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UNIVERSITY-INDUSTRY COLLABORATION FOR MANPOWER PLANNING AND THE CHALLENGES OF ECONOMIC DEVELOPMENT

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Abstract: The development of manpower aimed at addressing the prevailing and future needs of a given society is a good reason for designing and structuring collaboration between universities and industries. Using a qualitative research design, this article explored the university-industry collaboration for manpower planning and the challenges of economic development in Nigeria. It looked at the concept of university education as a private and social investment that has a limitless rate of returns to both the individual recipient and the society. It also discussed the relationship between economic development and manpower development planning and highlighted that economic development which is a deliberate process of sustained quality improvement of the people requires proper planning, at the center of which is manpower development planning. Furthermore, the critical roles universities and industries in Nigeria have to play in producing the skills needed for industries and national development were also examined. These roles include producing high-level and middle level manpower in order to address socio-economic challenges, boosting the acquisition of skills to tackle the mismatch between skills of the available workforce and job vacancies, and championing ideas and innovations to facilitate access to new markets. The article suggested a number of strategic approaches to foster a stronger collaboration of universities with industry. These strategies include among others an establishment of a consultative process where the voice of relevant business managers is given adequate consideration in curriculum development in order to ensure that the academic programs of universities are tailored to the needs of the industries. Another strategy posited by the article is that universities can encourage the participation of industries in graduate programs which may include the supervision of graduate students who may undertake part of their research within these industries. It was therefore concluded that a strong university-industry collaboration is a critical option in the process of developing relevant manpower and combating the challenges of economic development.

Keywords: University-Industry Collaboration, Manpower Planning, Manpower Development, Economic Development.

INTRODUCTION

As development continues to be progressively diverse and complex, especially among the nations of the North, the attendant consequences, with particular reference to its sustainability and the ever-increasing yawning gap between the North and the South have been a global concern because of the challenges and threats to global peace and security. The advancements in technology and economic development are fast accelerating the global race as the developing nations are grappling to play catch-up while at the same time, battling with the negative consequences of the dangerous disparities between the two major economic blocks. As earlier pointed out, this ugly situation also has a global dimension. It is therefore not surprising that the United Nations in response developed the 17 sustainable development goals (SDGs) as a roadmap for its member states, irrespective of their different socio-economic status. The sustainable development goals (SDGs) are a call for action by all countries of all developmental levels – poor, rich, and middle–income – to promote prosperity while protecting the planet. They recognize that ending poverty must go hand in hand with strategies that build economic growth and address a range of social needs including education, health, social protection, and job opportunities while tackling climate change and environmental protection (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2021). An analysis of the 17 goals shows that they are all interrelated and mutually reinforcing, with quality education proving the most critical structural base for the attainment of the other goals. Ensuring quality education, therefore, requires deliberate and systematic effort and programs aimed at addressing the prevailing and future needs of a given society. In this wise, manpower planning is key.

Manpower planning is a systematic rational process of tailoring manpower training and development to address the present and future manpower needs of a society with the primary aim of attaining the desired socio-economic development level. This is one of the statutory responsibilities of university education – human capital development. It is at the heart of educational planning which is a firm conviction in economic development. Hence, it is the firm conviction of both individuals and societies that education is a veritable instrument for nation-building poverty eradication, freedom from deprivation and subjugation, respect, and preservation of the environment. Universities contribute to global development and poverty reduction through a combination of collaborative research, direct teaching, and capacity–building initiatives with partner institutions in the developing world. Hence, the tertiary section is becoming more aware of, and engaged with its role as a driver of national economic competitiveness, with education and technological development which are its core business, strongly accepted as the twin drivers of modern productivity (British Council, 2012).

Even though all the sustainable development goals are intricate,

connected, and interdependent with quality education as the common driving force, the treatise focused specifically on achieving goal number one through quality education at the university level. The goal can only be realistic through the effective planning and implementation of programs that can generate relevance and functionality, to adequately address the socio-economic challenges of today and the foreseeable future. The national policy on education is very clear and specific on the need to have a curriculum and programs to address the socio-economic needs of the Nigerian society and also not losing sight of the implications of globalization and internalization with respect to the planning and provision of higher education of which university education is at the heart of it (Federal Republic of Nigeria, 2014). Ensuring quality university education through deliberate and systematic programs that are patterned or structured to adequately address the realities of the demands of the world of work offers a strategic approach to address the ravaging effects of unemployment of the products of the university system. Providing the education that equips university students with the knowledge, skills, and attitudes that reflect the world of work will, to a great extent, guarantee job creation and self-reliance that will squarely and drastically address the debilitating poverty ravaging developing countries such as Nigeria.

