

ADOPTING ECONOMIC KNOWLEDGE AND TECHNOLOGY DRIVEN APPROACH AS A MEANS OF ACHIEVING SUSTAINABLE ECONOMY

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Abstract

The driving force of any economy is knowledge and technology. The pride of any economy is its sustainability. Consistent technological innovations will constitute the lubricant that eases the processes in any economy that can be sustained. Economic knowledge produces and engenders the lubrication of the technological knows-how which runs the economy for sustainability. This paper examines the roles of economic knowledge and technology driven approach in achieving sustainable economy. It also considers the barriers to sustainable economy as well as the benefit derivable from a sustained economy. It therefore recommends measures to be put in place if any meaningful economic development activity should take place in any society economic sustainability.

Keywords: Economic knowledge, Technology-driven approach and Sustainable economy.

Introduction

The goal of any national sustainability is to establish an economy, whether local or international, that is economically viable, environmentally sound and socially adoptable and responsible. To achieve this set goal requires participation from all sectors that contribute to its economy, both to determine current and future needs and to identify and implement appropriate innovative solutions. These sectors could include agriculture sector, banking, health, educational, transportation system and business.

Economy is said to be the back bone of any nation. The development of a nation is measured by the strength of its economy and this development can be maintained when there is sustainability in the economy. When a nation is able or has the capacity to maintain the strength of its economy for an indefinite period of time without the depletion of the resources especially for future generation, the nation is said to be experiencing a sustainable economy. Economy is the effective management of resources of a system or nation. It also involves the system of production, distribution and consumption of goods or products. Many under-developed or developing nations of the world are economically backward for lack economic knowledge of most of their citizens. In many advanced countries of the world today, citizens are exposed to the economic knowledge and their practicality from the primary school. This helps the children and prepares them to create innovative ideas, suggestions and solutions that will contribute to the growth, development, advancement and sustainability of the economy. It is possible to build a stable and sustainable economy that meets people's needs without completely depleting the natural resources or undermining the life-support systems of the planet. Useful decisions that promote changes and necessitate actions are needed to achieve such an economy.

The world today is experiencing technological advancement in every circle. Every aspect of human endeavor is being affected today by technology such that it is becoming almost impossible to carry out operations in any sector without the help of technology. With the rate at which technology is affecting virtually every aspect of life, there is an urgent need for a deliberate attention to be given to technology in different sectors of the economy.

Technology Driven Approach

When a nation adopts a system where the method of production, system of government, business, educational and health are technologically based, it is said to be a technologically driven approach. It is such that activities involving commerce, banking, health and education are carried out electronically with the help of technology equipment to facilitate their effectiveness. According to Farid (2015), technology

is the knowledge of how to achieve human purposes in a specifiable and reproducible way. Vergragt (2006) also defined technology as encompassing essentially three meanings such as tools and instruments to enhance human ability to shape nature and solve problems (such as a hammer and nail), knowledge of how to create things or how to solve problems (such as to brew beer or to make an atomic bomb), and culture (our understanding of the world, our value systems).

With this understanding of technology, we can say that a technology driven approach is a system of approach that depends on technical abilities for the production of goods and services particularly in the production of new goods or services. It can be said practically that every breakthrough innovation is based on a technologically driven orientation. Many advanced countries of the world are characterized by innovations that gave them access to all kinds of advance technology in major sectors such as education, health, government, security, industry, commerce and banking, thus, facilitating online transactions, including e-governance, e-commerce, e-banking, online education and healthcare services.

Economic Knowledge

An economy in which there is much dependence on the quantity, quality, and accessibility of the available information for its growth, rather than the factors and means of production is said to signify economic knowledge. According to *Grimsley* (2003) a knowledge economy is an economy in which the production of goods and services is based primarily upon knowledge-intensive activities. In a knowledge economy, a large portion of economic growth and employment is a result of knowledge-intensive activities. A knowledge-intensive activity involves the collection, analysis, and synthesis of information. *Grimsley* (2003) also stated that the increasing growth of the knowledge economy is part of a larger shift away from production of tangible goods in developed countries towards intangible or informational goods as well as services. An example of an informational good is the 'app' on your smart phone or new video game for your gaming console. *Powell and Snellman* (2004) also defined economic knowledge as an economic system which depends on knowledge-intensive activities as a base for the production of goods and services in order to accelerate the pace of technical and scientific advancement.

