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# Globalization of Knowledge Economy: Implications for Africa's Economic Development

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***Abstract:***
*Communities and nation-states of the world have become increasingly interdependent in the last three decades. Encumbrances to trade, investment, and migration and the numerous barriers to socio-cultural and economic cooperation among states are being steadily dismantled. These rapid global changes are traceable to globalization, a process whose driving force revolves around technology, policy, competition and knowledge. Some of the most significant outcomes of these dynamics are the subordination of the domestic economy to global market conditions, the diminishing relevance of the capital, the industrial and the resource economy model and the overriding transformative capacity of the emergent knowledge economy for the economies of states that embraced it. This study derives its data from secondary sources, particularly textbooks, peer-reviewed journal articles, special reports and internet materials. Data were analyzed and treated qualitatively using content analysis. The study adopts the post-industrial theory to argue that countries that invest significantly in knowledge, information and services will reap stronger economies than those that rely on manufacturing and resource activities. The study concludes that such is the dilemma Africa faces in a globalizing world. It recommends, among others, that African states require a shift in leadership and citizenry perception of knowledge to become key players and partakers in the global knowledge economy.*

***Keywords:*** *Globalization, knowledge, economy, development, Africa*

## 1. Introduction

Over the last three decades, world economic output has expanded, and many countries have been benefitting from increased cross-border trade and investments. Many others suffer because economic regimes are inefficiently managed, and this weakness reduces their capacity to successfully compete globally (Schneider & Enst, 2002). International mobility of capital resulting from recent advances in communication technologies and liberalization of financial markets has intensified as the world economy witnesses the unleashing of market forces. According to Onwuka and Eguavoen (2007), the deregulation of domestic markets, their openings to competition, privatization and the retreat of the state from economic management are also among key features of the current global order.

As disadvantageous as the globalization process may be to some regions (Africa), particularly in the promotion of global inequality, an extremely vital but often overlooked variant of the global index of economic development is knowledge. In recent times, scholars have come to refer to this as "knowledge economy". The liberalization of the world economy in all its presentations, for instance, has proceeded in such a way that the growth prospects of developing countries are being undermined. Thus, while restrictions have been lifted on the freedom of capital and skilled labour (knowledge) to move to areas of high returns, the restrictions on the mobility of unskilled labour remain. Additionally, as developed countries have increased their capacities to produce and export manufactures, the developing countries have become active in promoting tariff peaks and escalations (UNCTAD 2001). Such measures, which are increasingly being reinforced by the globalization process, can neither resolve Africa's development dilemma nor allow for the narrowing of the North-South divide.

While the knowledge economy lays emphasis on learning, information, innovation and skill-acquisition available to society and which come into unity to elevate the level of technology and industrial development of such society, globalization suggests that the entire world has today shrunk to become one big village where what happens in one part easily affect the other parts. By logic and implication, therefore, the knowledge economy has become a global trend that no nation, sub-region, or continent is insulated from. The general objective of this paper is to ascertain to what extent the knowledge economy has, within the context of globalization, supported the economic development or underdevelopment of Africa.

For clarity of argument, the paper was arranged under sub-headings beginning with an introduction. This was followed by conceptual clarifications before the discourse on the trends and dynamics in the global knowledge economy. Africa in the global knowledge economy preceded the discourse on the implications of the knowledge economy for Africa's economic development. The paper finally drew a conclusion and made recommendations that may be of invaluable benefit to African states.

*1.1. Conceptual Issues*

This study captures three key concepts that interrelate to give meaning to the research problem. The concepts are: Globalization, knowledge Economy and Development.

1.1.1. Globalization

Globalization is the central concept of the moment, yet a single definition of the concept does not exist in academics or everyday conversation. Notwithstanding the variability in definition, scholars are guided by two philosophical underpinnings. According to Obiorah (2003), one can perceive globalization either positively or from a neo-liberal standpoint as involving a campaign for unrestricted movement of people, goods, information, norms, values, practices and institutions across national boundaries. From a negative Marxist radical perspective, globalization is seen as imperialism in different toga. Scholars like Oddih (2000), Ake (1995), and Nnoli (2000) share this view.

Often used interchangeably with internationalization, globalization, according to Fotopoulos (2001), is the result of systematic trends manifesting the market economy's grow-or-die dynamic following the rapid expansion of transnational corporations. However, for Abubakar (2001), globalization entails universalization whereby the object, practices or even values transcend geopolitical boundaries, penetrating the hitherto sovereign nation-state and impacting the orientation and value system of a people. He observes that an issue, value(s), institution, or practice is globalized if, either through commerce, production, consumption, politics and information technology, it is visible and considered relevant in global centres. Aina (1996) corroborated this perspective and maintained that we could speak of globalization of human rights, sustainable development, rule of law, environment, democracy, good governance and knowledge.

