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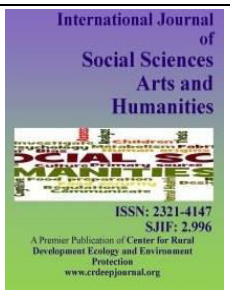

Review Paper

A Review of Literature on Higher Education as a Tool for Innovation

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ABSTRACT

Education has been identified and adopted as a tool for sustainable development by many countries under the title 'Education for Sustainable Development' a concept that guides learners to develop creativity by encouraging them to gain new knowledge and skills as well as demonstrate change in their values, attitudes and behaviors' consequently contributing to sustainable development. Higher education, as the level of education charged with the responsibility of preparing individuals to change the world through application of knowledge, skills and professionalism plays a vital role in nurturing these competencies. Necesitating, the need to assess its role in efficiently and effectively achieving this end. This paper has been developed through a review of 10 empirical journals focusing mainly on higher education and innovation. The research results indicate that Higher education institutions face challenges in funding, quality assurance and knowledge sharing. Because Innovative behavior not natural, Higher Education Institutions is mostly encouraged through a rewarding system. Funding for programmes and activities has to be increased. Leaders in institutions have to advocate for the implementation of quality assurance programmes that are in place. Knowledge sharing for both junior and senior scholars has to be encouraged and nurtured. The review has also established that research on higher education in Kenya and Africa in general is still at its infancy. These findings could be used to forecast, explain and improve the mannerisms of higher education structures and procedures to create an innovative environment that encourages and nurtures innovative behaviour among staff and students.

Introduction

The United Nations (UN) and its member countries are all seeking to develop communities sustainably. The seventeen Sustainable Development goals (SDG) have been developed to act as a guide to help achieve this end. The sustainable development goal 4 'Quality education for all' seeks to ensure that all people have access to quality education. Education for sustainable development is a concept that is quickly gaining global cognisance. It is designed to help learners to have a change in knowledge, skills, values and attitudes that will contribute to sustainable development ("What is Education for Sustainable Development?," 2016). The 1st UN decade of Education for Sustainable Development was delivered between 2005-2014. The aim of the initiative was to integrate the principles, values and practices of sustainable development into all aspects of education and learning; through mobilizing the educational resources of the world to help create a more sustainable future.

Target 4.4 of SDG 4 purposes to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship by 2030. Further, target 8.6 of SDG 8 aims to substantially reduce the proportion of youth not in employment, education or training by 2020(*Education .:. Sustainable Development Knowledge Platform*, n.d.). Consequently higher education has an indispensible role if these targets are to be met; Producing graduates who have requisite skills for the job market.

Higher Education

In the last half of the 20th century, there has been a major shift from economic growth led by mass production industry based on the established technology to knowledge-based growth in which hard and soft innovation ("creation of knowledge") has a higher economic value. Owing to the fast pace of change, research and higher learning are essential components of socio-economic, cultural and environmentally sustainable development of both individuals and communities (*WORLD DECLARATION ON HIGHER EDUCATION FOR THE TWENTY-FIRST CENTURY: VISION AND ACTION*, n.d.). Higher education is the third level after primary and secondary education. It is taught in a period of three to four years in an environment involving advanced research aimed at preparing the learners to qualify to work in a professional field thus increasing the earning potential (*What higher education is*, 2015).

The correct definition of the role of higher education depends on the ability to correctly balance the objectives of quality and

pertinence. Furthermore, such a balance will, in turn, depend on reaffirmation of the intellectual and educational missions of higher education. (*The role of higher education in society*, n.d.) Higher education has three functions: education, research and helping the community. The institutions prepare people to engage in research through educating them, while research makes the education process better and more fruitful. So, it can be argued that research and education are two sides of a coin. Many universities have a western background including those in Africa and Asia. non-the less they are designed in a way that they are deeply rooted in the society in which they belong because they existed in various forms long before they were established by colonialists in those places(*The role of higher education in society*, n.d.)