The proper planning of university education is therefore a necessary condition and very crucial to the realization of this all-important objective of equipping students with the relevant knowledge and skills for the 21st-century world of work. Hence, one of the planning strategies in the provision of university education is the collaboration of the universities with the industry. The partnership, when properly structured and defined, nurtures a viable give-and-take relationship in which both parties share enormous benefits. To that extent, the World Economic Forum remarked that university-industry collaboration requires careful management and can offer many benefits to both parties (World Economic Forum, 2015). They include a two-way flow of ideas, in which case, results can flow out to industry and at the same time can be inbound to fuel research questions. In this symbiotic relationship, a functional platform is created that not only strengthens and empowers the university system and the students but also helps the institutions live up to their statutory responsibilities with particular emphasis on the development of the relevant manpower for socio-economic development and by extension, poverty eradication. On the strength of this premise, the World Conference on Higher Education in its deliberations on higher education in the 21st century: vision and action' cautioned that universities need to understand the forces of globalization that are impacting employers internationally, nationally, and regionally and which are feeding through into the demand for graduates by industry and occupation, in terms of courses and skills required (World Conference on Higher Education, 1998). Key business responses to global pressure include outsourcing and concentration on core competencies. A well-designed and structured collaboration between

universities and the industry is therefore imperative in the development of the manpower that can guarantee the actualization of these goals.

METHODS

Using a qualitative research design, this article explores university-industry collaboration for workforce planning and economic development challenges in Nigeria. It views the concept of university education as a private and social investment that has an unlimited rate of return for both individual recipients and society. He also discussed the relationship between economic development and workforce development planning and highlighted that economic development which is a deliberate process for the continuous improvement of the quality of the people requires proper planning, the center of which is manpower development planning.

RESULTS AND DISCUSSION

University Education

Education is a social service as well as a private and social investment its rate of returns to both the individual recipient and society is boundless. The socio-economic and technological advancements sweeping across the globe in this 21st century are basically the consequences of well-planned, quality education through human capacity building. Beyond being a human right, education has an enviable capacity to transform humans who are the most active and critical agents of development. Hence, the United Nations Educational, Scientific and Cultural Organization (UNESCO) remarked that education is increasingly recognized as one of the best financial investments states can make because the importance of education is not just practical, for a well-educated, enlightened and active mind that is able to wander freely and widely is one of the joys of human existence (UNESCO, 2003). Hence education is a crucial type of investment for the exploitation of modern technology. This fact underlies the recent educational developments in all the major industrial countries. Despite the idiosyncrasies of national history, political structure, and social tradition, in all cases, the development of education bears the stamp of a dominant pattern imposed by the new and often conflicting pressures of technological and economic change (Boulton & Lucas, 2011).

The construction and development of a knowledge economy and society through a well-planned education system is a global truism, but it is more strategically domiciled with higher education to which university education is central.

Globally, university education is conceived and regarded as essential to national and international transformation by pushing the frontiers of knowledge across borders through robust research and development. Universities operate on a complex set of mutually sustaining fronts – they carry out research into the most theoretical and intractable uncertainties of knowledge. They at the same time seek the practical application of discovery, transmit the inherited knowledge of earlier generations and seek to establish sound principles of reasoning and action which they teach generations of students. Universities train students to go into the

world with both general and specific knowledge and skills necessary for the well-being of society. They work with contemporary problems and hence, render appropriate the discoveries and understanding that they generate (Morisson & Pattison, 2020).

Universities as centers of innovation, research, and development have a wide range, diverse and enormous responsibilities towards the society in dealing with the mirage of dynamic challenges that confront society. The Nigerian National Policy on Education was very specific on this mandate (Federal Republic of Nigeria, 2014) when it stated that university education should contribute optimally to national development by intensifying and diversifying its programs for the development of high-level manpower within the context of the needs of the nation. The research should also be relevant to the development needs of the nation (FRN, 2014). The role of higher education in general and university education, in particular, is continuously changing, getting more complex and challenging in response to the changing complexities of both the internal and external environments. It is clearly visible that the obvious environmental dynamism is progressively exerting intense pressure on higher education to deliver on its mandate.

