Social Capital in the Context of Fitness for Purpose: Do Engineering Students in Africa Possesses the Right Capital?

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Abstract: Social capital is important as it becomes an imperative as key indices for development and growth of students who opt for engineering education. Engineering educators have important role to play in motivating engineering students with untapped potentials to possess the right capital by creating productive teaching platforms. This paper explored the relationship of social capital on engineering education in addition to students possessing the right capital in their respective course of study. This paper argued that engineering educators should develop students' social capital within the context of social networks and norms by promoting knowledge-based social capital and its productivity among engineering students. This paper was guided by Social Capital Theory, which lay emphases on the views that student learning should be centred on education invested on human capital and social capital. Specifically, we explore engineering students having the right capital in their study and social capital is a quality criterion that enhances students in possessing the right capital towards EE in Africa. Thus, to address the social capital gaps in engineering education, it suggested that engineering educational curriculum as well as staff development and capacity building should be designed in developing engineering student to possess the right capital in their field of study. A number of educational-oriented recommendations for social capital in engineering education investment were made.

Keywords: Africa, Curriculum, Development, Engineering students, Social capital

I. INTRODUCTION

Social capital (SC) has been conceptually construed as it relatively has gained wide popularity in various research discipline, such as in engineering education (EE) in the last two or more decades. However, the sociological concept and usage of SC is allied with the general perception of human networks within their environment. In the year 1980's, this connection has blossom which has its roots in the Post-World War II era in the works of Bourdieu (1986), Wacquant (Bourdieu and Wacquant, 1992) and Coleman (1988). SC is regarded by two extensive assessments based on rational perspective: first, which ascertains that individual means are being shaped by rational means, and second, the embeddedness perspective focuses on the creation and outcomes of SC by collectivity (Babalola et al., 2020).

Although, these assessments are from two sides of the same coin and as a result of that, this paper adopted its rational perspective to explore that SC is key in engineering education (EE) in Africa. In Africa, various higher learning of engineering institutions are based on subjective idealist frameworks, within the contextual purpose identified with the impart of social capital amongst engineering students. This impartation emerges from structured partnership between non-profit organization and universities that has a rooted long-standing practices of groundbreaking engineering research projects (Batistic and Tymon, 2017). This corporation with remarkable projects was achieved in order to motivate potential students to create consciousness of SC in young potential engineering scholars. In order for engineering students in Africa to possess the right capital, faculty members ought to develop new teaching and learning practices revolving around SC (Juma, 2015; Harris et al., 2019. Challenging global competitiveness and expectations from traditional engineering programmes, becomes mandatory if higher educational learning meets with the Sustainable Development Goals (SDGs) of the much needed frontiers of advanced engineering industries. Therefore, sustaining EE in Africa, obliged the quest out of engineering students to embrace the right capital in engineering learning (Ahlborg et al., 2019; Chen et al., 2019). Thus, merging SC into engineering educational programmes act as a strategic role to generate accessibility to individual students and institutions alike to welcome the new approach. Similarly, the input of SC in EE could be perceived as one of the available options of building the right potential resources that are linked to engineering profession (Ceryn et al., 2017). SC is exhibited as learning resources and tools that are made as available opportunities and options for faculty members and students to adopt. In the era of fourth industrial revolution (4IR), engineering educators and professionals are beginning to stand up to challenge the laid down institutional background, pertaining to curriculum amendment. This becomes necessary in supporting engineering educators and students to accomplish the aim of incorporating SC into EE. The underlying structure of EE provides a strong capacity in preparing students with SC basics, related to educational, social and cultural benefits (Brown et al., 2005; Buck-Mcfadyen et al., 2019).

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331

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This paper presents a systematic review methodology exploring social capital on engineering education and engineering students in possessing the right capital within the context of EE in Africa. This systematic review approach identifies and appraises published articles from year 2005 to 2020 in the fields of Engineering education and Sociology systematically. The purpose of this methodology is to evaluate published reviews of SC on EE, to describe and discuss its implications in order to provide the best recommendations to engineering educators and professionals. The main objective of this paper is to fill the research gap by contributing to the overall understanding of the relationship between SC and EE. Specifically, we explore whether students have the right capital towards EE and SC is a quality criterion in enhancing engineering students as well as its implication in EE in Africa, hence, recommendations were advocated.