Article 10 of the Missions and Functions of Higher Education as provided by UNESCO states that, Education personnel and learners play a major role in higher education. The article recommends the creation and implementation of clear policies concerning teachers in higher education who now focus on teaching students how to learn and how to take initiative, rather than just passing knowledge and information. The article goes further to state that 'Adequate provision should be made for research and for updating and improving pedagogical skills, through appropriate staff development programmes, encouraging constant innovation in curriculum, teaching and learning methods, and ensuring appropriate professional and financial status, and for excellence in research and teaching, reflecting the corresponding provisions of the recommendation concerning the Status of Higher-Education Teaching Personnel approved by the General Conference of UNESCO in November 1997'(*WORLD DECLARATION ON HIGHER EDUCATION FOR THE TWENTY-FIRST CENTURY: VISION AND ACTION*, n.d.).

In 1994, the World Bank released a report where Psacharopoulos and his colleagues claimed that in Africa, primary and secondary education was of much more value than higher education. As a result, funding for higher education from both local governments and international well-wishers considerably dropped. Teferra(2013) claims that this trend has continued, making it difficult for Africa's Institutions of higher learning to cope with emerging issues. Teferra(2013) further posits that, while there has been a growing demand for education in Africa, especially with the introduction of self-sponsored programs, universities have not been able to grow their infrastructure at the same rate. This has resulted to several over populated and under equipped African Universities. Shortage of teachers, classrooms and other learning facilities make learning and creativity difficult to achieve.

New Partnership for Africas Development (NEPAD) aims to return to the former glory African higher education facilities and standards, promote specialized research, and create more African centres of technology. This is in a bid to reduce brain drain and achieve brain gain. By so doing NEPAD hopes to use education for national development, which is in line with the sustainable development objective of education for development. In their research, Blom et al. (2016) found that Higher education in Kenya has continued to grow over the years. Some of the growth can be attributed to the establishment of private institutions of higher learning, while the other can be attributed to the flexibility of programmes being offered by the institutions. The research findings further indicated that 28% of employers interviewed have a difficult time getting fresh graduates with requisite abilities for the job. This is of major concern considering the financial and time investments bade by the students and guardians.

Innovation

In order to define the term innovation, UNESCO borrows from OECD and Eurostat (2005), Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, §146, 148, to define the term as 'Implementation of a new or significantly improved product (good or service), or process, or a new marketing method, or a new organizational method. The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved in the case of product or process) to the firm'(*Innovation*, 2017). Al-Husseini & Elbeltagi, (2018) march this definition by identifying two types of innovation in the higher education context and defining them as follows. 1) Product innovation: defined as accepting, developing and implementing new products such as research projects, courses, new teaching resources and materials, and curricula Development 2) process innovation: defined as developing and using new technology, good financial management and the continuous improvement of skills. In the definitions of both UNESCO and Al-Husseini & Elbeltagi, (2018), adopting new ways of doing things or coming up with new things that will solve current issues is the way to go. Based on this premise Innovation is an indispensible concept and aspect of our life, if we are to achieve sustainable development.

Roffeei, Yusop, & Kamarulzaman, (2018) posit that innovative behaviour is the desire to change intellectually, in order to enhance innovation. Coakes and Smith (2007) as quoted in (Xerri et al., n.d.), argue that innovative behaviour can be supported by innovation champions i.e (i) people who have a natural ability to innovate and (ii) those who are experts in their field. However, the innovation process only ends there if the new knowledge is not shared outside that social network. Based on this premise, innovative behaviour is not always natural, but has to be nurtured through social networks. It is therefore important for higher education as a network to consider ways of nurturing such behaviour and sustaining it. The World Declaration for the Twenty-First Century in its priority actions 1(L) states that students have the right to organize themselves autonomously. This is closely linked to the findings of (Roffeei, et al 2018) who found that students who were allowed autonomy were more likely to engage in innovative behaviour as long as communication was properly done. Yuan, Zhang, Wang, & Li, (2018a) posit that the quality of a student is manifested In their entrepreneurial and innovative capacity. This closely matches Al-Husseini & Elbeltagi, (2018) description of innovation. based on this, we can then propose that the work of innovation champions then is to guide people in achieving innovative behaviour.

