on successful completion of associated criteria (Ahn, Pellicone & Butler, 2014; Davis & Singh, 2015). Unlike other forms of badges, digital badges are comprised of metadata accessible and verifiable by the users of the badge (Dowling-Hetherington, 2017). In addition, the open badges movement headed by the Mozilla foundation make badges inter-operable as well as democratise the 'badging' process (Priest, 2016). The term "digital badge" is relatively new and research concerning its application and effects in various fields are scarce. The majority of scholars believe that digital badges emerged around 2010 in the United from people working with the Mozilla and MacArthur foundations (Goligoski, 2012; Fong et al., 2016).

The period between 2011 and 2013 marks the time when badging especially open badging concepts were formulated along the lines of a common infrastructure and framework (Fong et al., 2016). During this time, technical specifications of the badge infrastructure, the badge design, and how to verify and display were issued (Abramovich, 2016). To date, the improved version of these specifications guarantees interoperability and sharing of the badges across different web platforms as well as social networks. Also, millions of badges are issued to the recipients across the globe. More important, The Mozilla Backpack infrastructure provides a mechanism to store and manage the collection of badges from individuals. By the end of 2016, the backpack contained more than 967,966 badges on behalf of learners around the globe (Fong et al., 2016).

Early works suggest both proprietary and open digital badges were used in several ways in different sectors. They were used to represent achievements and claims of hard and soft skills,

participation and official certification as well as authorisation and community involvement (Abramovich, 2016). Traces of earlier implementation can be found in professional development especially teachers and nurses development (DeMonte, 2017). Due to the open infrastructure, teachers and nurses were able to utilise the online materials from the Internet to improve their skills and later claim such achievement from various issuers of the badge (DeMonte, 2017). Unlike the traditional professional development projects that rely heavily on the training event and activities, this mode is fast and cost-effective. Learners decide what, when, where and how to learn, and due to the openness, learners pursue different routes to achieve the same skills. Therefore, it motivates personalised, connected, as well as lifelong learning (Gibson, Ostashewski, Flintoff, Grant, & Knight, 2015).

The application of digital badges in education especially in higher education is a work in progress (Abramovich, 2016; Fong et al., 2016; Gibson et al., 2015). Literature suggest that micro-credentials work better in informal education than formal settings due to its flexibility (Hickey et al., 2015). Formal education requires a well envisioned structured approach comprised of a series of topics as well as activities that are assessed as a whole and represented in the transcripts. Also, formal education is organised around the teacher-centred philosophy whereby learners are not in control of what they want to learn. There are two common approaches used to deploy digital badges in education: complimenting the existing credentialing systems: this involves adding skill-based modules that require learners to put some optional efforts in order to earn badges, and the total integration of badges as part of formal credentials that learners have to earn on top of traditional credentials (Abramovich, 2016; Gibson et al., 2015). Further, academic institutions open up their boundaries to allow people who are not formal students to claim university credit in the form of digital badges.

However, despite the high motivation by various research institutions and foundations across the globe, micro-credentials uptake in academic institutions is low across the globe (Fong et al., 2016; Gibson et al., 2015; Hickey et al., 2015). This is attributed to the lack of awareness and participation of employers as well as admission officers of the academic institutions (Hickey et al., 2015). Thus, learners and badge recipients are not assured of their acceptance in the labour market as well as in their further education and training. Also, while there are several initiatives and movements across another part of the world to inspire adoption of the new credentialing system, such efforts are missing in Africa. The badge ecosystem requires an enabling infrastructure that ensures the quality of services as well as cooperation from stakeholders such as employers, educators, issuers, endorsers as well as policymakers in all sectors (Gibson et al., 2015). Apart from the infrastructure, the policies and skills of the stakeholders towards design, administration as well as the execution of the project is vital.

Theoretical reflection of micro-credentials deployment in higher education

Micro-credentials, especially digital badges represent what the recipient of the badge knows and what he/she can do (Gibson et al., 2015). These messages are communicated through the images and aided through technologies. To a large extent, technologies play facilitation roles by providing needed infrastructure. However, considering the advent role of modern analytical tools such as artificial intelligence systems, technologies play active roles in deciding what learners can learn by analysing their behaviour patterns (Kukulska-Hulme, 2007). The role of technology in shaping micro-credentials needs theoretical explanations.