II. METHODOLOGICAL APPROACH

This paper adopted the Systematic Review Methodology, which is a logical and appropriate step, allowing the findings of separate reviews to be compared and contrasted, providing engineering faculty members with the findings they need. Large numbers of studies on social capital and engineering education have been published by engineering educators and professionals. It became seeming that systematic reviews of individual studies were required to appraise, summarize and bring together existing studies in a single area. The methods used to identify and evaluate published reviews systematically, are drawn from existing studies, following scientific research practices in the conduct and reporting of systematic reviews are explicitly explained. The process of identifying and appraising all published reviews allows researchers to describe the quality of the compiled existing studies, summarize and compare the conclusions of the reviews as well as discussing the implications and recommendations of the conclusions of the reviews.

III. LITERATURE REVIEW

3.1 Overview of Social Capital and Engineering Education

EE is important for Africa's development as many African countries are still finding it hard to recover the nation's economic growth and expanding their role in the global economy. Yet, their efforts are hindered by poor public services, corruption, lack of skills and political will. In Africa, the rising interest in public services investment has offered opportunity for the continent to build up its engineering skills competences (Brown et al., 2005; Almohamed and Vyas, 2019). Poor public services and dearth of educational facilities are the most important factors that is standing as an impediment in the continent's advancement in higher learning institutions. Africa can only harness dividends of her population by laying more emphasis on the importance of technological innovation in the competitive international markets. Investing in EE infrastructure will serve in promoting the right capital in engineering learning programmes and thereby tapping the students' potentials for productive employment (Mejia et al., 2018). Concerted efforts from all relevant stakeholders are required to attend to EE needs in Africa. The first step in achieving that is for engineering institutions to be challenged in coming up with vital solutions relevant to Africa in creating SC in EE for engineering students (Magana et al., 2019). For instance, pioneering engineering projects of faculty members and academic achievements of engineering graduates should be given the recognition and honour as they have immensely contributed in sustaining EE with SC improvement with resourceful results. As this will make available prospects for engineering students to play a part in major development, that could be strengthened by the support of engineering academies (Magana et al., 2016; 2017). An example of such recognition activities is the Mondialogo Engineering Award, which encourages engineering students to possess a right capital in engineering to establish a team building on projects that seek to implement social capital in engineering educational initiatives (Carreras and Bowler, 2019).

Africa continent in its early stages of EE and its scientific development, academic members worked toward bringing in expertise from international engineering institutions to assisting in building sustainable EE educational policies. For instance, there are twelve national science academies in Africa — in Cameroon, Egypt, Ghana, Kenya, Madagascar, Nigeria, Senegal, South Africa, Sudan, Tanzania, Zambia, and Zimbabwe — and one continental academy — the African Academy of Sciences (World Economic Forum, 2017a). However, in African region, it is only South Africa that has a well-established and sustainable engineering academy. This becomes necessary as these international experts have a major role to play in restructuring existing academy modules to meet with the international standard requirements (Kang et al., 2019). Incorporating SC in EE will provide a rare opportunity in seeking indigenous knowledge-based that will link EE to the revival interest in investing in SC of potential engineering students. In Africa, contemporary schemes have been strategize to rethink and build the future of higher EE that will create long-term important opportunities and partnerships through matching engineering institutions integrating SC skills into their curriculum (Martin et al., 2013; Marilyn, 2018). Curriculum policy and development of SC integrated in EE programmes may create a consistent and systematic approach to curriculum change that supports an effective monitoring and evaluation.

This systematic approach reveals the type of training policy, which involves engineering educators in teaching and students in learning to possess the right capital in EE (World Economic Forum, 2016a; 2016b; 2016c). These training programmes have structured timetable and teaching schemes, which allows engineering students to engage with their educators in fruitful discussion and exchange of idea. This will continue to facilitate continuous improvement of training and development of SC embedded in EE as well as staff competence. Curriculum revision and course content modification across study programmes indicates a consistent method to improve teaching and learning skills and abilities (World Economic Forum, 2017b). This method include: regular curriculum review, a definition of EE standards, modifying and delivering course content, assessment to grow good practice and processing new courses as well as reviewing existing courses (Brown et al., 2005; Akintimehin et al., 2019). Thus, creating an inclusive staff education and training in engineering learning environment demands raising awareness and the knowledge impact of SC in EE among educators.