Education for Sustainable Development is becoming a major issue of discussion in the international arena, bringing even more prominence to the indispensible role of education in achieving sustainable development. (*Education .:. Sustainable Development Knowledge Platform*, n.d.). Education has to be holistic; taking a forefront in transforming the knowledge and attitudes of communities so that they can achieve sustainable development. Higher education being the sector charged with the responsibility of preparing individuals to transform the world through application of skill and professionalism, needs to be abreast not only with challenges facing the world today, but

also new ways of doing things. Makhtar Diop, in his speech delivered in Peking University-china in November 2017, notes that new innovations are not the only way of solving challenges rather, innovations can be adopted or systems adapted to existing innovations from other areas in order to solve current issues (Diop, 2017). As such, there is need to invest not only in the human resource required for this challenge, but also the infrastructure to support the efforts. Further because of high population in the university caused by over demand and under supply of the services of the higher education institution, It is paramount that these institutions focus on providing what is ready and friendly for the market(Blom et al., 2016)

Rationale

Historically universities have viewed research as a catalyst to economic development(Christy & Duane, 2013). Christy & Duane, (2013) further posit that aside from this traditional role, universities should also venture into innovation and competitiveness to create wealth. Hasanefendic et al., (2017) quotes Campbell and O'Meara (2014) who note that constraints posed by institutional factors (i.e. power structures, values, norms, taken-for-granted attitudes, behaviours and routines) can delimit the level of success for innovation in higher education. This is a sentiment collaborated by Roffeei et al., (2018) who posit that bureacracy and rigid communication channels are sometimes a cause for students shying away from exibiting innovative behaviour. With the raising level of unemployement, universities need to come up with innovatieve ways of filling this gap. They not only need to equip their students with requisite job skills but also innovative skills to help prepare them to solve the ever dynamic problems in the community. In light of this, this study sought to identify various bottlenecks that universities face in the quest of naturing and demonstrating innovative behaviour. In order to achieve this a systematic review of empirical journals was conducted . This findings of this study are instrumental to (i) management bodies of Institutions of higher education as it will help the develop policies inform on how to navigate this bottlenecks, (ii) relevant government ministries as it will inform them on policy to propel higher education.

Methodology

This paper has been crafted after a review of 10 empirical journals focusing mainly on higher education and innovation. Concept papers and pure literature review papers were not considered in crafting this paper. The sources of the data were online journals including JSTOR, Taylor and Francis Group, Emerald Insight, TOJET, JHEA/RESA, Springer, and OECD. The objective of the review was to determine the role of higher education as a tool for innovation. In order to meet this objective, there was a selection criterion for the journals to be used. First, all the journals that were used were those offering empirical analysis. Second, the review focused on those journals that were focusing on innovation in higher education. Third, the paper under review had to have been published in the last ten years, and lastly the source journal had to be reputable. In order to generate the review report, I searched keys terms including innovation, higher education and role of (higher education in innovation). My focus was on the broader topics of either innovation or higher education. In each paper I focused on the background, objectives, interesting claims, and striking findings presented there in. I would then craft areas I felt needed further research. In presenting this paper, the background paints the general picture of the state of both innovation and higher education. The emerging themes that were presented in the papers under review are presented under the section of findings and discussion.

Findings and Discussion

This section discusses emerging themes as identified in the papers under review.

Funding

Psacharopoulos (1985), an influential economist at the World Bank, and his colleagues (1994), erroneously concluded that the rate of return on higher education in Africa is much less than the lower education sub-sector, that is , primary and high school sectors. Teferra (2013) posits that As a result of this report, funding in higher education took a nose dive and the situation remains largely the same to date. Many institutions in higher education remain financially stifled even as the student population continues to grow in unprecedented numbers. Further Teferra(2013) in his study titled 'Funding Higher Education in Africa: State, Trends and Perspectives' revealed that Institutions of higher learning in Sub-Sahara Africa were poorly funded by the government. He further states that institutions have had to find ways to supplement the funding that they receive from the government, and other well wishers. Some of the activities used to increase the income level include admitting self-sponsored students. Though these programmes bring in a lot of money, the level of development in institutions remains largely disabled and growing at a very sluggish rate. In fact Tefarra(2013) exclaims that most institutions are still using facilities that they had long before the student population.