The critical role of university education in ensuring knowledge dissemination, and skills development for social re-engineering through manpower formation is on the front burner in the 21st-century global race. To that extent, Altbach and Rumbley (2009) pointed out that a widely accepted fact is the centrality of the higher education enterprise across the globe and the need for strong, vibrant post-secondary institutions to support the knowledge economy, as well as to provide the knowledge necessary for the social mobility and economic progress essential to societies around the world. Furthermore, Altbach and Rumbley stated that the role of higher education as a public good will always be fundamentally important and should be supported. Hence, the multiple and diverse responsibilities of higher education are basically key to the well–being of modern societies. However, this expanded role increases considerably the complexity and challenges. The emergent complexity, challenges, and demands require comprehensive and robust innovative planning and strategies. In light of this development, UNESCO unequivocally remarked:

> *Our world today is characterized by rapidly changing economies as well as societal and environmental challenges that have a direct impact on higher education (HGD) systems. This unprecedented transformation is due, among other factors, to new modes of work, technological developments, demographic trends, and massive migration. The digital revolution including the emergence of artificial intelligence, the rise of web-based education and training, and big data developments – disrupting all aspects of life and work (UNESCO, 2021).*

As both the internal and external environments continue to progressively

change in complexity and demand, higher educational institutions are expected to be dynamically proactive to ensure sustainable relevance and competitiveness both locally and globally. This global concern was at the heart of the observation of Panth and Jagannathan (2019) when they stated that in this era of disruptive technological progress, the role of universities must also change at the same pace. The importance of universities has gone way back beyond teaching (first generation), to teaching and research (second generation), to teaching, research, and commercialization of know-how (third generation). However, the fourth generation has seen universities become network hubs for education, research, and open innovation, driving not just economic development, but also catalyzing solutions to social and environmental challenges. The vision for higher education has therefore clearly expanded enormously.

Manpower Development Planning and Economic Development

Development is at the heart of every nation and society and it is a continuous process that is complex and dynamic and multi-dimensional. Economic development is a rational process of galvanizing the resources of a nation, both human and material for the continuous improvement of the well-being of its people. Economic development is more than economic growth in scope. It encompasses both quantity and quality. It entails quantitative increases and qualitative increases to guarantee the well-being and prosperity of the people. For development to be guaranteed, the quantitative increases in the areas of the gross national product (GNP) and per capita income must be accompanied by substantial progress in areas such as education, health, and security. This process transits emerging economies to become advanced economies, in which case, countries with low living standards become nations with high living standards. Economic development is all about improving living standards which refers to high levels of education and literacy, workers' income, health, and life span (Market Business News,2020). The continuous improvement of the well-being of the people through deliberate efforts is at the center of economic development. The development could therefore be summarized as a process that ensures self-reliant growth, achieved through the participation of the people acting in their own interests as they see them, and under their control. The first objective must be to end poverty, provide productive employment and satisfy the basic needs of all the people. Hence, basic goods and services such as food and shelter, basic education and health facilities, and clean water must be accessible to all (The Report of the South Commission, 1992). Economic development can be technically disaggregated into the following: (a) increase in availability and distribution of basic life-sustaining goods and services such as food, shelter, health, and production (b) rise in levels of living, higher income, job availability, quality education (c) expansion in the range of economic choices to individuals and groups which is expressed in increased freedom from servitude and dependence on other people and nation, freedom from forces of ignorance and human misery. It is,

therefore, a process of discontinuous and spontaneous change in the stationary state which forever alters the equilibrium state previously existing. This, therefore, means more output and changes in the technical and institutional arrangements by which it is produced and distributed (Obasi, 2016).

Economic development which is a deliberate process of sustained quality improvement of the material well-being of a people requires proper planning, at the center of which is manpower planning. It requires goal definition and the development of programs and strategies necessary for their actualization. Manpower planning and development is critical to economic development. It is a systematic process of determining the manpower needs of a nation or an organization with the aim of ensuring their availability in their different kinds, categories, and quantities at the time of utilization. The planning of manpower is central to organizational management and national development for effectiveness and efficiency. Manpower planning ensures adequate supply, proper quality, and quantity as well as effective utilization. This planning process determines how an organization or economy should move from its current manpower position to the desired manpower position through planning. It strives to have the right people at the right place and time to do the things that both the organization/economy and the individual gets the long – time benefits. Manpower planning is basically proactive in nature as it guarantees that the right number of people and the right kinds of people, are in the right place and at the right time doing the things for which they are economically most useful (Wajiga & Ndaghu, 2017).