In knowledge economy, the major cause of economic growth and employment is as a result of knowledge-intensive activities. These involve activities as collection, analysis and synthesis of information. For any knowledge economy to achieve success workers need to continually improve and increase their skill and expertise which will foster creativity and innovation of ideas.

Sustainable Economy

Sustainable economy can be defined as the ability to effectively and efficiently manage the resources of any system for an indefinite period of time and still have the ability to conserve these resources for future generation. It can also be defined as an economy that is able to maintain the strength of its economy for an indefinite period of time without the depletion of the resources especially for future generation. A sustainable economy must have the ability to support a defined level of economic production indefinitely and also satisfy the needs of humans but in a manner that sustains natural resources and the environment for future generations. Also can be said that when there is conservation in the use and re-use of both natural and human resources in a nation, the nation is said to be experiencing a sustainable economy. The conservation in the use and re-use of natural and human resources are the way to more employment, incomes, productivity and competitiveness (*Farid*, 2015). Sustainable economy goes hand in hand with growth and development. Generally, it can be described as that economy which has the capability for meeting the goals needed for human development and at the same time sustaining and maintaining the ability natural system to provision of the natural resources.

Adopting Economic Knowledge as a Tool for Achieving Sustainable Economy

Sustainable economy cannot be achieved when the impact and relevance of economic knowledge is overlooked. As noted earlier, every economy depends on its natural resources to thrive and these resources undergo the process of production to generate revenue which may not be possible without the involvement of knowledgeable professionals and experts. According to the Organization for Economic Co-operation and Development Paris (1996), investments in knowledge (economic knowledge) can increase the productive capacity of the other factors of production as well as transform them into new products processes. Since these knowledge investments are characterized by increasing returns, they are the key factors to long-term economic growth and sustainability. It is important to note that through the

investment on economic knowledge, a great number of economic experts and entrepreneurs are produced and the impact or role played by these experts in the sustainability and growth of an economy cannot be quantified.

Economic knowledge is very important in the understanding of how the world and its systems operate as it builds problem solving skills on individuals and develops one's logical way of understanding problems and providing solution them It gives a clear understanding on the concept of demand and supply in production, which is the fundamental basis of economics. It serves to ensure the availability, stability and equality in the dispersion and distribution of goods and services. It therefore, creates a balance between the usage and maintenance of resources by making informed, useful and calculated decisions on "what to produce, how to produce it and who to produce it" at a given point in time. Also it is responsible for determining the prices of goods and services including things like land property, buildings and stocks. It helps in a country to determine how resources should be distributed to its citizens during scarcity of resources, how much formal education one requires to be considered adequate for a specific field and provides techniques on how to handle or disperse individual's savings and investments. It also deals with how tax system affects the people and its implementation to help government operations and services for taxpayers. It also gives insight on how the government's budget is drawn so as to meet the objectives of the nation through fulfilling the demands of the people. Therefore, economic knowledge is one of the key factors to the sustainability of an economy.

Impact of Technology on Economic Sustainability

There is no doubt that technology both in its process and operational dimensions when combined with human development improves the quality of productivity and makes a critical and important contributions to the growth and sustainability of an economy. (Ranis 2011). Technology driven approach for economic sustainability and development of any country is an important factor. All developing and under-developed economies are maintained through agriculture, industry, transport, banking, health, education and so require improved technology to facilitate and enhance their productivity. The advent of technology has transformed practically every aspect of human endeavor. With the help of technology, many of these activities have been made easy, fast and more productive. Man can now acquire necessarily technological skills and initiate innovative and creative ideas. Production, the process of converting raw materials or semi-finished goods into finished products is known to be a major constituent of economic growth and sustenance. Every nation depends on production for growth. The integration of advance technology in the production process facilitates not only the growth but also to ensure a sustainable economy. Despite the boom in technological innovation, application and integration of advanced technologies has been a challenge facing most under-developed and developing countries as a means of generating high national income that will sustain economy.

