



Knowledge Economy

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Abstract A knowledge economy is the production of goods and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance. It will continue to bring changes to the way we live, work, and operate businesses. The idea of the knowledge economy is very appealing. Governments around the globe believe that to remain competitive in a global economy they must boost their knowledge intensiveness. This paper provides a brief introduction to knowledge economy.

Keywords knowledge economy, knowledge-based economy, global knowledge economy, human capital

Introduction

The developed world has transitioned from an agricultural to industrial economy to knowledge economy (KE). The concept of KE was introduced by an Austrian management consultant Peter Drucker and his followers in 1966. In his book *The Effective Executive*, he makes a distinction between the manual worker and the knowledge worker. The term “knowledge economy” (or “knowledge-based economy”) was used to describe a shift from traditional economies to ones where the production and use of knowledge are paramount. The knowledge economy differs from the traditional economy in several ways. The economics is not of scarcity, but rather of abundance [1]. Since everything is becoming virtual, there is no longer a problem of location in KE. A successful organization in the KE must be network-oriented since that makes it easy to transmit information. KE is an economy based on knowledge and ideas, in which the key factor of prosperity and economic growth is the superior knowledge capitalization. It has outperformed traditional resources of land, raw materials, labor, and capital. KE facilitates the economic growth of a nation and increases competition in the global market. It has an impact on the production, operation, and management of enterprises.

The global economy is in transition to a knowledge economy, where knowledge resources such as intellectual products, trade secrets, and expertise are as critical as other economic resources. In the knowledge economy, the specialized labor force is characterized as computer literate, producing ideas, knowledge, and information. Consequently, STEM careers including computer scientists, engineers, chemists, biologists, mathematicians, and scientific inventors will see continuous demand in years to come [2].

In KE, ideas are identified as a commodity, while knowledge is recognized as the catalyst in modern economies. Knowledge is now recognized as the driver of economic growth and the powerful engine of production. It has become an engine of social, economic, and cultural development. Knowledge can be stored in different media depending on the type of knowledge. Tacit knowledge is often stored in human brains. Codified knowledge is traditionally stored in books and journal papers. Lately, software has emerged as a new medium of codified knowledge [3]. Academic institutions and companies involved in research and development are important foundations of KE. KE requires “creative cities,” which are competitive urban areas that combine focus, diversity, and positive reputation. Cities play a crucial role in the transformation of the national and international



economy into KE. The rise of worldwide KE is closely linked with globalization. KE creation process is a manifestation of global transformation, which express the changes in various areas of social, economic, political development, and technological progress.

The KE gained momentum as American capitalists and political leaders sought an effective way to combat competitive threats. Lesser-developed nations tend to have agriculture-based economies, while developing nations tend to have service-based economies, and developed nations tend to have knowledge-based economies. Nations increase their knowledge base by investing heavily in higher education and research institutions in order to better position themselves in the global competition.

Pillars of KE

The World Bank has set four pillars of the knowledge economy [1,4]: (1) economic and institutional regimes, (2) education and human resources, (3) information infrastructure, and (4) innovation systems. They are illustrated in Figure 1 [4] and explained as follows.

- *An economic incentive and institutional regime* that offers efficacious and effective use of new knowledge along with existing information. It provides good economic policies and institutions that permit efficient mobilization and allocation of resources.
- *Educated and skilled workers* who can continuously upgrade and adapt their skills to efficiently create and use knowledge. Education and human resources contribute significantly to economic growth. Education and training may encompass elementary and high school education, vocational training, higher education, and lifelong learning.
- *An information infrastructure* that can facilitate the effective communication, dissemination and processing of information and knowledge. Information and communication technology (ICT) is the catalyst for transformation of knowledge economy. In today's modern world, ICTs offer an opening into the knowledge and information age. ICT is the backbone and driving force of knowledge-driven economies. It plays a critical role in developing education and is crucial in innovation [5].
- *An innovation system* of firms, research centers, universities, consultants, and other organizations that can keep up with the knowledge revolution. Using innovation as a proxy for the KE, knowledge work may be regarded as work involving creation of internalized information. According to the US National Science Foundation (NSF), innovation is measured by research and development activities as well as the employment of scientists, engineers, and technicians. The role of innovation and invention as the driver of wealth creation cannot be overemphasized.