Globalization has also been viewed as a somewhat complementary concept with liberalization and economic integration. Scholars like Khalid (1997) and Rosenau (1996) remain strong exponents of this viewpoint. Within the neo-liberal school of thought, conceptions of globalization appear inexhaustible. While the United Nations Development Programme UNDP (1996) links globalization with the movement of capital around the world in search of better returns, Alli (2006) defines globalization as a process which intensifies the integration of the world economy and the people through technological advancement in several areas, particularly in the area of information technologies.

Aside from these, Marxist scholars see globalization as a new phase in the development of capitalism. Prominent among them is Toyo (2002), who defines globalization as a capitalist and imperialist economic revolution. In the same vein, Onimode (2000) argues that globalization is a process promoted by the openness of most countries to international trade, international investment and international finance. For Nnoli (2000), as a complex social phenomenon, globalization interfaces with various elements of social life and is sufficed with ambiguities, variations, uncertainties and incompatibilities. He observes that its core is the inevitable expansion of capitalism worldwide, including the spread of its values. In concurrence with this position, Oddih (2000) strongly argues that globalization depicts the desire and dream of the core capitalist nations to spread capitalism to all parts of the globe, particularly the socialist states. He views globalization as nothing other than an ideology of capitalism represented in different frames and shapes. Other Marxian apologists on globalization, including Tehranian and Jameson, call globalization "pan capitalism" and opine that it makes for unrestricted movement of people, goods, information, norms, practices and institutions across boundaries.

In this study, we would rather view globalization as a virtual process whereby the entire international system becomes fused together through the interdependence of the world's populace following tremendous changes. These changes, which have occurred in the economic, political, social, environmental, technological and cultural spheres of human life, were basically engineered by the powers of information and communication technologies (ICTs) and knowledge. However, we must note that the debate on its benefit to mankind is a two-way affair. Scholars like Malia (2008), Nadeem (2009) and the BBC Editorial (2007) have advanced the unprecedented positive impacts of globalization on industrialization, financial markets, economic growth and development of states as well as cultural diffusion among mankind through increased information flow, Longworth (2007) has raised concerns over increasing inequality and environmental degradation generated by globalization. In addition, Obiorah (2009), the WHO (2005) and the ECA (2005) have graphically demonstrated the damaging impacts of "brain drain," a phenomenon associated with globalization on Africa and other underdeveloped regions of the world. The globalization process is also considered to be a major source of conflict in Africa and other third-world states. According to Alli (2006), in the past two decades, globalization has disarticulated the fragile government systems in Africa and significantly undermined the developmental state. By and large, while the industrial-capitalist states, mostly of the North, continue to benefit from the current dynamics of globalization, their counterparts in Africa, Southeast Asia and Latin America have continued to wallow in poverty and abject conditions.

1.1.2. Knowledge Economy

Among the perspectives on the knowledge economy, the discourse that situates it within the frame of a knowledge-based economy forms the central theme of our study. In this instance, knowledge economy refers to the use of knowledge technologies such as knowledge engineering and knowledge management to produce economic benefits. A prominent scholar of the knowledge economy, Drucker (1969), made, even though not quite successful, some efforts to differentiate

between a knowledge economy and a knowledge-based economy. He arrives at the conclusion that whereas knowledge is a product in a knowledge economy, it is a tool in a knowledge-based economy. More revealing, however, was Drucker's assertion that the difference between the two concepts is not yet well distinguished. According to him, they are both strongly interdisciplinary, involving economists, computer scientists, software engineers, mathematicians, chemists, physicists, cognitivist psychologists and sociologists.

Today's global economy has been described by analysts as one in transition to a "knowledge economy" and, by implication, as an extension of an information society. The transition requires that the rules and practices that determine success in the industrial economy need rewriting in an interconnected, globalized economy where knowledge resources such as "know-how" and "expertise" are, to say the least, as critical as other economic resources (Drucker, 1969). Prominent scholars of the knowledge economy, including Peter Drucker, Daniel Bell, Manuel Castells and Robert Reich, remain resolute in their advocacy that these rules need to be rewritten at the level of firms and industries in terms of knowledge management and at the level of public policy as knowledge-related policy.