The fact that funding does not match student enrolment and population is striking because education is now considered an indispensible asset for sustainable development by nations all over the world (*The Role of Higher Education in the Changing World of Work*, n.d.) Why then are governments in Sub-Saharan Africa still not warming up to the idea of funding education more, for a better future? This study by Tefarra (2013) was conducted in Public Universities in Kenya, Uganda, Tanzania, Ethiopia, Madagascar, Zambia, Malawi. The study further found that the number of students enrolling is on a steady increase, but the funding was constant if not declining. For, example, MOEs (2005) in Oboko (2013) found that in Uganda, government funding for tertiary education has been declining over the years. This can be confirmed by the fact that 2004/05, higher education received only about 10 per cent of the total education budget, or USh 619.93 billion. In Zambia, the situation has remained almost the same from 2009 to 2011 mainly due to the position of the kwacha against other major currencies. According to Mpofu, Chimhenga and Mafa (2013), higher education in Zimbabwe has remained under-funded as the government struggles. Teferra(2013) further posits that, from 1985 to 1989, 17 % of the World Bank's worldwide education-sector spending was on higher education. However, from 1995 to 1999, the proportion allotted to higher education declined to just 7 %. Teferra(2013) also alluded to the fact that many public universities are looking for new avenues to get funding. Consequently, they are charging higher tuition fees and allowing self-sponsored students to enrol.

Marshall, (2016) in his paper 'Technological innovation of higher education in New Zealand: a wicked problem?' explores the structures and systems of the New Zealand higher education sector using the concept of a "wicked problem" (Rittel 1972; Rittel and Webber 1973) to understand the complexity and interconnections that are perhaps preventing

innovation and the shift to models of education that can scale while maintaining quality and reducing costs. In this paper, he connotes that, An analysis by the New Zealand Ministry of Education looking at the earning outcomes of students completing tertiary education prior to the recession and over the five subsequent years, found that students with bachelor's degrees were employed to a higher proportion than those with lower-level qualifications, and that median earnings had a premium of nearly 20% over the national median earnings in the first year, rising to 53% over the five years studied. New Zealand higher education institutions are substantially dependent upon public funds (68% of higher education spending, compared with 45% for Australia, 38% for the United States and 30% for the United Kingdom; OECD 2012, table B3.2b, 259). The accreditation system and management associated with this dependence constrain the autonomy of existing institutions (Thorens 2006), and act as barriers to the entry of new providers. It is also interesting that the government has placed so many measures to prevent all from accessing tertiary education, requiring institutions to negotiate 'investment plans' with a government agency. Failure to meet the required regulations can lead to reduced funding or no funding at all.

Comparing the findings of the study by Marshall, (2016) and those of Teferra (2013) the difference in University enrolment and funding procedures and practices between developed and developing countries is astounding. While in New Zealand the criteria for admission into higher education is stringent with the government creating space for only about 25% of the population (Marshal, 2016), admission in African countries requires only for the candidate to meet minimum qualification for a course and they can enrol as a privately sponsored student. In addition, the government partially sponsors several qualified students each year (Teferra, 2013). Due to this aspect, there is a significant difference in the number of students enrolled, as well as the pressure placed on the infrastructure. Unlike the African Universities which depend on a fluctuating national budget (Teferra, 2013), the government of New Zealand has placed a criteria, which uses four measures: course completion, qualification completion, progression to tertiary study, and retention in study for further qualifications. Failure to perform above minimum thresholds for these indicators for all students, and for students in key government policy target groups, results in significant financial penalties, and in some cases complete removal of government funding from the institutions. As a result these institutions are always under pressure to deliver unlike in African university where the criteria is not clear. A different study by Al-Husseini and Elbeltagi (2018), indicates that the availability of funding in higher education institutions encourages and facilitates the process of knowledge sharing among staff. The study also implies that adequate funding tends to reduce the occurrence of brain drain as academicians and researchers move to other countries to seek greener pastures.