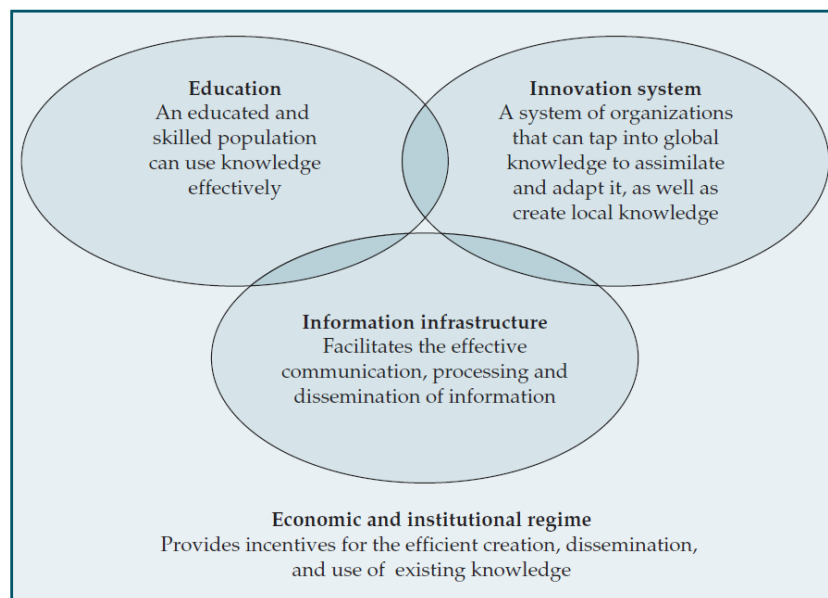


Figure 1: The four pillars of the knowledge economy [4].



These pillars are prerequisites for effective use of knowledge for economic growth. Note that the pillars are interdependent or interconnected. The economic and institutional regime is the base on which the other three pillars are erected. The full effect of KE reforms requires sustained action across the four pillars.

Challenges

The knowledge economy is not without its problems. It has been received with skepticism by scholars from different fields such as political economy, philosophy, and higher education [6]. It presents issues regarding employment, job security and wage inequality. A major challenge has been to find metrics to gauge the extent to which society has become more dependent on knowledge production. Perhaps the most developed line of research has focused on patent-based measures to quantify both R&D activity and stocks of knowledge. Patents have become an easily accessible measure of inventive output, offering insight into the contribution of knowledge-intensive activities to economic growth [7].

The development of the knowledge economy is changing labor market demands for competencies and skills. But what kinds of competencies and skills are important for success in the knowledge economy? There is a lack of empirical evidence for present developments in the KE.

For a nation to maximize its competitive edge in the KE, it must have open immigration policies that will encourage international student mobility. Student mobility increases economic benefits and knowledge capital of a Nation [8].

Many developing nations are hindered from realizing the elusive dream of becoming knowledge economies by computer illiteracy, lack of digital technologies, poor connectivity, and sporadic electricity supply. It is not easy for them to transform into a KE, because a successful KE requires an intricate relationship between enabling economic and institutional regimes, innovation, motivation, and entrepreneurship. For example, in spite of undersea cables that have been lying along the coast of Africa since 2009, African countries are lagging behind as creators of knowledge. These countries need to adopt modern knowledge systems and tools in order to avoid becoming laggards or passive bystanders in the future.

Conclusion

The knowledge economy is the production and services based on knowledge-intensive activities. It dominates the 21st century global economy. The global “knowledge economy” race is currently led by four regions, called knowledge engines, the European Union, East Asia, India, and the USA. These nations have applied knowledge as a crucial factor in production and dictating the standard of living. There is an urgent need for the integration of all nations into the new economy. Poor nations must join this race and embrace knowledge economy in order to better position themselves in the global competition. To become leading economies of future, these countries must invest in the knowledge resources.

The notion of “knowledge economy” is still undergoing development. In spite of wide-spread disagreement, it has rapidly expanded as an economic policy. More information about the concept can be found in *Journal of Knowledge Economy* and several books on it available in Amazon.com.

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