Manpower planning and development is a strategic management function in both organizations and national economies and the most critical driving force in the process of optimal goal attainment in a rational and efficient manner. The human resource (manpower) is the only active and rational agent of production in whose capacity and capability the other factors of production can functionally and maximally contribute to the process of goal attainment. Standing on the premise of the human capital thesis, human capital stock (manpower) is pivotal to economic development and progress and the competitive advantage of organizations. The quantity and quality of a nation's human capital stock, therefore, determine to a very large extent, the direction, magnitude, and responsiveness of its development. This is because the effectiveness of her physical capital is largely determined by the capacity of the available manpower. However; one very serious problem commonly prevalent among less developed economies such as Nigeria in the development of human capital is manpower surpluses and shortages. This is inimical to economic development. Such an unhealthy economic situation makes manpower planning and development imperative in order to ensure the effective and efficient allocation of scarce resources (Obasi, 2016).

The development and provision of manpower for the purpose of desired economic development is a function of planning defined by a systemic rational process because it requires the collection,

collation, and analysis of relevant statistical data on a sector-need basis. This is to determine the manpower needs of the different sectors of the economy on a periodic basis with the aim of integrating the identified needs into the national economic planning in collaboration with the education system, adopting the principle of systemic integration. The principle of systemic integration in this context demands that the education system should be planned within the context of the national economy, conscious of the fact that education is a sector planned within the framework of the national economy. The national economic plan provides the legal planning framework for the education system for the purpose of creating and maintaining a seamless, organic relationship in pursuit of the national socio-economic goals and objectives. It was in recognition of this planning principle that Peitchinis (1967) asked a very crucial question: "In view of the recognized importance of the quality of labor in economic development, what are the processes by which manpower is being readied for its economic activities? Are the educational and training programs based on information regarding anticipated manpower requirements, both in nature of skills and in quantity; or do they constitute a haphazard collection, largely the outcome of numerous revisions of past programs?"

The above are pertinent questions that receive impetus and are reinforced by the principle of systemic integration, the neglect of which will obviously result in economic wastage and structural development disaster. Based on the evidence from the advanced industrial nations, Peitchinis (1967) further pointed out that these nations over the years have evolved built-in systems of education and training, both individual and institutional on the basis of which there is a continuous flow of specialized and semi- specialized manpower.

What is therefore expected is that in normal economic conditions, the system would automatically maintain an occupational diversification in the labor force that is consistent with the economic structure. This systemic synergy between the national economic planning and the education system planning in the generation of the manpower required by the economy in order to realize the defined developmental goals is critical and non-negotiable. The Federal Ministry of Education clearly enunciated this fact in the presentation of the philosophy and goals of education (FRN, 2014). It stated that education is an instrument for national development and social change and must therefore be qualitative, comprehensive, functional, and relevant to the needs of society. The goals should therefore include the development of appropriate skills, mental, physical, and social abilities, and competencies to empower the individual to live and contribute positively to the\[society. Strict adherence to the principle of systemic integration provides the necessary framework that ensures the curriculum and programs of the education system are in congruence with the national development plans. In this wise, educational planning is key.

Educational planning is a deliberate, systematic, and rational process of

determining goals and objectives and the corresponding programs and projects for the purpose of the educational and economic needs of both the individuals and society at large. Overall, the planning of education or from a more comprehensive scope, educational development planning is a comprehensive strategic process through which a society structurally designs its education system with the aim of addressing the socio-economic needs in the present and foreseeable future. Central to this planning process is manpower planning and development. The education system through manpower planning develops the relevant manpower required to drive the economy to the desired level. However, it is not a one–short activity but a continuous process. The adoption of manpower planning tasks in addressing a society's economic development needs is based on the assumption that the provision of relevant skills is a necessary condition for the development of a society. In order to excel in the development of such crucial skills, there is considerable reliance on the education system, especially at the higher educational level (Enaohow, 1990).