Drucker's assumption that knowledge and human capital development can be treated as a business product and a product asset contributed immensely to the high rating he was to eventually earn as the father of modern management. In addition, scholars like Becker (1993), Schultz (1971) and Florida (2002) made great contributions to the understanding of the importance of human capital and knowledge in driving economic growth and development. The knowledge economy is distinguished by several key features, including an emphasis on intellectual capital, as espoused by Teece (2000), an emphasis on Information and Communication Technologies, as discussed by Castells (1998), an emphasis on Collaboration and Networking, as highlighted by Grant (2013) and an emphasis on Globalization and Knowledge flows as revealed by Friedman (2006) among several others. These scholars have provided valuable insights into the role of these features in driving the knowledge economy and shaping contemporary society. These features have no doubt collectively contributed to the dynamism, resilience and competitiveness of a knowledge-based economy.

### 1.1.3. Development

Development is one concept that has defied a uniform perspective. First, it is a dynamic concept with an increasingly expanding scope and content. Second, the best acceptable means of development have not been agreed upon. Nevertheless, within the complexities of its categories – for instance, national development, regional development, millennium development, sustainable development, socioeconomic development, democratic development, etc.- explanations exist that have adequately guided research on the subject. Oladoyin (2010), for instance, captures the thoughts of the neo-liberal, the structuralist and the interventionist development scholars. According to him, while the neo-liberals argue that an independent price mechanism may occasion a spontaneous process of development, the structuralists see development as encompassing changes in social and economic structures. The interventionists, on the other hand, argue that an unfettered market economy will spell down society since the market is too germane to be left unregulated.

For Chambers (2012), development is synonymous with "good change," and this presupposes that there is "bad change." However, this definition, which equates development to progress, has been challenged by scholars like Thomas (2000), who insist that progress is limitless development, whereas development implies moving towards the fulfilment of potential. In his contribution, Igbuzor (2005) views development from three perspectives. The first envisions the state of being a desirable society. The second is a historical change in which societies are transformed over a long period of time, while the third is the deliberate efforts aimed at improvements on the part of the various agencies, including governments, organizations and social movements. According to him, based on ideological inclinations, three different visions have emerged. While the first envisions a modern industrial society, which is elaborated by modernization theories, the second is of a society where every individual potential can be realized in conditions characterized by the capacity to obtain physical necessities, particularly food, employment, adequate education, information, gender equity and sustainable development. Additionally, the third is the one that sees development as reducing poverty, improving health and mitigating environmental degradation, among others.

The "vision perspective" on development that fascinates us in this paper is the one that associates development with a society where adequate education, information, innovative research, know-how, expertise and employment are among other things. The combined strength of these variables to leap-frog and sustain an economy is today referred to as the knowledge economy. In contemporary discourses on global development, the knowledge economy has emerged as the central factor that engineers and determines national and regional economic capacities.

## 2. Theoretical Framework

Of the variety of theories that exist for the knowledge economy, including the human capital theory, the innovation theory, the learning organization theory, the network theory, and the intellectual capital theory, the *post-industrial* theory has been adjudged to be most appropriate for this study. This follows from its strength in emphasizing the importance of knowledge, information and intellectual capital as key drivers of economic growth, productivity and innovation. Post-industrial theory is broad and encompassing, subsuming all other knowledge economy theories under self. It also differs from earlier theories, such as the industrial or agrarian economies, which focused more on physical resources and manufacturing. In the post-industrial economy, intangible assets like skills, education, research and innovation are critical for success, leading to a shift in emphasis towards sectors like technology, finance, education and healthcare.

- Proponents of the theory — Major proponents of the post-industrial theory of the knowledge economy include scholars like Alvin Toffler, Daniel Bell, Peter Drucker, Manuel Castells, Robert Reich, Richard Florida, John Naisbitt, etc. These scholars have contributed immensely to the understanding of how knowledge, information, innovation

and communication have become central to economic development and societal transformation in the contemporary world.

- Basic Thrusts of the Theory: The most visible postulations of this theory are that:
  - ✓ Knowledge, rather than raw materials or labour, is the primary source driving economic growth and societal development (Drucker, 1969).
  - ✓ Innovation and creativity are crucial for economic success (Schumpeter, 1942). The understanding here is that technologies drive productivity and competitiveness.
  - ✓ Traditional manufacturing industries are supplanted by service and information-based sectors where knowledge workers play the central role (Bell 1973).
  - ✓ The economy is increasingly interconnected through networks, both physical, such as the internet, and social, such as professional networks (Castells, 1998). This facilitates the flow of information and collaboration.
  - ✓ Knowledge workers are the drivers of economic growth, and as such, it is essential to invest in education and skills development to enhance human capital (Becker, 1993).
  - ✓ It is crucial that knowledge creators benefit from their creations through the establishment of intellectual property protection rights.

These trusts, which emphasize the centrality of knowledge, innovation and human capital in driving economic prosperity, collectively shape the framework of the knowledge economy.