Most developed nations have advanced economically by the adoption of advanced technology and are making progress in their economy due to the impact of technology. It is important that developing countries should adopt appropriate technology, this is because technological innovations and Information Communication Technologies (ICTs) represent a way for developing world nations to foster economic development, improve levels of education and training Chetty (2013). Also Constantinescu and Frone (2014) showed that technological innovation is crucial to advance sustainable development, through its effects on the three pillars of sustainability, and with decisive influence on the efforts to promote economic vitality, environmental sustainability and social progress.

The adoption of a technology-driven approach can be beneficial in the following areas for economic sustainability:

- 1 Improved Commercial Activities:** The adoption of technology in this field will greatly benefit and foster the economy. There is no doubt that major revenue generated from any nation is gotten from their commercial activities. There have been a credible and significant change in the economy of most nations that have harnessed technology affordances changed their methods of transacting business. This has in turn fetched them huge financial benefits and turned many of them to millionaires and billionaires overnight and indirectly generated incomes that could increase and sustain the economy.
- 2. Increased Labor Productivity:** There is increase in the labour output with the use of technological equipment or machines compared to when done manually. The practical example is in agriculture sector, where a farmer does more work with a tractor than ten farmers would do without a tractor.

3. **Increased Human Skills:** Human capital refers to both skilled and educated labor force. Increase in the use of technology will lead to increase in human technical skills, thereby increasing the creativity and speed of work.
4. **Increase Productivity Output:** The increase in productivity with technological equipment leads to increase in the production level or production output and thus increase in national income of a country. New kinds of technology increase the efficiency and thus lower the cost of production. For instance, the increase in the production of food through agriculture and an improvement in the means of food preservation, storage and distribution of food in order to support the increasing global population will depend on technological machines and equipment. Also, biotechnology has produced fertilizer that will boost the productivity of farm produce and new strains crops resistant to disease and drought.
5. **Increased Production Demand and Supply:** A developed nation is characterized by increased production process. This attracts high demand from outside nations and with the help of technology, booms production process in order to improve supply. This, in turn, increases and sustains the economy of a nation.
6. **Improved National and International Trade:** The exchange of goods and services within a country or between one country and another can be facilitated with the use of technology. With the use of technology, national and international trade increase.
7. **Infrastructural Advancement:** Infrastructures are the basic facilities needed for the functioning of an organization or society. Technology itself can be referred to as a component of infrastructure. With the use of advanced technology, provision of infrastructures such as the use of gas in place of petrol, good roads and computer will be improved.

Barriers to Achieving Sustainable Economy

There are certain factors that could hinder a nation from achieving a stable and sustainable economy. They are:

1. **Dependency on Manpower:** There is no doubt that increase manpower can yield productivity in work force but that cannot be compared with technological facilities that are used in workplace. Man is liable to tiredness, sickness, inconsistency, and non diligence which is not a characteristic found with technology.
2. **Lack of Investment in Technological Infrastructures and Equipment:** Investment on technological equipment can only be done when value is attached to it. Failure to invest in the importation of necessary technological equipment and machines will mean lack of access to them in various sectors, organizations or industries for production, thus depending on manpower. This will result in low productivity and when there is low productivity in any nation, the economy cannot be adequately sustained for a long period.
3. **Poor Governance:** Another factor that could hinder the achievement of sustainable economy is poor governance. Government with the interest of people in mind will ensure and venture into any dealing that will promote and sustain the economy of the nation it is governing. In nations where the governing body is made up of leaders with selfish interest, their economy will dwindle and be stagnant. In such nations, a sustainable economy is not assured and cannot be achieved.
4. **Poor National Income and Revenue Generation:** The acquisition of advance technology can only be determined by a nation's financial strength or power. When the revenue generated is not enough to run the affairs of the nation, difficulty will arise in the purchase of this technology as a result poor financial strength.
5. **Negligence of the Teaching of Economics and IT related subjects in the Schools:** The teaching of the subject economics in schools should not be handled lackadaisically due to the impact of the knowledge on young people. Young people should be taught on the subject from primary school to university level to expose them to the necessary knowledge on economics. The same also applies to IT related subjects. They should be taught in schools mandatorily in order to expose young people to necessary technical knowledge and skills.
6. **Discouraging Small Business Enterprises:** Small business enterprises may look small but they contribute greatly to the growth and sustainability of an economy. Discouraging them will mean cutting off the income or revenue generated by them from the economy. Discouragement can come in form of not granting loan to young entrepreneurs or small business owners.