The critical theory of technology helps to explain the value of technological deployment in any situation. It refutes the instrumentalist view of technology as neutral and valueless as well as the substantive claim that technologies are autonomous and tailored to serve the purpose of the owner (Andrew Feenberg, 2005). The argument we are making is that the development and deployment of any technology are value-laden, they are shaped by the goal to improve social

problems. Therefore, social values can never be ignored to avoid the consequences during the implementation and application of such technologies. Thus, it is the democratic process that relies on the interaction between technocrats and people affected by the technology. The design of the techno-codes, if not addressing social needs will unlikely be accepted by members of the social groups. Therefore, we argue that micro-credentials deployment should reflect the need of the society and the context used. In the paper, we present the empirical results from the qualitative enquiries with key stakeholders from higher learning institutions in Tanzania.

Similarly, the introduction of any learning approach or technology in education requires theoretical justification, specifically, explanations concerning the pedagogical values achieved (Brown, Tom H, 2005). The pedagogy is related to epistemic approaches to learning. They are concerned with the effects of technologies on overall personal development. Specifically, any new approaches and technologies deployed in a learning environment should comply with the known learning theories including behaviourism, cognitivism, and constructivism (Kop & Hill, 2008). The advances in the Internet and online learning have prompted the formulation of newer theories that aim at explaining the process of learning in a connected world full of knowledge sources (Siemens, 2014). Unlike earlier times, learning happens anywhere and anytime (Ally, 2009). Also, based on the exponential growth of knowledge online, even educators are no longer in control of knowledge (Kathleen, 2011). Thus, when explaining knowledge and learning in the connected world, there is the need to move away from teacher-centred, or institution centred to learner-centred as well as context-based learning (Siemens, 2014).

Sensitive to understanding the position of micro-credentials especially digital badges in higher education, we apply the Connectivism Learning Theory (Siemens, 2014). Essentially, Connectivism recognises that knowledge is distributed across the various and diverse networks powered by the Internet. The existence of multi-level and multi-purpose learning resources, learning communities and expertise exploited by capable learners is acknowledged (Siemens, 2014). The radical shift to occur is for teachers' roles to become facilitators of learning. Connectivism is self-directed, collaborating, and happens anywhere and anytime (Kathleen Dunaway, 2011). Crucial to its success are infrastructure, policies, course design as well as the capacity of both learners and educators to perform their transformed role while in isolation (Siemens, 2014). Thus, connectivism is relevant in exploring the situation of the institutions, educators as well as learners to understand how aware and ready they are for the use of micro-credentials as it highlights key variables to be studied both quantitatively and qualitatively

METHOD

This is an exploratory study which is guided by the Connectivism and Critical Theory of technology. Qualitative methods especially interviews were employed during data collection, analysis and communicating results. Qualitative enquiries are deemed to be an effective approach to exploring knowledge from the perspectives of individuals. In particular, they enable researchers to engage in conversations with the respondents and seek clarity of matters through probing (Creswell, 2009). It is more suitable for studies in which the aim is to understand the situation rather than predicting the outcome. Thus, it is vital to involve the right individuals affected by the phenomena under study.

Sampling method

Universities were chosen for the sample population based on their experiences, organisation structures and records in applying learning technologies. Theoretical sampling guided the process of identifying the respondents as well as the questions to be asked. According to the principles of theoretical sampling, the samples are chosen based on the emerging theories. Thus, during the data collection process, the next data to be collected and who to involve depends on

the coded and analysed facts (Coyne, 1997). This approach is ideal for Grounded Theory because it offers the needed flexibility to complete the project (Bricki & Green, 2007). In practice, the flexibility of the theoretical sampling enabled the researchers to include all relevant respondents across the four universities, faculties and program of studies to avoid bias. The sampling exercise ended upon reaching the saturation point, when all important information was obtained. The final sample included thirty-one lecturers, fifty-four students and twelve ICT experts from four universities in Tanzania: the Mzumbe University (MU), the Open University of Tanzania (OUT), the University of Dodoma (UDOM), and the University of Dar Es Salaam (UDSM) as detailed in Table 1 below. The four public universities represent early adopters of learning technologies in their academic activities. They are at different stages of implementing learning technologies compared with the rest. Also, the four have comparable characteristics that make them ideal for our study. While the UDSM is known as the oldest and 'mother' of several universities in Tanzania and has established a high reputation in academia, the University of Dodoma is the youngest and most populated and has the youngest generation of staff. Both UDSM and UDOM rely on their established schools that deal with virtual education. Also, MU's history is impressive having passed through various transformations, from being a college to train local chiefs to a full university. Unlike the rest, MU relies on the ICT unit to oversee transformations. Furthermore, OUT and UDSM are the only universities offering Open and Distance Learning (ODL) services in the country. Also, OUT is the only university present in every regional centre and some districts in Tanzania. Therefore, such variety made them ideal for the study of micro-credential deployment.