*2.1. Strengths of the Theory*

The postindustrial theory of knowledge economy provides a comprehensive framework for understanding the dynamics of contemporary economies, emphasizing the transition from traditional industrial production to a more knowledge-based, innovation-driven model. This theory, initially proposed by scholars like Daniel Bell, Peter Drucker and Alvin Toffler in the late 20$^{th}$ century, has gained increasing prominence as societies increasingly rely on knowledge, technology and innovation to drive economic growth and development. At the core of this theory is the recognition that knowledge, rather than physical capital or labour, has become the key resource for creating wealth and driving progress. This shift is facilitated by several interconnecting factors such as intellectual capital, technology and innovation, globalization, human capital, high-value industries, sustainability, quality of life, flexibility and adaptability, among others. Imbued with the capacity to comprehend the opportunities and challenges associated with transitioning to a more knowledge-intensive economic model, the theory provides a comprehensive framework for understanding the economic transformations occurring in contemporary societies.

*2.2. Weaknesses of the Theory*

Despite its valuable insights into contemporary economic dynamics, post-industrial theory has been criticized for exacerbating global inequality due to the digital divide or digital gap. This widens the disparity between those with access to technology and education and those without. Also, automation and digitalization have been discovered to lead to job losses in traditional industries, creating structural unemployment and social unrest. In addition, overemphasis on intellectual property can stifle innovation and hinder knowledge diffusion. Also, concerns about skills mismatch, urban concentration and environmental degradation are all linked to the post-industrial theory. Finally, the reliance on digital infrastructure also raises concerns about cybersecurity, privacy and data protection.

*2.3. Application of Theory to the Study*

Postindustrial theory can provide a clear guide to Africa's current position in the global knowledge economy. Global economy fundamentally emphasized three levels of economic transformation that also correspond to three eras of human economic development. These eras include the pre-industrial resource/ agricultural era, the industrial/manufacturing era and the post-industrial/knowledge-information era. Most African states are currently in the early stages of industrialization and are not yet transitioning to knowledge-based economies. Successfully transitioning to a knowledge-based economy requires a strong ICT infrastructure, deepening intellectual capital, strong innovative skills and a formalized education system, among others. In the case of Africa, challenges like limited access to education, infrastructure, technology, and research hinder the region from fully participating. This perpetuates dependency on raw material production and exportation, leaving the continent vulnerable to fluctuations in global commodity prices and lacking the ability to compete in higher value-added sectors. Thus, until deliberate policies aimed at massively investing in education, technology and innovation are proposed, made and implemented by African states, the desire to foster economic diversification and resilience in Africa will remain elusive.

*2.4. Trends and Dynamics in the Global Economy*

Historically, societies relied on agriculture as the primary economic activity. Wealth and power were largely based on land ownership and agricultural production. Classical societies were characterized by such dynamics as subsistence farming, rural life, barter economy, seasonal cycles, limited technological innovation, limited mobility, land ownership and feudalism. Philosophers like Karl Marx, Adam Smith, Ester Boserup, David Ricardo and Amartya Sen provided valuable insights into the dynamics, challenges and opportunities of agrarian economies, thus contributing to our understanding of their historical development and contemporary significance. In his "Development as Freedom," Sen (1999) extensively explored the relationship between economic development, human capabilities and freedom. The agrarian economy laid the foundation for human civilization, providing the basis for settled communities, social structures and the development

of early forms of government and trade. It persisted for centuries until the Industrial Revolution triggered a significant shift towards industrialization and urbanization.

The Industrial Revolution marked the departure from an agrarian to an industrial economy that resulted from technological advancements. In addition to Adam Smith, who is regarded as the father of modern economics, there are also prominent neoclassical economists such as Alfred Marshal, John Keynes, Max Weber, and John Stuart Mills. These scholars gave insight into what made the industrial economy. Some of the features identified include the introduction of steam power and mechanization and organization of factories. Then, urbanization resulted as people began to move from rural areas to cities for factory jobs (Harvey, 2006). Other visible developments of this era were the growth of mass production and standardized goods, the emergence of capitalism and industrial capitalism, the development of transportation networks, particularly railways and canals, for the efficient movement of goods, etc.

The post-industrial, also known as the information economy, which is a contemporary of globalization, is characterized by a transition towards service-based industries and information technology. This presupposes a decline in manufacturing, which is an upshot in the service sector of national economies. Here, economies of states became largely interdependent and deeply interconnected with each other, and this has been referenced as economic globalization. In the post-industrial economy, the resultant economic globalization is largely complemented by rising knowledge-based jobs in fields like information technologies, finance and healthcare. Also, high premiums are placed on innovation, technology and intellectual property. There is also greater reliance on automation and artificial intelligence. Scholars like Peter Drucker, Manuel Castells and Richard Florida made great intellectual contributions to the theoretical formulation of the knowledge economy. Conclusively, competitive high-tech education is the bedrock of the knowledge economy.