3. Do Students have the right amount or kind of Social Capital for Engineering Education (EE) ?

The process of globalization and demographic shifts has led to the rapid pace of technological innovation. This has driven engineering institutions to improvise a planned and diversify new lifetime educational prospects. This further ensure that education and learning are made available to different student population with diverse disciplines they opt for. The diversification of engineering institutions are not restricted to the ongoing professional change but are subjected to the requirements needed in fast-changing labour market (World Economic Forum, 2017a; Benbow and Lee, 2019). This growing demand calls for quick response to students' development and socio-cultural opportunities engineering institutions will offer them. Engineering institutions have significant role in stimulating long-lifetime learning prospects faculty members can impart on students, which will make key contribution through continuous training and research (Amaewhule and Abraham, 2019; Abdullah et al., 2019). Hence, learning technologies are specifically developed to improve learning and educational resource materials. Thus, EE involves students programmes that entails acquisition of occupational skills under supervision of engineering educator or expert. In the last two decades, EE has recorded its greatest achievements in terms of development and distribution of advanced technologies, automobiles, telecommunications and supercomputers (Berthelsen et al., 2019). Despite these achievements, engineering students are still faced with challenges that seeks for improvement in their endeavours in their academic pursuit (Danko, 2016; Akintimehin et al., 2019). These challenges may prevent both engineering educators and students to adopt 21st century approaches to implement effective teaching and learning methods

(Benbow and Lee, 2019; Babalola et al., 2020). In Africa, several engineering schools are plagued with problems in updating their programmes over the last decades in meeting up with engineering programmes in developed countries. For instance, in Africa, the practical content of EE curriculum programmes are majorly theoretical than practical, as this is a reverse case in engineering institutions in developed countries (World Economic Forum, 2017a; 2017b). In Africa, several studies have shed more light on skill gaps and poor application of advanced technology usage among engineering students. Current research focused majorly on identifying and measuring individual outcomes of engineering students tends to focus on human capital creation rather than social capital creation (Thompson and Jensen-Ryan, 2018). In addition, few studies have lay emphasis on engineering students not having the right SC towards their studies, as they do not understand the significance of investing SC in EE. Thus, engineering institutions have a role to play in creating atmosphere for SC to be inculcated in EE programmes for engineering students (Marilyn, 2018; Skvoretz et al., 2019). In addition, engineering educators are neglected in the aspect of knowledge development of staff, and capacity building where such capacity building facilities will be beneficial to academic members by adding SC values to their teaching and learning skills. Staff development of engineering educators will build them to take up the task of making their teaching platforms to become viable and centred on the right capital so that students who take up their courses will eventually possess the right capital (Rogosic and Baranovic, 2016; Saukani and Ismail, 2019). In developed countries, engineering undergraduate students or graduate students are tutored to have a comprehensive understanding of what engineering profession is. This helps them to capture their minds and potentials as young scholars to embrace engineering profession as a core discipline with SC value (Magana et al., 2017; Berthelsen et al., 2019).

In modern Africa, owing to lack of funding, the dearth of engineering staff and professionals in academia, and lack of political will establish a top engineering institution focusing on building SC values in engineering students as the turnout of such engineering student brings earned social status of achievement. Investing in EE skills that has SC values and skills may likely broaden engineering students' social frame of orientation in possessing the right capital (World Economic Forum, 2016a; 2016b).

This will aid in developing the potentials and necessary skills in engineering students to become intellectual professionals. More efforts should be put in place to support engineering students with the right capital in engineering courses through in-depth knowledge and skills creation (Danko, 2016; Benbow and Lee, 2019).

Bringing SC with EE conveys new social connections and professional networks that boosts engineering students to retain SC in their course of learning. Identifying SC elements and providing apt strategies relevant to EE, offers comprehensive programme contributing to the revised curriculum of EE in the 21st century. SC is important as it will improve engineering students in knowledge capacity and human capital, as this has a positive effect on SC elements. Social capital elements include confidence, social participation and social integration, as they are in a mutual relationship (Brown et al., 2005; Harris et al., 2019).