Innovation And Innovation Culture

Roffeei, Yusop, & Kamarulzaman, (2018) in their study of Determinants of Innovation Culture amongst Higher Education Students based their study on the premise that many studies focusing on innovation were found in the management field, and rarely do they focus on innovation in higher education. Innovative ways of teaching would challenge the traditional ways of learning and teaching, which would potentially determine the innovation culture among students. Roffeei et al., (2018) further, connote that in order to have developed an *innovative culture,* there must be values, norms, beliefs, and basic assumptions shared among members of the institution (students, faculty members/academics, support staff, administrators, and board members). He further describes *innovative behaviour* as desire to change intellectually in order to enhance innovation. In the course of this study, Roffeei et al., (2018),also determined that effective Communication plays a major role in influencing innovative culture as it makes access to communication channels and information friendly. What is striking about this point is that Effective Communication is not just about passing messages in a manner that makes it easy for the recipient to understand, but also about the fact that channels used should not be intimidating and ridden with unnecessary and restrictive procedures. Future research could be needed to determine appropriate methods of communication, which help to build innovation culture.

A striking finding in the study by Roffeei et al., (2018) is that Climate for Innovation does not influence Innovation Behaviour. Even though the institution under study has infrastructure to support innovation, the availability of infrastructure did not influence the innovative culture and behaviour of the students. This research focused on the physical climate i.e the infrastructure. Sevillano-García & Vázquez-Cano 2015) conducted a research titled **'**The Impact of Digital Mobile Devices in Higher Education' in which they sort to examine the acceptance incidence and use of digital mobile devices among students in the European Education Area. They posit that digital devices (tablets and smart phones) are potentially beneficial in the development of university education. However, the discussions about using digital mobile devices are sporadic and inconsistent. In addition, the lack of quality professional development, staff that are sceptical about the use of digital devices in course development, and generally cultures that are unsupportive of mobile devices as a learning technology, make it challenging to in cooperate them into the University learning process. Pijpers, 2001;Pachler, Bachmair, & Cook, (2010) as quoted in Sevillano-García & Vázquez-Cano, (2015), explain that an examination of other literature on technology acceptance, indicates that social variables such as demographics, managerial knowledge, environmental characteristics, and task-related characteristics would also expand the predictive capabilities of use of digital mobile devices in teaching. This is an interesting fact that leads me to opine that, educational innovation through ICT will only be achieved through administrative orders, regardless of whether those orders are passed down from the European, national or regional authorities.

Ford, McNally, & Ford, (2017), posit that a shift in assumptions of andragogy as suggested by Knowels (1984), have applicable relevance to the instructional shifts that include adoptive learning in the curriculum. The study was inspired by the fact that Courses with high enrolment and low success rates (or lower than average success rates) are referred to as Obstacle Courses at UMUC. The three researches (Ford et al., 2017; Roffeei et al., 2018; Sevillano-García & Vázquez-Cano, 2015) agree that studies on innovation in higher education are not done frequently, but rather most researches concentrate on innovation in the management field. They also allude to the fact that digitization plays a major role in knowledge retention and duplication. As an example, Ford et al., (2017) used an Accounting unit in the course of the research, during which they found that students performed better because challenges

facing students were identified as they arose. Roffeei et al., (2018) connote that highly innovative universities nurture not only technical abilities and expertise, but also promote a sense of sharing and togetherness by creating a conducive environment for new students to feel supported by lectures, friends and fellow colleagues.