*2.5. Globalization of Knowledge Economy*

Neither the dynamics that threw up the knowledge economy nor its globalizing processes were deliberate policies of states. Rather, the growing desire for capital accumulation and profit-making in the neoclassical era unleashed, on a massive scale, imperialist tendencies, which became the forerunner of globalization. Having observed that the industrial economy operates to the optimal capacity, neoliberal scholars of developed economies began to advocate the creation of a highly-skilled, highly-waged economy by upgrading the education and skills of their workforce. The creation of a world-class skill argues. Reich (1991) was a route to economic prosperity, social cohesion and reduced inequalities. Such policy prescriptions rest on the idea of a knowledge economy where innovative ideas and technical expertise hold the key to the new global competitive challenge.

Granted that in the globalizing world order, the United States and Western Europe are well-placed to become magnet economies supplying the global economy with highly skilled, highly waged workers, great strides in the recent years of China, India, Singapore, Brazil and other emerging economies in moving into the production of high value-added, high technology product affirms that knowledge economy has embraced the globalization process. What has fascinated watchers is the observation that emerging economies were moving up the value chain to compete with Western concerns for high-tech products and Research and Development Investments (RDIs).

Efforts to reevaluate the global economic challenge produced a win-win scenario that has seen the Western economies introduce change, innovation and productivity growth (Schwab, 2016). The policy implications are to support innovation and entrepreneurship by producing more highly skilled workers. This is to be accomplished through education and training policy that is focused on lifelong learning. The objective is to sustain a shift towards more high-value activities that might remain within the economies of the Organization for Economic Cooperation and Development (OECD) states. It was in light of this that Brown (2008) announced that the UK had entered a global skills race. Within this race, education, skills and, more significantly, knowledge assume ever greater importance. The challenge was how to outsmart other national economies – whether established, emerging or yet to emerge in the knowledge war of the future.

The current argument that a knowledge-driven economy demands a larger proportion of the workforce with a university education and access to lifelong learning opportunities has impacted participation rates in tertiary education. Scholars like Anthony Carnevale, Thomas Friedman and Gary Becker have made strong input in this debate. Becker (1993), for instance, enriched our understanding of the relationship between education and economic development. Whatever the merits of the economic case for expanding higher education, there has been major growth in the global tertiary education sphere. Brown (2008) informs that even though the OECD countries, the emerging economies of Asia and the underdeveloped states of Africa share in this massive proportional growth in tertiary education participation had reached close to 63 million by 2005, the quality of education varies in countries experiencing rapid expansion of educational provision.

In his highly revealing contribution, Larson (2006) informs that Asia is already producing twice as many engineers as North America and Europe put together. According to him, in the USA alone, nearly half of those gaining a doctorate in engineering, mathematics and computing sciences are foreign students. He additionally observes that in the UK, home students make up less than half of those following postgraduate degrees in science subjects. Similarly, Brown (2008) observes that in computing science, a discipline that stands at the heart of the high-tech industry, enrolments have fallen drastically in Europe and North America. According to him, the number of UK computing students in higher education fell by 22.3% in three years between 2003 and 2006, witnessing a decline of over 30,000 students. Also, during the same period, the number of students taking A-level computing fell by 33.9%, from 8,488 to 5,610.

Conversely, the downturn experienced in recent years in the high-tech, high-skilled tertiary education system of the North significantly differs from what is happening in China, India, Brazil and the Asian Tigers States (Singapore, South Korea, Taiwan, Indonesia, etc). These states are no longer contended with doing the 'body' work while living the 'brain' work in the developed economies of Britain, Germany, Japan and the United States, among others. The rapid expansion of

high-tech (Engineering, Mathematics and Computing) tertiary education in the BRICS and the Asian Tiger States has clearly proved to be more than a beauty contest aimed at attracting investment from Western multinational companies. Becker (2006) has informed that these emerging economies are also using their rapidly expanding tertiary education to build high-tech research infrastructure that can serve as a springboard for creating their own national champions.

*2.6. Africa in the Global Knowledge Economy*

For regions in the vanguard of the global economy, the balance between knowledge and resources has shifted so far towards the former, making it arguably the most important factor determining the standard of living ahead of land, tools and labour. Until recently, neoclassical economists had recognized only two factors of production: labour and capital. In any case, knowledge, productivity, education, and intellectual capital are all regarded as exogenous factors outside the system. However, Stamford economist Romer (1986), while proposing a change to the neoclassical explanation of causes of long-term growth, suggested technology and the knowledge on which it is based as an intrinsic part of the economic system.