4. Exploring Social Capital as a Quality Criterion as an Enhancement for Engineering Students

Social capital is a quality criterion in enhancing students to possess the right capital in their field of studies. SC has been explored to fit the purpose of adhesive that combines engineering institutions to enable provision of opportunities to access human and financial in the generating of productive results (Ceryn et al., 2017; Mejia et al., 2018; Magana et al., 2019). SC resources can provide engineering students with key social assets, including solidarity and norms of cooperation that are essential for creation, sharing and management of engineering knowledge combined with SC. Thus, investment in engineering students to acquire knowledge and skills in creating human capital is attributed with an effective means in EE. EE has provided individual students with the opportunities to build valuable relationships resulting into gaining of resource information, exchange of favors, emotional support and career networking (Ahlborg et al., 2019; Kang et al., 2019). Though, it is assumed that EE is an effective way for engineering students to invest in and accumulate not only in human capital, but also social capital. Social capital has created an equal prominence that may not clearly promote opportunities for SC investment among engineering students (Brown et al., 2005; Carreras and Bowler, 2019). Engineering educators may have poor awareness that engineering institutions may facilitate SC investment and students may have poor understanding of SC application in their learning endeavours. Emphasis should be centred on how EE should explore such opportunities for buildup of SC in higher learning institutions. Higher education can be perceived as a form of SC investment (Berthelsen et al., 2019; Harris et al., 2019), in which EE are established to kit engineering students with necessary practical skills and competencies. For engineering students to develop as scholars, academic programmes and courses must be made demanding and socially supportive in order to maintain high academic standards (Rogosic and Baranovic, 2016). Social supports from engineering educators and professionals from industries will inspire students to acquire new knowledge, to internalize scholarly dispositions towards intellectual thinking. Perspectives from human and social capital has submitted that engineering students can only acquire SC if they engage frequently in the use of university resources to attain their educational goals (Saukani and Ismail, 2019). Moreover, studies have demonstrated largely the works of James Coleman and Pierre Bourdieu stimulated the relationship of SC to educational development as the interest in the concept in the late 1980s (Bourdieu, 1986; Coleman, 1988; Bourdieu and Wacquant, 1992). Hence, SC has been positively linked to educational accomplishment and psychosocial factors that has implications for educational development. Social capital in this context consists of social networks and shared values between individuals that enable group of people to trust each other and work together. Until recently, engineering students are building SC by developing new social networks, by gaining confidence and self-esteem through respect they receive from teachers and contemporaries (Thompson and Jensen-Ryan, 2018; Harris et al., 2019). This overtime has assisted engineering students, in particular among marginalized students to interact and build a level of confidence in class interactions. Significantly, high levels of SC have been linked with greater productivity, and efforts should be made to increase students' participation as they represent relatively untapped talent pools (Mejia et al., 2018; Skvoretz et al., 2019). Moreover, the strength and size of engineering educators alongside professional networks shows a strong association with employment prospects. SC plays a key role in recruitment process for graduate students as there is a consensus between engineering universities and industries.

IV. THEORETICAL FRAMEWORK

This paper employed James Coleman's concept of social capital theory to explain the purpose of social capital on engineering education (Coleman, 1988; 1990; 1993; 2000). Contemporary works on SC was dated back to the 1980's, which flows primarily from the works of Pierre Bourdieu, James Coleman and Robert Putnam. First, Bourdieu's (1986) conceptualization of social capital theory is grounded in theories of social reproduction and symbolic power. The theory recognizes that capital is not only economic but has social exchanges that are not purely self-interested. Second, Putnam theory of social capital uses the United States of America as a case study since 1960s, to illustrate unprecedented failure in civic, social relationships and political life pertaining to social capital revealing serious negative outcomes (Putnam, 2001). Third, the American sociologist John Coleman's concept of social capital theory centred on relationship beliefs comprising mutual exchange, which controls relatively the extent of conviction of shared values involving wider networks among individuals (Coleman, 2000). Coleman's operationalization of SC is perceived to have a substantial impact on educational perspectives (Coleman, 1993; 2000), and therefore, this paper adopted Coleman's concept of Social Capital as the theoretical framework.

According to Coleman (1988), SC explains that educational level is influenced by the social position of human capital development. Social capital position itself in social structure perspectives, which facilitates individuals' activities within a particular context representing the right capital Coleman (1990). This depends on the particular activities an individual is engaged in having the knowledge value of the significance of social capital. This played an important role on the individual's decision-making towards educational achievement in acquiring SC in their learning undertakings (Coleman, 2000; Cooke et al., 2005). The viewpoint of Coleman is that SC can facilitate individual relationship in achieving certain goals that imposes additional costs oneself. In other words, as physical capital leads to changes that shapes and facilitate production, in such a way that social capital brings new changes into human skills and abilities (Coleman, 1993; Erinne, 2015).