Knowledge Sharing

Al-Husseini and Elbeltagi (2018) in their research on the 'The Role Of Knowledge Sharing In Enhancing Innovation: A Comparative Study Of Public And Private Higher Education Institutions In Iraq', posits that although previous studies have looked at the relationship between knowledge management and innovation, few touch on knowledge sharing processes, and the impact they have on the teaching staff's product and process innovation within developing countries. According to this study,, *Knowledge sharing* is defined as a two-dimensional process, with members of staff sharing and exchanging their tacit and explicit knowledge, with daily interaction creating new knowledge through the process of knowledge exchange, donation and collection.. *Knowledge donating* as described by (Von krogh et al., 2012 as quoted by (Al-Husseini & Elbeltagi, 2018) refers to the owner of knowledge, and includes listening, talking to others, and providing them with information so as to help them develop their self-knowledge and solve problems more quickly; while knowledge collecting involves getting information from colleagues through observing, listening and practicing the information shared to you.

Al-Husseini & Elbeltagi,(2018) define *Product innovation* within higher education as accepting, developing and implementing new products such as research projects, courses, new teaching resources and materials, and curricula Development while *Process innovation* within higher education is defined as developing and using new technology, good financial management, and the continuous improvement of skills. Foe effective knowledge sharing and donation to take place in process and product innovation, communication is a key element. This echoes the findings Roffeei et al., (2018), which indicate that that good communication and less strenuous communication processes are positively related to innovation culture. Further for innovation champions to be effective proper channels should be created to support effective knowledge sharing. Therefore, effective knowledge sharing processes that lead to innovative behaviour can only be achieved with good communication practices. Based on the definitions of Knowledge sharing and those of product and process innovation, it appears the two share a chicken-egg relationship and none of the two concepts should be undermined.

These studies indicate that Knowledge sharing practice may benefit from institutional factors such as reward systems, helping the organisations to access tacit knowledge embedded in the minds of the organisational members, and convert it into explicit knowledge (Wang & Wang, 2012) as quoted by Al-Husseini & Elbeltagi, 2018), through the donating and collecting of knowledge for the enhancement of product and process innovation. Under reward systems, employees are not only more likely to exchange their knowledge and experiences, but also they seek different approaches to work. These sentiments are echoed in the findings of Roffeei et al., (2018), who in a different study found that warm interpersonal relations between members support and encourage teamwork. In addition to this, the presence of adequate infrastructure, provision of rewards and recognition, good work nature, availability of support from friends and lecturer may contribute help in establishing a positive innovation culture.

Leadership

In a different study on Transformational Leadership And Innovation: A Comparison Study Between Iraq's Public and Private Higher Education, Al-Husseini & Elbeltagi (2016) connote that Only a few studies have investigated the impact of Transformational Leadership on product and process innovation of teaching staff, and the differences in these impacts between public and private Higher Education Institutions in developing countries, particularly Iraq. Although it can be argued that both public-sector and private-sector institutions face immense pressure to innovate, leadership styles may be different in the two sectors due to their organisational and cultural environments. These sentiments are supported by the findings of Yahyagil (2004) quoted in Al-Husseini & Elbeltagi, (2016) from a previous study indicating that supportive culture, or the provision of managerial support to the organisation members is indispensable. Being able to freely share all the resources and knowledge with others through teamwork and collaboration, together with having warm interrelation among members, help in creating the right environment for innovative supporting activities.

Al-Husseini & Elbeltagi (2016) established that the majority of leaders in the public Higher Education Institutions(HEIs) indicated that MOHESR provides a good climate that supports Knowledge Sharing, such as funding research scholarships for postgraduate students (Master's and PhDs) and their supervisors to study outside Iraq for six months. In contrast, in the private sector, there is a lack of support from the leaders. It appears that leaders in this sector tell teaching staff what is expected of them, but do not show them how to meet those expectations. I find it rather interesting to connote that the good climate supporting knowledge Sharing is not necessary for the golden key to innovation because as established by Roffeei et al., (2018) in a different there is no relationship between good climate for innovation and innovatiove behaviour. Surprisingly, the findings of this study by Al-Husseini & Elbeltagi (2016) indicate that the public HEIs budget for aspects such as training programmes, research projects, development of academic staff, scholarships and incentive systems. As a result, the staffs are more ready and willing to participate in process and product innovation. Private universities however do not have funding for these activities. and as a result the leadership finds itself in a place where they need to convince the staff to participate in innovation without funding. The researchers' further states that a possible reason for this kind of trend is due to the fact that public universities tend to focus at the long-term, while private university look at the short term in terms.