For Romer and the new growth theorists, knowledge is the basic form of capital, and economic growth is driven by the accumulation of knowledge. According to them, new technological development, rather than having a one-off impact, can create technical platforms for further innovations, which, in effect, is a key driver of economic growth. Rodrik (1998) believes that human capital is the formal education, training and on-the-job learning embodied in the workforce and argues that a knowledge-driven economy is one in which the generation and exploitation of knowledge play the predominant part in the creation of wealth. According to him, while wealth was created by using machines to replace human labour in the industrial era, many have come to associate today's knowledge economy with high-tech industries and infrastructure such as telecommunications, internet, satellite and e-banking. For new growth economists like Paul Romer, Roberto Barro, and Daron Acemoglu, there is no alternative way to prosperity other than to make learning and knowledge creation of prime importance. For instance, Acemoglu and Robinson (2012) maintain that inclusive institutions that encourage innovation and the spread of knowledge are crucial for long-term economic success, while extractive institutions hinder it. In addition, the new growth economists argue that a region's capacity to take advantage of the knowledge economy depends on how quickly it can become a learning society.

Curiously, despite the massive improvement in transportation, information and technologies infrastructure and, by implication, an increased degree of the economic interdependence of states, a phenomenon often referred to as globalization, Africa's performance in the global knowledge race remains dismal. Unlike China, the Asian Tigers and the BRICS States, where deliberate high-tech education policies were targeted at improved economic performance, Africa lacked the zeal and temerity to participate in the knowledge race. This was demonstrated by the inward-looking trade and financial policies adopted in Africa in the 1970s and 1980s, which led to disappointing economic performance in the region. For Osakwe and Osakwe (2005), available data indicates that the annual average growth rate of real GDP per capita in the Sub-Sahara Africa region fell from 3.3% from 1970-1974 to 2.2% from 1990-1994. This position was supported by Rodrik (1998), who informs that about a third of the countries in Sub-Sahara Africa had lower per capita income in 1994 than they did in 1960.

Although the African economy is assumed to have rebounded since 1995, the improvements recorded are not enough for sustained growth and development. Recent studies have shown that the region will not achieve the 7% growth rate necessary to deliver the development goals of the United Nations to its people. With falling shares of the World's exports and imports added to the disproportionate share of global inward Foreign Direct Investment (FDI), all recording below the developing countries' average of 17.5%, Collier (2007) insists that the surest part of Africa's economic development becomes linked to the knowledge economy.

However, Nweze (2009) has observed that growth in the knowledge economy is not linear but exponential, in which case, one plus one may not necessarily give a product of two. Not many are conscious of the complexities of the unfolding economy. As is usually the case, by the time late bloomers wake up to the realization of the knowledge economy, the early bloomers and strategy thinkers would have taken positions in different spheres of human endeavour (Onyekuru, 2012). Within the global context, therefore, the knowledge economy is indifferent to tradition and past reputations, unforgiving to frailty and ignorant to custom and practice (Drucker, 1969). Thus, China, Singapore, South Korea, India, Indonesia, Brazil and other BRICS and Asia Tigers, though not among the forerunners of the knowledge economy, have demonstrated that success will go to states that are swift to adapt, slow to complain, open and willing to change.

In a globalizing world order, the intellectual capital of nations includes their workforce, accumulated knowledge, brainpower, know-how, expertise, skills and processes, and their ability to continually improve on these, which are a source of competitive advantage. Of regret, however, is that several decades after the knowledge economy was birthed globally, Africa remains outside the mainstream. Since the continent did not enter the knowledge race with the zeal of China, India and other emerging economies, it could neither accumulate adequate knowledge nor muster the required skill and expertise, which are the major tools the emerging economies used in advancing their rating on the global economic scale. In Africa, inadequate policy attention to the expansion of the intellectual capital in high-tech disciplines of engineering, technology and computing sciences, among other related skills, adjudged as sources of national and regional competitive advantage, constitutes a grave economic setback. This explains the snail-speed transformation of Africa's economy from a conventional to a knowledge-driven economy.

**3. Implications of Knowledge Economy for Africa's Development**

Knowledge economy brings forth some great prospects for Africa's development. It offers the potential for diversification of economies, huge prospects for job creation and improved productivity. However, there are challenges that must be surmounted if Africa is to fully benefit from a knowledge-based economy. Essentially, Africa needs to invest in education, innovation and infrastructure. Also, access to technology and digital literacy are critical to fostering a culture of entrepreneurship and innovation. Without these investments, Africa risks being left behind in the increasingly transforming global economy.