Thus, a theoretical argument revealed that EE curriculum should be designed for students to enable them to develop SC. Evaluation and value of SC require supports from students' development and retention in EE evaluation programmes. These EE evaluation programmes implied that SC is valuable in terms of retention and in multiple measures of academic achievement (Juma, 2015; Gilani, 2019). Interactive sessions with teaching staff, tutors and peers will either motivate engineering students to remain or opt out of engineering education owing to dearth of acquisition of the right capital in them. Students that have left engineering faculty differed in their perception towards SC from those that remain in EE with teaching methods will encourage interactive discussions on engineering curriculum based themes (Abdullah et al., 2019; Skvoretz et al., 2019). As a part of social structure that SC is based on, depends on conduit of information, norms and definite acts resulting from expectations and assignments of EE that encourages learning behaviours among engineering students (Coleman, 1990; 2001). For Coleman, social organization makes SC and cannot be replaced or exchanged completely, unlike physical and human capital. SC belong to certain activities which represent a source that is involved in networks of common values and trust (Coleman, 1990; 1993). Several studies have cited the effects of education on trust and social engagement are positively correlated and these variables are measures of SC (Brown et al., 2005; Bosbach and Maietta, 2019). Development of EE policies and revision of curriculum should be advocated for in engineering university institutions in order to promote SC investment in engineering learning establishments. This is as a result of critical experiences and lessons drawn, regarding role of SC in developing EE, previously ignored and discouraged (Buck-Mcfadyen et al., 2019). Recorded success of SC on EE would be a step forward for engineering academia to introduce the appraisal of engineering programmes adapted from international collaboration efforts. This will identify good engineering teaching practices and inspirational models that will incorporate SC into engineering curriculum

in order to measure the impact of EE on students who opt for the course (Rogosic and Baranovic, 2016; Bosbach and Maietta, 2019). One of the major constraints facing EE incorporating SC lies in in findings means of creating EE programmes in enabling engineering students to possess the right capital for the courses initiatives. Hence, SC can be created via EE in three approaches: first, engineering students have to put into practice the right capital, such as participation and reciprocal relationship; second, engineering academia need to support community activities with engineering forums; and third, engineering students should learn how to participate responsibly through civil education in their society (Batistic and Tymon, 2017; Kang et al., 2019). These approaches have played an important role in the educational process in promoting SC and equipping engineering students to retain the right capital in their educational pursuit.

V. DISCUSSION

Social capital (SC) still remains the key theoretical model and valuable tool for social investigation in EE in order to explore its complex phenomenon, its diverse nature and components to enhance engineering individual students (Brown et al., 2005; Mejia et al., 2018; Gilani, 2019). This is as a result of its involvement of both micro and macro societal factors, predicting the value of SC and its intervening challenges amongst engineering students possessing the right capital in Africa. Importantly, the effects of SC on EE depends on the social and cultural context within which is measured based on the effects of SC on different outcomes which vary from individual students to another (Amaewhule and Abraham, 2019, Kang et al., 2019). The important value of SC on EE is enclosed with the quality of graduate students upon their completion of studies, which in turn would indirectly lead to enhanced learning and quality educational outcomes (Magana et al., 2016; Marilyn, 2018). The newly adopted Sustainable Development Goals (SDGs) has a role to play in addressing challenges plaguing EE by bringing relevant stakeholders to discuss the way forward on how to build an strong engineering foundational institutions in Africa (World Economic Forum, 2017a; Ahlborg et al., 2019). In Africa, there is still a long road ahead to close skill gaps, as the continent needs a tenfold increase in relevant skills from the engineering fields (World Economic Forum, 2017a; 2017b). To achieve this, it must intensely educate a higher proportion of engineering undergraduate students through to graduation. Engineering courses/fields traditionally has a high dropout rate around the world, and which begin to pop up the question what can higher educational sector do in order to produce engineers with the right capital that African region needs?

Social Capital in the Context of Fitness for Purpose: Do Engineering Students in Africa Possesses the Right Capital?