Table 1. *Sample composition of the respondents*

Institution	Number of Lecturers	Number of Students	Number of ICT experts	Total
MU	6	12	3	21
OUT	7	10	4	21
UDOM	10	16	3	29
UDSM	8	16	2	26
Total	31	54	12	

Data collection tools

The main data collection tools were in-depth interviews, document reviews, and observations. Specifically, semi-structured interviews using open-ended questions were conducted among the thirty-one lecturers, fifty-four students and twelve ICT experts from four universities in Tanzania

Data analysis

Data analysis was conducted based on the principles of Grounded Theory, whereby analysis begins as the data are collected (Corbin & Strauss, 1990). In this study, we applied the three coding procedures proposed by Corbin & Strauss (1990): open, axial and selective coding. During the open coding, with the aid of the Nvivo 10 software, we identified concepts from the interview transcripts. The concepts are the abstract labels that represent the incident(s), action(s) or event(s) from the studied phenomena (Corbin & Strauss, 1990). Then the identified concepts were compared with the emerging theories to realize the most relevant and acceptable concepts that clearly and concisely reflected the situation. A total of 98 concepts were open-coded during this stage. Next, similar concepts were organised into categories and sub-categories. The resulting categories and sub-categories were related to each other to identify the interplay

between them. The final results were verified by involving some of the respondents so as to ensure validity and accuracy.

RESULTS

The following results reflect the situation in the public institutions of higher education in Tanzania. Where respondent views are presented, an English translation is followed by the original Swahili response.

Awareness

The success of the micro-credentials' deployment depends on how much stakeholders are aware of and able to participate in the process. They include an understanding of the concept and philosophy behind micro-credentials as well as the procedures and processes needed to manifest the project. Our results suggest that micro-credentials is a relatively new concept across the studied universities. Unlike the traditional credentialing system, most of the respondents seem to be unaware of any system which is different from the traditional formal systems as attributed by the respondent in text below:

To say the truth, it is the first time I hear about your topic [micro-credentials]. I know the issue of skill recognition is not new but making it formal [process within universities] I hear it from you. But thinking critically, it is a good thing and beneficial to especially youth

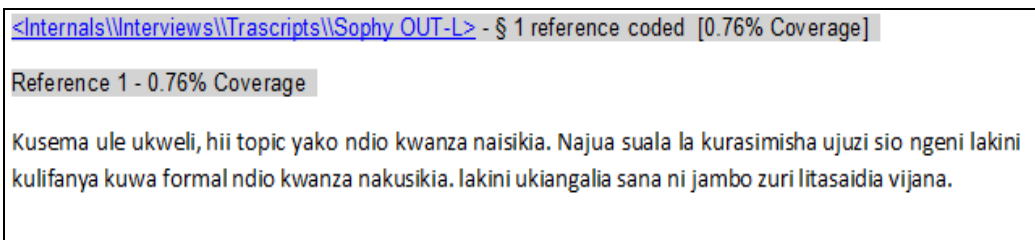


Figure 1: *Extracted sample of Swahili response on awareness of micro-credentials*

This output is an extract from NVivo software with reference code for NVIVO's way of linking codes to the actual text from the respondents.

Despite the majority of the respondents being aware of the badge concept used in the military and among scouts, few have come across the term digital badges. Also, there is little understanding of the issuers as well as processes used to earn or issue digital badges. While the logic behind the micro-credentials appears to be appealing in the mind of most of the respondents, few have attempted to earn or issue digital badges.

Similarly, it is revealed that none of the studied universities is contemplating the issue of micro-credentials due to a number of reasons. Educators and students speculated that the design of the courses is not geared towards a skill-based outcome, and it is unlikely that educators may venture into micro-credentials. Also, over-reliance on the traditional teaching system makes it hard for educators and students to shift focus into other forms of learning to complement the materials learnt in class. Also, due to the lack of awareness, the majority of the employers and admission officers ignore any credits that are not recognized as a formal credentialing system.

Unless there is a change of strategies, policies and procedures to promote the alternative credentialing system, digital badges and micro-credentials will remain sidelined.