The imprint of the knowledge economy on Africa's development has been felt in various spheres of the continent's economic policies. For instance, the knowledge economy offers Africa the opportunity to diversify its economy away from traditional sectors like agriculture and natural resource extraction. Juma (2011) is unequivocal in insisting that diversifying Africa's economy beyond agriculture is crucial for sustained economic growth. According to him, investing in knowledge-intensive industries can create new sources of wealth and employment, reducing the continent's vulnerability to agricultural fluctuation. In addition, the International Monetary Fund, IMF (2015) emphasizes the potential of the knowledge economy to drive productivity and economic diversification in Africa. The fund advocates for policies that promote macroeconomic stability, improve the business environment and enhance human capital to unlock Africa's growth potential.

Secondly, knowledge-based industries have the potential to create a significant number of high-quality jobs in Africa. Sectors such as information technology, software development, digital marketing and e-commerce can provide employment opportunities for young Africans with the necessary skills. The World Bank (2014) for instance, has over the years consistently stressed the need for investments in education, infrastructure and institutions to create an enabling environment for innovation, entrepreneurship and job creation. Africa can also benefit from knowledge-intensive activities like research and development (R&D) and innovation, which have great potential to stimulate job creation in related fields.

Also, a knowledge-based economy places a premium on human capital, including individuals' knowledge, skills and abilities. Human capital is essential for sustainable economic growth and competitiveness in the economy of African States (Stiglitz, 2002). This would involve investing in education, training, healthcare and skills development to enhance the capabilities and productivity of the workforce. In the knowledge economy, the value of goods and services is increasingly based on intellectual capabilities rather than physical assets, thereby making human capital a critical factor for success (Drucker, 1969). African states need to focus on improving access to quality education, promoting lifelong learning, fostering innovation and creating an enabling environment that supports entrepreneurship to thrive. By investing in human capital, Africa can unlock its potential for economic transformation and inclusive development.

In addition, participation in the knowledge economy enhances Africa's global competitiveness. According to Masiyiwa (2020), by leveraging technology and knowledge-based industries, African countries can position themselves as hubs for innovation, attracting investment and talent from around the world. However, even though many countries in Africa are making strides in improving competitiveness by enhancing their business environments and attracting foreign investments, they also face various challenges, including infrastructure deficits, inadequate education and healthcare systems, political instability and corruption. Therefore, to truly compete globally requires that African nations invest in education and innovation. Africa has immense potential in areas like renewable energy, agriculture, healthcare and fin-tech, which can be harnessed to drive economic growth. As such, the continent's journey towards global competitiveness and a knowledge economy would necessarily require investments in education, innovation, infrastructure and regional cooperation.

Access to reliable infrastructure, particularly digital infrastructure, is essential for the knowledge economy. To ensure widespread access and participation in the digital economy, African countries must, of necessity, invest in broadband internet, ICT infrastructure and digital literacy programmes. Africa can harness the potential of the knowledge economy if the state of her digital infrastructure advances to a point where access to high-speed internet, which is essential for participating in the knowledge economy, has been accomplished. In addition, a robust Information and Communication Technologies (ICT) infrastructure must be accompanied by efforts to improve digital literacy among the population. The establishment of research institutes, technology parks and innovation hubs where researchers, entrepreneurs and students collaborate on new ideas and technologies will launch Africa into the knowledge economy. Finally, entrepreneurial ecosystems, smart cities and cross-border connectivity are all fundamental elements of Africa's transition to a knowledge-based economy. By investing in the diverse pack of infrastructure development, African countries can unlock new opportunities for innovation, entrepreneurship and sustainable development (AfDB, 2017).

In the least developed parts of the world, such as Sub-Saharan Africa, the knowledge economy promotes sustainable development by encouraging resource efficiency and environmental conversation. Such technologies like renewable energy, sustainable agriculture and green infrastructure address environmental challenges while supporting economic growth. Sustainable Development Goals (SDGs) such as poverty reduction, gender equality and climate action can be achieved through knowledge-based approaches. To be specific, quality education, which is the SDG-4, has enjoyed huge investment, particularly in STEM (Science, Technology, Engineering and Mathematics) fields. Online learning platforms and educational technology have improved access to quality education in the most remote parts of the continent. Thus, SDG-4 is additionally supported by ensuring inclusive and equitable quality education for all. Also, SDG-8, which is decent work and economic growth, as well as SDG-9, industry, innovation and infrastructure, have all experienced positive impacts from the knowledge economy. The same goes for SDGs 10, 11, 12, 13 and 17. The imprint of the knowledge economy is also strongly felt within these developmental frameworks in Africa.