Al-Husseini & Elbeltagi, (2016), indicates that in order to have global reach, the education system in Iraq needs unique leaders. I find this striking because the word unique is very vague. What characteristics is the researcher looking at to qualify a leader as unique? Also, leaders everywhere need to keep sharpening their skills and networking with other like minded individuals, in order to propel organizations to the heights they desire. Even though public universities have funding for staff development, this research does not mention any funding for leadership development. Private universities have no kitty either. What I found striking in this study was the fact that the

university under study was working towards building the international competitiveness of the students, as well as building an innovation and entrepreneurial culture through rewarding students and staff in the 'Innovation and entrepreneurial context'. However concept of the innovation and entrepreneurship education had not been sufficiently integrated with the professional skill curriculum. It is interesting to note that equipping the teachers with requisite skill has not been done despite the university focusing to improve itself for the last six years.

Monitoring and Evaluation

Yuan et al , (2018) conducted a research based on the premise that research results generated from evaluation models that are currently in use cannot be directly or effectively applied to the quality assessment of the innovation and entrepreneurship education at colleges and universities. In this research, they posit that though there has been research on the quality of innovation and entrepreneurship in universities and colleges, it is still at its infancy and focuses on the environment, educational, inputs and outputs. They also found that University neither pays enough attention to the development of the curriculum system regarding the innovation and entrepreneurship education nor fully strengthens the teacher training/ professional in this field. As a result, it becomes difficult to apply the findings of these studies in to the quality assessment of the innovation and entrepreneurship education at colleges and universities. The methods have been found to have either a weak scientific index system, or a simple calculation, or these approaches are not empirically tested. This is despite the fact that the government continues to pay significant attention to higher education in a bid to transform its innovation and entrepreneurial abilities.

Sevillano-García & Vázquez-Cano, (2015) Acknowledge that lack of professional development may cause the teacher to be sceptical about the process or product in use . Therefore, the concept of the innovation and entrepreneurship education has not been sufficiently integrated with the professional skill curriculum, making it impossible to operationalize and prove practically. This matches with the findings of Yuan et al., (2018)which indicate that there was imperfect mechanism of innovation incubation within the university. The result of this was slow growth or incomplete incubation. Proper evaluation system and more suitable methods of evaluation should be established to counter this. Further, providing increased financial support for the innovation enterprises, promoting the concept and facilitating the practice of the entrepreneurship education, and hiring talents from all walks of life to serve as teachers or tutors of the innovation and entrepreneurship courses will enhance entrepreneurship and innovation. Then, the overall quality of the innovation and entrepreneurship education will be enhanced only after establishing an accurate and effective quality evaluation system, and creating suitable evaluation methods have become an urgent task for the academia.

In their paper titled 'Quality Issues in Kenya's Higher Education Institutions' Kagondu and Marwa (2017) posit that the quality assurance offices are grossly understaffed and operate as a one person unit. They observe that though the quality assurance directorates have developed many quality assurance guidelines, they are, unfortunately, not implemented by management. Out of the eight institutions of higher learning sampled, the data collected indicates that there are disconnects between the management and other staff, making it difficult for both parties to deliver the universities vision. For example, Olayo (2005) as quoted in (Olaskoaga-Larrauri et al., 2015)), studied selected Kenyan universities and found that efficiency and effectiveness reduced as a result of low levels of participation in decision making by their staff and students. This, perhaps, is one of the reasons why the World Bank Report dubbed 'Kenya's Education Achievement and Challenges' faulted Kenya's education system for failing to produce graduates with the knowledge and skills that are considered crucial for achievement of Vision 2030 (Wamalwa 2015 as quoted in Kagondu and Marwa 2017). The challenges have also been worsened by the unprecedented number of students joining universities and underfunding making it difficult to follow through with the systems put in place.