Benefits Accrued to a Sustainable Economy

1. **Increased Employment Opportunities:** A sustainable economy is that which is able to meet the needs and demands of individuals. One of the major needs of humans today is employment. Everybody wants to be involved in a gainful job that will guarantee him/her sustainable living. A sustainable economy, with its characteristics of increased productivity, guarantees high employments since manpower is needed in the production process.
2. **Increased Technically Skilled and Knowledgeable Manpower:** With the adoption of modern technology in different sectors of the economy, demand for technically skilled manpower will be high, and thus motivating individuals to indulge in technological training that will enable them acquire necessary and needed technical skills. This will result in increasing number of technically skilled manpower. Also, the teaching of Economics and technologically oriented subjects will lead to mass production of graduates that are eligible to run the affairs of a nation and compete with other nations of the world.
3. **Assured High Standard of Living:** High standard of living of citizens is known with most developed nations as a result of the stability and sustainability of their economies. Since sustainable economy is known with the ability to effectively and efficiently manage its resources for an indefinite period of time, these are properly and equally distributed among individuals in the society to satisfy their immediate and future needs thereby granting high standard of living. Also, in trying to ensure high standard of living, sustainable economy provides quality education, eradicates poverty, promotes good health, quality infrastructures and good building structures as well as provide advance modern technology for daily individual operation and activities. All these make standard of living high.
4. **High and Stable Productivity:** Productivity is the state of being efficient and effective especially in the creation of goods and services. Every sustainable economy is characterized by efficiency and effectiveness in the production of its resources and thus high productivity is assured.
5. **Assured Continuous Economy Growth and Development:** Economy is the backbone of any nation and for steady growth and development in the economy, available resources must be properly and efficiently managed to avoid wastage. With the knowledge that sustainable economy ensures the management of natural and human resources effectively, continuous economy growth and development is enjoyed.
6. **Depletion of Natural Resource:** In any sustainable economy, resources, whether human, natural or capital are properly managed to avoid wastages. In the situation where there are wastages, they are recycled and converted into useful products.
7. **Reduced Hard and Stressful Labour in Organizations:** Every sustainable economy ensures the provision of modern and advance technology. These technologies help to reduce hard jobs that are done by humans. An example can be seen in agricultural sector where machineries tractors, harvesters and bulldozers are used to farm in large plots of land while in industries Robots are used to do harmful and stressful jobs that may be dangerous and harmful to human health if done by man.

Conclusion

Economy is well known to be the backbone of any nation but the ability to ensure the growth and sustainability of any economy must be guaranteed for the future. Achieving a sustainable economy can be realized when necessary attention is given to some factors such as adoption of economic knowledge and technology driven approach. Impact of economic knowledge and technology cannot be underestimated in any economy as they are the key factors that guarantee promotion of economic growth and sustainability. Producing experts and professionals with adequate knowledge on economy, technical know-how and skill needed to facilitate productivity and creation of innovative product will generate income to the economy. This can only be achieved in a nation which adopts a knowledge based economy and technology driven approach as a system. Most developed nations have understood the concept and impact of these key factors and that is the reason why their economies are thriving and booming day by day and competing with economies of many other nations without setback or economic downfall. It is important that under-developed and developing nations adopt this approach in order to strengthen their economies and guarantee future stable growth, development and sustainable economy for their citizens and generations to come. But, ignoring this may only result in downfall and unsustainable economy.

Recommendations

Based on the considerations of factors that can be engender economic growth, this paper recommends that:

1. Nigerian government and individuals should begin to invest in the production sector to create openings for more jobs.
2. Nigerian universities should provide technical equipment and resources for the training of youths in entrepreneurship sectors and skills.
3. Young entrepreneurs should be encouraged with incentives to venture into the productions sectors, in areas like raw material provision, tax reduction and financial loan.
4. Government should provide enabling environment that could encourage the availability of establishment of small scales enterprises infrastructures like regular power supply, water and accommodation could motivate investors to venture into production.
5. Policy provision that would protect rather than kill small scale investments should be put in place to encourage investors.
6. In a place like Nigeria, security challenges could scare potential investors. Therefore, dependable security operations and secure environment must be guaranteed if any meaningful investment would thrive.

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