Readiness

The second important aspect of deploying a new system into an organisation or society is to check whether the environment is ready? The readiness tests are physical and logical. They include questions related to the preparedness of the individuals as well as society as a whole, infrastructure, policy as well as individuals' skill and attitude. Despite, being new, we asked educators as well as students questions to find out how ready the institutions are as well as individuals towards micro-credentials and digital badges. First, skill readiness is essential to the successful deployment of any system. They include the ability to navigate through the digital media to perform the required task, to set required micro-credential infrastructure, and to evaluate and accredit relevant skills to the learner.

Our results reveal that situations at the universities are encouraging to start the project. In all four universities, digital awareness amongst students and educators are high. The majority of the students and educators are conversant with the Internet and social media services. They use the Internet to communicate, search scholarly resources as well as to entertain themselves. In addition, three of the four universities have units entrusted to realize digital transformation. However, there are some skills gaps among educators and ICT experts that can be filled through short courses as attributed by the respondent in the text below and a sample of responses from the interviews is provided in Figure 2.

First, some lecturers are of the other generation that when you bring technology to them is a challenge. We want to reach to a time when we can supervise students through soft-copy, but some [lecturers] respond [to us] that I cannot deal with soft-copy. ... So, we are of two categories: those who cannot work with technology completely and those who are trying to cope with it.

[Internals\Interviews\Transcripts\Lecturer1 OUT>](#) - § 1 reference coded [4.84% Coverage]
Reference 1 - 4.84% Coverage
kwanza walimu wenyewe wapo ambao kusema ukweli ni kizazi kingine ambacho ukimletea technogia ni kazi japo sasa hivi bado. Sisi tunataka tufike wakati hata kuwasupervise wanafunzi tutumie softcopy tu lakini mwengine anakuambia mimi softcopy siwezi. Kwahiyo kwaujumla kiseru tupo vizuri lakini sisi wenyewe tu watendaji tumegawanyika: wapo ambao hawawezi kabisa wapo ambao wanajaribu kucop. Hata juzi tulikuwa na training ya capacity building kwamba na sisi wenyewe inabidi tupewe elimu ya namna ya kuwasiliana na wanafunzi kwenye forms mbalimbali ...

Figure 2. *Extracted sample of Swahili response on readiness for micro-credentials*

This output is an extract from NVivo software with reference code for NVIVO's way of linking codes to the actual text from the respondents.

The infrastructure is the backbone of the systems implementation. Digital badges rely on the functioning network and Internet systems as well as databases. Connectivism learning is a network forming process. Learners and educators connect and collaborate with various learning nodes across the Internet. The fluidity of the Internet is brought by the bandwidth capacity and the

Wi-Fi connectivity. Also, micro-credentials rely on the ability to learn across the network. Unfortunately, the quality of the Internet services in all the universities is low with silos of Wi-Fi services. We have witnessed the jamming of the network during the day at some institutions due to heavy traffic. Students are to rely on their mobile-based Internet or wait until after midnight for improved services. The wireless service across all the universities is poor; and it is only available in some parts of the university environment as shown in the responses below.

Wireless is available but in few places. For example, in this college of education, it is in few very places, you must go to the administration offices or the Library to access the wireless.

The university Wi-Fi has those concentration areas where you can have good connection. For example, when I need to use Wi-Fi I go to [room] A110 where there is Internet. So, I go and use it until I complete [my works] then I leave. The infrastructure is not that good. We depend on the university network to accomplish our work but slow and not always accessible. They should improve the Internet to make it faster.

