

Application of Technology in Strengthening Collaboration in Research, Teaching and Learning for African Universities in the post COVID-19 Era

George Raburu

Abstract— The collaboration and sharing of teaching and technology among universities is increasingly perceived as a vehicle to improve quality in education and innovation through knowledge exchange. The discussion explores how virtual environment can be optimised for use as a common vehicle for enhancing research and collaboration in a virtual environment in Africa. The study recommends the use of a virtual platform that offers solutions to the challenges encountered by Universities within Africa (Eastern, Central, Southern or Western) in implementing a unified curricula, collaborating in research and teaching. The study documents the developing global challenges such as; the ongoing restrictions on keeping social distance due to COVID-19, the duplication of curricula, funding of research, lack of adequate experts in various programmes and new market demands.

The paper proposes a virtual platform (VP) that will offer room for collaborating universities to formulate and developing National and Regional policies that govern the environment.

Background

COVID-19 will leave no sector in any country in the world unaffected, and its consequences will be felt for years to come and higher Education is not an exception. Currently, most schools in Africa are struggling to accomplish the unfinished syllabi using radio, TVs and other technologies considered appropriate to substitute the face to face approach that the prevailing situation has brought to its knee, Higher education institutions have no option but to establish and improve their information and communications technology (ICT) to deliver their programmes online at a distance to their enrolled students. The universities who have been dependant on projects funded from the west and the east have to rethink first on how such on-going projects will be accomplished. The economic impact left behind by Covid-19 may no longer enable such funding. The collaboration in research and sharing of curriculum and teaching among universities in Africa will be utilized in the post Covid-19 era to address the challenges left behind. This can be carried out by producing and sharing of; common quality curricula resources within and between regions, between different countries or between universities. Curriculum sharing can effectively improve the student's basic knowledge structure, however, there is limited help in improving their professional knowledge (Li and Wei, 2015). "It may be part of human nature to create solutions, find better alternatives and meet the challenges ahead". It is further argued that Good policies and procedures play an important role in safeguarding quality (Kohn, Corrigan, & Donaldson, 2000). The use of an effective virtual platform in universities would be of great benefit in addressing the challenge of inadequate qualified staff,

the increasing learner population, and unenhanced regional and research collaboration.

Index Terms— teaching and technology, COVID-19 .

I. INTRODUCTION

There is no country in the world that COVID-19 will leave unaffected and its consequences will be felt for years to come. It has come at a time when tremendous effort has been put in the deployment to transform and improve higher education in Africa. It will increase research targeting the containment but at the same time will require that steps are taken to ensure that the already funded research in the continent by organisations predominantly lead by Asia and Europe are completed. The economic impact left behind is likely to compel the two continents to minimise their support so as to concentrate on rebuilding there ravaged economy. Unless the higher institutions in Africa collaborate and share; research, teaching, technology and innovations as an instant disaster response, then there is great danger that COVID-19 will destabilise the sectors in Africa with serious consequences.

II. GLOBAL FOCUS

The 21st century christened the 'digital age' has realised remarkable changes in productivity, creativity and abundance of high-bandwidth information networks that can facilitate collaboration between business units spread out across the world. Business must no longer bring talent to a few central hubs located in the host country but to tap talent at the source, using the abundance of band-width, coupled with the emergence of sophisticated work flow software that facilitates electronic and "face-to-face" communication. The environment so far created comprising fiber-optic cables, has resulted in the over-investment in capacity that enables the creation of virtual global offices that are accessible in different parts of the world enabling tasks to be completed in real time. And so 24/7/365 we are all working." (Friedman & S, 2006)

Research collaboration and curriculum sharing among universities and industries is critical for skills development (education and training) that culminates in the generation, acquisition, and adoption of knowledge and the promotion of entrepreneurship. Through virtual environment benefits in university-university, university-industry linkages are wide-reaching: they can help coordinate Research and Development (R&D) agenda, avoid duplications, stimulate additional R&D investment, and exploit synergies and complementarities of scientific and technological

capabilities. University-Industry collaboration can also expand the relevance of research carried out in public institutions, foster the commercialization of public R&D outcomes, and increase the mobility of labour between public and private sectors. The benefits of university-industry and university-university collaboration are also evident in developing countries. In Chile and Colombia a study shows that collaboration with universities substantially increased the propensity of firms to introduce new products and to patent (Marotta, Mark A, & Thorn, 2007).