This question provides an answer that lies in prioritizing a sustainable EE that is equipped with the right social capital for students. This becomes an imperative, as it will bring transformation in the way engineering courses are taught to improve EE that will build a crop of graduate students with SC for the profession. The SDGs and other engineering professional networks have open accessible opportunities to collaborate with students and faculty members to have an enabling strong learning space for engineering and technological built environment (World Economic Forum, 2016a; 2016b; 2016c; Akintimehin et al., 2019; Babalola et al., 2020). In this approach, engineering students can be taught on how to develop self-skills and how to apply these skills to EE, which will keep them from being a drop-out (Magana et al., 2017; Kang et al., 2019). Hence, SC skill gaps in EE and profession have received attention from engineering educators as they build an inclusive and diverse higher educational environment in EE. These practical actions have suggested for engineering educators to fill gaps in knowledge, by raising academic standards and create potential engineers who can demonstrate engineering competence via social capital (Thompson and Jensen-Ryan, 2018; Saukani and Ismail, 2019). A new approach for EE involves integration of SC as historical approaches has called for positive changes in EE. Concerted efforts to bring about the change seems to be stalled in EE as policies adopted do not fit into the cultural change of SC to enable engineering students to possess the right capital in their career pursuit. Cultural shift of SC is inclusive in EE environment, which needs supportive and visible long-term impact that will bring changes into EE within the context of SC (Rogosic and Baranovic, 2016). This will aid in focusing and reshaping by managing the engineering students to embrace unique differences in creating knowledge-based SC in engineering revised curriculum programmes.

EE is challenged with many problems, which makes it less reproductive and hardly achievable in investing in engineering students to possess the right capital. Some of these challenges in EE are: the dearth of qualified and competent teaching personnel, poor funding and administration of empowerment programmes, shortage of institutionalized framework and training facilities, gender inequality and stereotyping to certain technical and vocational based courses, ignorance and absence of healthy spirit of competition among engineering academia and professionals (Marilyn, 2018; Harris et al., 2019; Babalola et al., 2020). Thus, the ties between SC and EE will bring academic expansion of engineering students' ability to acquire more knowledge and skills in their course of studies. Incorporating SC in EE requires positive input from engineering faculty members and professionals to hold accountability for the development of EE valued with the right capital (Bosbach and Maietta, 2019; Saukani and Ismail, 2019). The concept of SC in EE is important as it introduces engineering students to develop SC, in providing useful insights for engineering practices upon studies completion. Integrating SC in EE are aligned with elusive resources embedded in interpersonal relationships with engineering educators, professionals and students (Buck-Mcfadyen et al., 2019; Carreras and Bowler, 2019). In EE, SC exists in three forms as obligations and expectations, as information channels, and as social norms. Within this context, SC can take the role of parental expectations, obligations, and social networks often found within family, school, and community, as they are important indicators for engineering students' achievements (Erinne, 2015; Mejia et al., 2018; Carreras and Bowler, 2019).

VI. CONCLUSION AND RECOMMENDATIONS

SC is key in EE as it has an intermediate level with human capital. This paper revealed that engineering student with high level of human capital are indicated by amount of SC that comes in various forms. Thus, SC fosters skill development in human capital, which in turn stimulate in promoting SC growth in engineering tutelage. EE is changing in response to SC value among rapid engineering educators and graduate students' population. The need to address social capital gaps in EE is to incorporate SC into EE teaching and learning programmes, which will equip students to possess the right capital in their course of study. Although in Africa, the importance of investing in SC in EE has been cited in previous studies, yet there is still skill gaps among engineering students to determine SC in their engineering courses. However, there are major challenges promoting hurdles against engineering students in taking up SC values in their educational programmes. These major challenges include dearth of competent teaching staff, poor funding, lack of teaching and learning facilities, and unhealthy competition among engineering academia and professionals. Thus, there is need to refocus on quality investment in SC of engineering courses and to improved revised syllabus that will bring out the right capital for engineering students to retain in the 21st century and in the fourth industrial era (4IR). Adequate funding of academic staff development and capacity building programmes and sustainability of SC engineering teaching and learning resources has a significant role and social implications for engineering graduate students to compete with their counterparts in developed countries. Hence, we identified the following recommendations in addressing social capital gaps among engineering students in African engineering higher educational institutions:

1. Ensuring relevant stakeholders (public and private sectors) to invest more in SC in EE for its optimal and quality outcomes for young engineering students with untapped potentials at micro and macro levels.

2. to develop and finance more in EE synopses that hugely lay emphasis on the significance of SC by working out appropriate self-development programmes for engineering graduates with technical, ethical and SC skills aligned with education in the 21st century.

3. Promoting effective teaching tools and preparing engineering graduates for the global challenges by reviewing and revising EE curriculum content and delivery of programme resource materials.

4. Help engineering students to understand the relationship and reward values between SC and EE in the 4IR era through sensitization by creating awareness in order to assist them to choose and possess the right capital in their educational endeavours.

5. Ensuring huge investment in academic staff and educators' development and capacity building that will yield maximum productivity in teaching, research and community development that will advocate the right capital in their pioneering projects and graduate students.

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338