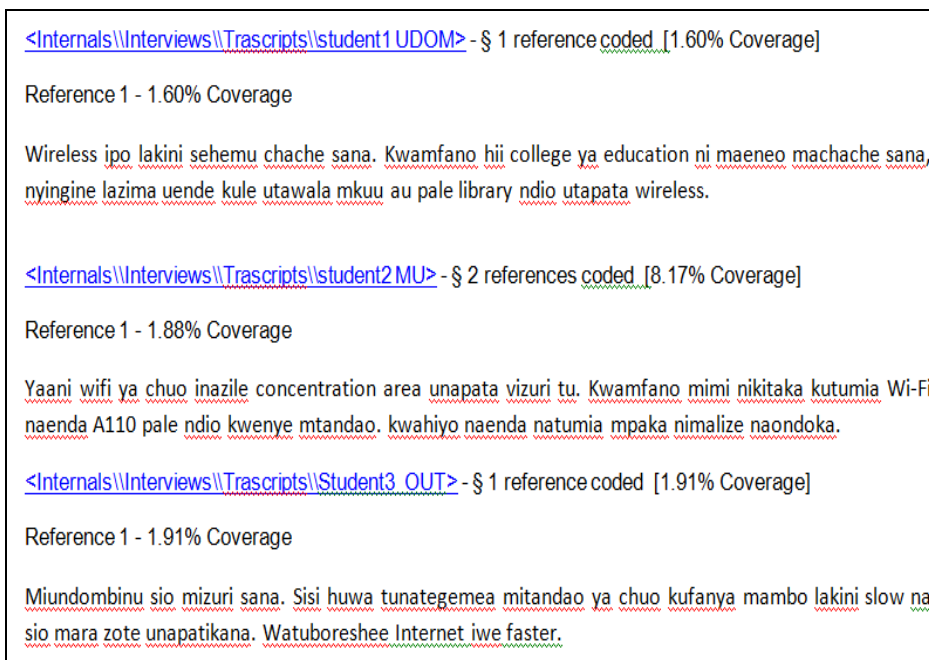


Figure 3: Respondent's reaction on the network services (Swahili)

This output is an extract from NVivo software with reference code for NVIVO's way of linking codes to the actual text from the respondents.

Third, policy readiness is crucial for the survival of micro-credentials. Both institutional and national policies should identify and value the system. Unfortunately, digital badges are not valued by the majority of employers and policymakers. Thus, the majority of badge owners find it hard to be either recruited or admitted into education systems. The existence of policies enforces the responsible units to recognise micro-credentials hence inspiring learners and educators. Also, the existence of policies that recognises micro-credentials will inspire institutions to venture into the project by either integrating digital badges into the course design or inspiring learners to

participate in learning activities and earn digital badges from reputable issuers. Our study reveals that universities own various policies and strategies tailored towards learning technologies. They include general ICT policies as well as e-learning policies that facilitate technology-mediated learning. However, they lack enforcement as well as content related to micro-credentials. Thus, the focus of the majority institutions of higher education is on traditional teaching method with the exception of few e-learning services.

Attitude

The attitude of the stakeholders plays a significant role in the uptake of micro-credentials. To succeed, any move toward the issue of digital badges will need the support of educators, students as well as educational technologists. The behaviour of an individual is shaped by the belief associated with the concept. It is likely if stakeholders believe that micro-credentials are useful and have a positive outcome they will likely participate in the deployment process and use them. Although awareness of micro-credentials is low, upon introducing the topic to the respondents, it was revealed that the majority of the educators and students have positive attitudes to the topic and are willing to participate in the project. The possibility of inspiring attention to skills-based outcomes in learning as well as the ability to recognise skills acquired through self-motivated learning appear to be attractive to the respondents. The responses suggest that the introduction of such mindset into academic institutions would free educators from being solely responsible for the output generation. Learners will be responsible for their career and professional development. Similarly, the respondents were accepting of the possibility that the institutional mandate will expand thus improving the image as well as revenue of the institution. Hence, their attitudes suggest the existence of mental readiness from key stakeholders of education in higher learning institutions.

CONCLUSION

In this paper, we have explored the position for use of micro-credentials in higher learning institutions in Tanzania by using the Critical Theory of Technology and Connectivism Learning Theory. Specifically, the paper presents the situation found in most of the universities in Tanzania. Generally, micro-credentials, especially digital badges are relatively new concepts in Tanzania; none of the studied university offers micro-credentials. Also, we have noted that deployment of such service is subject to improving infrastructure, developing policies, as well capacity building for educators and technologists. Because of its infancy, it is an opportunity for the African universities and researchers to explore various aspects of the project to improve knowledge and African identity.

On the positive side of the revelation is that both educators and students are optimistic about use of micro-credentials and the benefits that come with it including expanding the reach and revenue of the universities. Also, the project will inspire creativity, personalised and lifelong learning. In addition, the project has potential to motivate educators and students to be in charge of their professional development. Based on the results, we can conclude that with some improvements at the universities micro-credentials are deployable. Also, the attitude of the learners and educators suggest that micro-credentials are relevant and needed to improve the skills of the educators and learners. The study is relevant to the educational stakeholders including researchers and policymakers. The necessity of expanding the mandate of the educational institutions and learners' access to skill-based credentials is unquestionable. Importantly, as we admit that this study is limited regarding scope, more research projects and initiatives to explore the practical application and efficacy of the systems are required. The active participation of African scholars will shape the future of micro-credentials and digital badges implementation in the continent and Tanzania in particular so as to refute the claim of being a planetary laboratory of imported knowledge and tools.

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