Collaboration and integration among African States have also been identified as vital for the development of the knowledge economy. For instance, Juma (2011), a prominent scholar of international development, has argued that collaboration among African countries is essential for leveraging resources, knowledge and infrastructure to address common challenges and promote economic growth. He emphasized the need for African nations to work together to build synergies and foster innovation in fields such as agriculture, technology and entrepreneurship. His works have had significant impacts on the discourse surrounding African development and the importance of regional cooperation. Added to the numerous implications may also include the integration of Africa into the global economy, preservation of Africa's cultural heritage, harmonization of states' policies to facilitate regional integration, regional trade and standardization of product regulations, among others. The list appears inexhaustible, just as the opportunity appears limitless. However, despite these huge possibilities, the knowledge economy in the era of globalization faces some arduous challenges in Africa.

First is that the Information and Communication Technologies (ICTs) facilities are partly developed and also the processes and institutions for acquiring formal education, skills and on-the-job training which enhance human capital development are not encouraged by African States. A strong human capital base is critical to GDP growth, but sustained GDP does not just happen. Successfully making investments in technology and sustaining economic growth requires a country to have stable and sufficient human capital. Regrettably, African States do not and, hence, have sadly remained passive participants in the global knowledge economy.

Second is the dilemma of attitudinal poverty towards transformative reforms in the continent. The poor attitude of state policy-makers in Africa towards reforms that will transform their various states from non-formal societies, turning out a large proportion of the unskilled workforce into learning societies operating learning economies, remains the bane of Africa. In learning societies, individuals, firms, and countries are able to create wealth in proportion to their capacity to learn and share information and innovation. Since African states are unable to articulate and implement policies that transform them into learning societies, the technological development and economic growth of the state in Africa are hampered.

Thirdly, even with the modern-day universal norm of democracy, good governance and probity, which increasingly converged global principles and practices around Western values now assuming primacy in globalization, their impacts have been felt less in Africa as a result of leadership corruption. African states, most of which remain frail and unstable, are yet to comprehend policy way out of diminishing learning, skills and technical competence. This is despite the fact that these have remained the most reliable tools for raising the return on investment. This singular factor easily explains why developed economies can sustain growth and why developing economies, even those with unlimited labour and ample capital, can neither attain nor sustain growth. It also explains why *brain drain* – a social phenomenon associated with the emigration of highly skilled workers from areas of low value such as Africa to global hot spots such as the United States, Western Europe and Japan, has become the trend.

## 4. Conclusion

Knowledge economy within the context of a globalized world is characterized by a season of rapid change and uncertainty. Even though the traditional criteria for socio-economic evaluation may not have become obsolete, under this economic perspective, new tools have been introduced to modify and, in some cases, replace the old ones. The global economic crises of 2008-2009 were part of the signposts of the knowledge economy. For an already underdeveloped Africa to survive in an environment of uncertainty, a new set of skills and tools in technological innovation, intellectual deepening, financial management, common sense, and urgency are needed. Unlike pre-industrial and industrial economies, knowledge is driven by information, skill and know-how. As such, nations are better off when they possess an adequate pool of skilled labour and competent leadership, especially skilled in distilling information that supports informed decisions for their various states. In the first quarter of the 21st century, neither did Africa effectively key into the global ICT race nor command an adequate pool of skilled labour or focused leadership that enables it to compete in the global knowledge economy. To the extent that knowledge is the basic form of capital and that economic growth is driven by accumulated knowledge in the knowledge economy, Africa will, for some time, remain outside the mainstream of global economic development.

## 5. Recommendations

For Africa to participate in the global knowledge economy and make global-scale impacts on the trending economic pattern, a fundamental shift in leadership and citizenry perception of knowledge is required. Formal education in Africa needs to become less about passing of information, but rather, focus more on teaching people how to learn and acquire relevant skills.

Also, African states must, of necessity, encourage the processes and institutions that enhance human capital development. The ICT facilities needed to support the acquisition of formal education, skills, and on-the-job training must be accorded their deserved priority attention in Africa. Essentially, African leaders must be aware that to make investments in technology and sustain economic growth, a country must enjoy a sufficient pool of human capital.

In addition, African policymakers must improve their current poor attitude to reforms that can transform their various states from non-formal societies, turning out a huge proportion of the unskilled workforce, to learning societies where individuals, firms, and countries will be able to create wealth in proportion to their capacities to learn and share innovation.

Finally, widespread corruption, human rights violations, political class impunity and bad governance, which have long held down Africa, must give way to the universal norm of democracy, good governance, probity and institutional best

practices of the contemporary era. If the continent can improve on these credentials, the crisis of brain drain – a social malady associated with the emigration of highly skilled workers from areas of how value such as Africa to global hotspots such as the United States, European Union and Japan will be brought under control. This will also enable African states to successfully amass a huge proportion of citizens with adequate learning, skills, and technical competence who are capable of raising the return on investment.

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