The many types of university-university, university-industry links have different objectives, scopes, and institutional arrangements. Collaboration may be more or less intense and may focus on training or research activities, formal or informal, research projects, patent licensing, mounting and sharing curriculum, PhD and Masters Supervision (Hagedoorn, Link, and Vonortas 2000). Collaborations may be short-term and long-term. The Short-term collaborations consist of on-demand problems with predefined results that are articulated through contract research and licensing. Long-term collaborations are associated with joint projects and public-private partnerships that enables firms to contract for services and to periodically re-contract flexibly for specific deliverables. Longer term collaborations are more strategic and open-ended, providing a multifaceted platform where firms can develop a stronger innovative capacity in the long run, building upon the capabilities, methods, and tools of universities (Koschatzky & Stahlecker, 2010). It is unarguable that university research, teaching and learning is not just about the immediate environs-It requires continuous global interaction that cannot be limited by distance and time. With the advent of COVID19, universities are increasingly finding it mutually beneficial to share and collaborate on virtual platforms as a way of maintaining social distance and optimizing the use of the limited expertise in special courses such as Engineering and Medicine . Cloud computing services can be enhanced to provide a platform for the sharing and collaborating (Bosamia & Patel, 2016) in research and curricula.

III. DISCUSSION

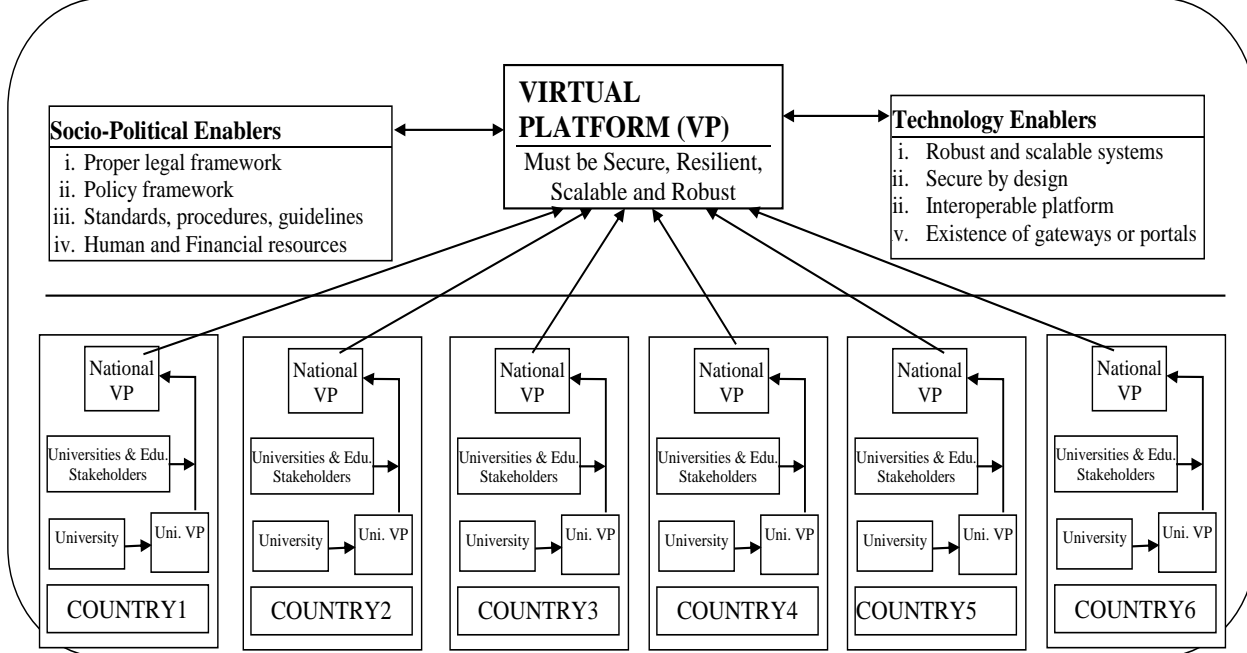
COVID19 has caught learners between globalization and localisation (University World News, Sept 2020). Some countries have proposed hybrid model for upcoming academic calendar but this has been challenged by the new health demand of keeping social distance and minimizing travel. The ultimate aim of transforming learning and research to online is likely to bring regional and global collaboration among higher learning institution across the divide. The industry –university linkage can also be facilitated using the approach. The online education may also enhance the sharing of rare specialized expert skills in the engineering and technology sector locally and abroad. Higher institutions of learning played a major role in preparing students for the ever changing world especially in the areas of technology that require a lot of hands-on work.

The rapid development of a variety of information technologies, such as the Internet and cloud computing, have provided solid support for the development of online education. The sharing of inter-university quality curricula is of great significance in improving the quality of teaching and research in universities and responds to existing challenges such as curricula duplication. In contrast, the relatively weak teaching resources of universities, the huge quantities of curricula and research outputs, the lack of motivation to share, lack of unified platform, lack of adequate qualified faculty result in obvious shortcomings in terms of lectures and mobility programmes. The sharing of curricula and use of virtual platform could help address the situation.

IV. CONCLUSIONS

In conclusion, this study proposes an establishment of a virtual environment for sharing curriculum, research and teaching/learning resources managed by universities in Africa that will utilise cloud service and connect the academia and collaborating relevant industries within the continent as a solution to the present challenge created by COVID19.

VP for Enhancing Collaboration in Research, Teaching and Learning for African Universities in the post COVID-19 Era



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