However, adherence to this standard practice of economic planning development among developing nations such as Nigeria still leaves much to be desired. Decades after most developing nations became politically sovereign; their economic sovereignty is still being negotiated amidst tough challenges. Many of these countries are still caught in the ugly web of development crisis that is still reinforcing and exacerbating their educational crises. This is because when educational planning is carried out on the basis of irrational political considerations, national development will obviously be compromised (Obasi, 2020).

University-Industry Collaboration for Manpower Development

Over the years, many people have continued to view educational planning from a very narrow perspective of manpower planning. Thereby seeing and understanding educational planning as synonymous with manpower planning. The only snag with this line of thought is when it is limited to economic consideration. However, viewed from a more comprehensive perspective of socio-economics, which takes into account the integral development of the individual, the description guarantees its validity. However, the analysis of manpower planning from a purely economic perspective makes some obvious specific demands on the attainment of the expected goals: the acquisition of relevant and functional skills, knowledge, and attitudes for the individual beneficiary to be productive and contribute meaningfully to society. Educational planning, therefore, becomes rational and relevant when it is carried out on the basis of the demands of socio-economic variables peculiar to different societies and nations.

The planning of education through manpower planning, therefore, presents the nexus between education and national development that defines educational planning as a social process. The Federal Ministry of Education (2014) in defining the goals of university education explicitly expressed this all-important relationship). It stated thus:

> '*University Education shall make an optimum contribution to national development by intensifying and diversifying its programs for the development of high-level manpower within the context of the needs of the nation; reduce skill shortages through the production of skilled manpower relevant to the needs of the labor market; making professional course contents reflect our national requirements' (Pp 39, 40-41).*

The policy provision clearly presents the critical role university education is statutorily required to play in national development through the development of relevant manpower. In line with this discourse on the primacy of the direct economic benefit of the university education system, Boulton and Lucas (2011) pointed out that government ministers, officials, funding agencies, and research councils, have in the last decade generally developed the following: (i) the function of universities is to provide direct in – out benefits for society's economic prosperity, (ii) that there is a direct relationship between university applied research and economic prosperity through the medium of scientific and technical innovation spreading into the economy (iii) that there is a high correlation between prosperity, social contentment and university research in science and technology (pp 2508 – 2509). A global discourse of this nature highlights the need to adopt some strategic plans of standard international best practices such as a strong and vibrant collaboration between university institutions and the industry. A partnership of this nature provides a veritable symbiotic relationship that has the potential to reinvest and reposition the socioeconomic development of nations in a knowledge and technologically-driven global economy.

University-industry collaboration is a strategic systematic process of making university education live up to its statutory mandate in terms of knowledge generation and dissemination, scientific and technological innovations, research, and the acquisition of practical skills for social re-engineering and economic prosperity. Boulton and Lucas (2011) highlighted this fact in their attempt to address the obvious asymmetrical motives between universities and industry as they collaborate. They cited Cunningham and Gok who remarked that universities are primarily driven to create new knowledge and to educate, while on the other hand, private firms are focused on economically capturing useful knowledge to gain a competitive advantage. Universities are motivated to collaborate with industry to access industrial capabilities and resources, to commercialize research ideas or test their commercial potential, to develop 'real-world' links, or to develop potential career pathways for students. However, the motivation of private companies is to collaborate with universities to access leading-edge research knowledge, and research infrastructure, develop in-house capabilities, and may be to identify potential employees. However, Boulton and Lucas (2011) pointed out that relevant policies can be the best instrument to overcome information and behavioral

barriers between universities and the private sector.

A partnership of this nature brings to the fore the philosophical basis of the concept 'of education and society. Educational institutions at all levels exist in and for society and vice versa. The relationship is interdependent and mutually reinforcing, thereby making this collaboration at the university level imperative (Morisson & Pattison, 2020). The global race has continuously exacerbated the crucial role of the partnership among nations, particularly the less developed ones in order to adequately address the yawning gap between the two major global economic blocks of the North and South. In this wise, Joshua et al (2015) remarked that collaboration between universities and industry is a common practice in developed countries in sharp contrast to what is obtainable in developing countries. Hence, the fundamental reason for this collaboration is to enhance competence in order to tackle social and economic problems by creating more jobs and drastically reducing the unemployment rate. The linkage between universities is very weak in Africa including Nigeria. Consequently, they do not produce the skill assets needed for industrial productivity which leads to low absorption levels by the available firms. It is no longer surprising therefore that the socioeconomic developmental gap between the South and the North is continually widening.