Olaskoaga-Larrauri et al., (2015), conducted a study on 'Political Nature And Socio-Professional Determinants of The Concept of Quality. The study not only sought to determine how factors like age and gender influence an academicians' perception of quality, but also to establish how individuals in management positions within the institutions perceive quality. To attain variables for their study, Olaskoaga-Larrauri, et al (2015) used Harvey and Green (1993) definitions of quality that include: (1) quality as perfection or consistency; (2) Quality as fitness for purpose; (3) Quality as value for money; (4) Quality as efficiency in student transformation (5) Quality as excellence and compliance with standards. Qutanilla (1999) as quoted in Olaskoaga-Larrauri, et al (2015), connotes that Harvey and Greens concept of quality as excellence and compliance with standards, is the most traditional way of defining quality. The research found that women are more likely accept the idea of innovation as student transformation, while men are more likely to accept quality as setting of standards. Beutel and Marini (1995) as quoted in Olaskoaga-Larrauri, et al (2015) explain that this characteristic can be attributed to traditional societal roles of women, which help them to place value on activities that give service to others. The research also found that lecturers who held management positions felt that quality is more about value for money and excellence, and compliance with standards rather than transformation. This was translated to mean that those in management positions did this in support of the universities policy or values'; and the funding procedures, as well as expectations placed on the university by funding bodies.

In the thematic area that dwelt on the concept of monitoring and evaluation, Yuan et al., (2018) ,Olaskoaga-Larrauri et al., (2015), and Kagondu and Marwa (2017), agree on the fact that there should be a common understanding on what quality really entails. Olaskoaga-Larrauri et al., (2015), and Kagondu and Marwa (2017) both had more than one concept of what quality would entail. Yuan et al., (2018 and Teferra (2013) are in agreement that in order for proper evaluation systems to be successfully implemented there has to be adequate funding. Yuan further notes that, apart from funding, Institutions need to bring on board unique talent from all walks of life to help with implementation and evaluation of entrepreneurship and innovation in higher education.

This matches the sentiments of Coakes and Smith (2007) as quoted in (Xerri et al., n.d.) advocating for the participation of innovation champions into the innovation process. I opine that, a universal definition of what quality in higher education entails would help form an understanding on the requirements

of quality delivery and consequently make the monitoring and evaluation process more productive.

Conclusions

From the literature reviewed, it is evident that higher education contributes significantly to innovation. However, institutions of higher learning face major challenges such as deficits in funding, as well as weak quality assurance systems, both of which are essential elements in to successful incubation and implementation of innovation. The review has also established that knowledge sharing is essential though most often it takes place only among staff members. I did not come across a journal article on knowledge sharing among students. Also, if institutions of higher learning are to succeed in nurturing innovation the university leadership has to engage in transformational leadership. Much of the literature on transformational leadership is conducted in the business and management field with very few focusing on higher education. This review concludes that very few institutions are motivated to provide both the infrastructure and environment for innovation. Some of the institutions were said to have awards system to encourage innovation from staff and students. Those that had awarding system recorded improved participation in innovation activities. Institutions, especially in the developing countries like Iraq and those in Sub-Saharan Africa, faced big funding challenges that suppressed further, the provision of environment and infrastructure for innovation. Research should be conducted to help identify ways of encouraging stakeholders in the Higher education arena to participate in innovation. Research in this area would be beneficial in informing national and institutional policy on higher education and funding for innovation. It would also help identify how poor provision of these facilities could potentially lead to brain drain as mentioned in one of the papers. Findings of this research would also act as a guide to innovative techniques to motivate the stakeholders. In order to meet the development needs today and in the future, we have to be at the top of our innovation game. Higher education has a major role to play for us to achieve this end. Research should also be conducted to establish how the Higher Education sector in Kenya can encourage innovation among graduates and consequently reduce the levels of unemployment among Kenyan graduates.

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