Robust collaborations between university institutions and firms are a critical catalyst to the global race that has left many nations particularly the less developed ones gasping for developmental breath, thereby playing catch-up. Adopting the 'university-industry-government triple helix' thesis by developing countries is imperative to launch them into the fast track of development. Arguing from this collaborative perspective, Lima et al (2021) stated that the collaborations between university institutions and the industry create socio-economic impacts for the areas where they are undertaken. These collaborations sometimes entail both formal and informal interactions that are determined by industry characteristics and strategies, university rules, and also operational policy provisions. These relationships usually start on an informal basis and later develop into more formal relationships with detailed descriptions of planning, roles, and expectations. They are contractually supervised thereby guiding the use of universities and firms' skills, resources, and facilities.

As the global race continues in magnitude and complexity to the advantage of the developed nations, the socio-economic challenges facing the developing countries become more daunting thereby creating a lot of developmental and security crises. It, therefore, calls for an urgent and structural overhaul of the education systems that can open up new frontiers to strategically address the developmental challenges to which these university-industry collaborations are crucial. This worrisome situation was succinctly highlighted by Guimon (2015) thus:

> *Collaboration between academia and industry is increasingly a critical component of efficient national innovation systems. It is useful to*

examine the experience of developed countries to better understand the different types of university-industry collaboration, motivations to form these agreements and barriers to cooperation, as well as the role of public policy in fostering such linkages. Developing countries face even greater barriers to such alliances (p. 1).

A proper understanding of linkages of this nature by university management and the government that makes education policies at all levels will be crucial in strengthening and repositioning the university education system to enable it to deliver its statutory responsibilities in manpower planning and development. The demands of the 21st-century global economy in terms of skills requirements are constantly putting pressure on the education systems of developing economies, thereby making this linkage a condition sine qua non. Responding to this developmental challenge, Guimon (2015) further stated that education and training remain the core statutory responsibilities of universities, especially in lower-income countries such as Nigeria, where the lack of skilled workers is a major bottleneck impeding the competitiveness and innovative capacities of firms. Part of the strategic approach is for Governments to seek ways such as policymakers to improve the quality of university graduates by fostering a stronger collaboration of universities with industry. One major first step is to establish a consultative process whereby the voice of relevant business managers is given adequate consideration in curriculum development in order to ensure that the academic programs of universities are tailored to the needs of the industry. Again, Governments can also establish, strengthen and support student internship programs for undergraduates and also encourage the participation of firms in graduate programs which may include the supervision of Ph.D. students who may undertake part of their research within firms.

CONCLUSIONS

The sustainable development goals (SDG) number 4 (quality education) provided the platform for this discuss. An analysis of quality education shows that relevance and 'functionality' are essential components that define it, and they are dynamically required to be at the centre of university education that is statutorily mandated to generate high level manpower for socio-economic development. Manpower planning and development is therefore a strategic deliberate process of facilitating the economic development of a nation. The quality of manpower stock of a country significantly determines its level of development, the economy's level of global competitiveness, innovativeness, and resilience. The global race that logically propped up the global education race has constantly rendered this race very complex and challenging thereby widening the already existing yawning gap between the developed and less developed countries. The socio-economic developmental crises bedeviling most developing countries with Nigeria as a case in point, its attendant security challenges are very disturbing. At

the root of this economic crisis include poor quality graduates many of whom are unemployable, low levels of practical skills, unimaginable mismatch between the skills they possess and the needs of the economy and proper entrepreneurial capacity. All these put together exacerbate the level of unemployment and poverty. University-industry collaboration therefore becomes a critical strategic option in the deliberate process of developing the relevant high level and middle level manpower to drive the economy in order to squarely address these socio-economic challenges. The linkage will boost the acquisition of the skills needed by the industry and will also significantly equip the graduates to be self-employed, employers of labour and wealth creators. In this wise, UNESCO Global Compact (2015) commenting on SDG 4, remarked that the firms can invest in education by developing the capacity of future employees. Investing in education can be a source of innovation and facilitates access to new markets. This will help education address the mismatch between skills of the available workforce and job vacancies which is a major problem in many markets.

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