

Article

Knowledge-based economy and society has become a vital commodity to countries

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Accepted 6 July, 2010

Technological change is driving demand for skilled labor and spurring an upgrading skills across economies. The emergence of a knowledge-based economy (k-economy) has spawned a “new” notion of workplace literacy, changing the relationship between employers and employees. The traditional pledge where employees expect a stable or lifelong employment will no longer apply. New ideas or intellectual capital, more than savings or investments, are the new keys to prosperity and to the wealth of nations. The importance of knowledge as a tool that could be used to achieve developmental goals of nations cannot be over emphasized. Knowledge is of a decisive importance in economic development of countries.

Key words: Innovation, knowledge management and society, performance knowledge economy, competitiveness, governance, education, opportunity, challenges.

INTRODUCTION

A knowledge of economy is one where organizations and people acquire, create, disseminate and use knowledge more effectively for greater economic and social development. Increased importance of knowledge provides great potential for countries to strengthen their economic and social development by providing more efficient ways of producing goods and services and delivering them more effectively and at lower costs to a greater number of people. Wealth creation through application of human knowledge and creativity is steadily outpacing wealth creation through extraction and processing of natural resources. Knowledge has increasingly become an important means for value creation. Knowledge has become a vital commodity to countries, businesses and individuals in the 21st century - age of the knowledge-based economies (KBE). Tangible evidence suggests that knowledge and information are capable of helping nations to achieve developmental goals. To capitalize on the knowledge revolution to improve their competitiveness and welfare, developing countries need to build on their strengths and carefully plan appropriate investments in human capital, effective institutions, relevant technologies and innovative and competitive enterprises. Countries such as Korea, Ireland, Malaysia and Chile illustrate the rapid progress that can be made. According to Houghton and Sheehan (2000), knowledge

economy emerges from 2 forces “the rise in knowledge intensity of economic activities and the increasing globalization of economic affairs”. Knowledge societies are generally characterized with the ability to create, share and use knowledge for the sole purpose of improving upon the general well being of the people as well as making it possible for them to prosper.

The knowledge-based economy analyses economic organization and development when the creation, distribution and use of knowledge become decisive factors. The competitive edge of companies, whatever their size or sector of activity, basically lies in their ability to mobilize and combine knowledge and skills in order to come up with integrated solutions that meet increasingly complex and differentiated needs. Making the most of human assets is decisive factors to have a knowledge based economy to analyses the economic organizational structures which encourage apprenticeship and knowledge sharing constitute are the most important levers for growth. A number of studies have been done in the area of knowledge societies or economies. UNESCO (2005) report describes a knowledge society as one which is nurtured by its diversity and its capacities. This is because, every society in one way or the other has its own knowledge assets and it is only necessary to work towards connecting these assets which are already in the

society. This could be blended with the new methods of developments, spread of knowledge and acquisition. Another important feature proposed by UNDP is that knowledge societies must foster knowledge sharing. This is due to the recognition given to knowledge as public incentives and must be made available to every individual of the society.

The increased rapidity and higher capacities of data processing, improved means of communication, the emergence of new needs and new markets all led to very significant gains in productivity. Yet, confronted by the explosion in available information, the rare resource is the ability to give meaning to decisions and actions in the field of the knowledge-based economy. One aspect of globalization is that of locating players and bringing them together within the chain of knowledge. Spence (2008) in his growth report puts out strategies which are needed to sustain growth. This means that when knowledge and all other factors needed for development are put into use to achieve a desired result, strategies must also be put in place to sustain growth. According to Spence, there should be an increase in GDP to the level of 7% or above annually over a given period of time in achieving high growth. The World Bank also places emphasis on the GDP of a country as one of the criteria for measuring a knowledge society in the knowledge assessment methodology. In order to achieve this high growth, growth auxiliary factors need to be promoted in the country.

The 13 dimensions is the major benchmark of this study and were formulated by Sharma et al. (2008) using the 4 pillars of knowledge society: Infrastructure, Governance, Human capital and culture. For a country to be classified or regarded as a knowledge society, the following dimensions must exist and be sustained as well. The dimensions are: Geographical proximity to market, net knowledge inflows, ICT accessibility, rule of law, IP regime, political.

Knowledge and technology are the heart and mind of the global economy. The countries that thrive will be those that encourage their people to develop the skills and competencies they need to become better workers, managers, entrepreneurs and innovators. Today's policy makers must extend their country's existing strengths through careful investments in education, institutional quality, and relevant technology. They must create enterprises that are knowledgeable enough to recognize new competitive opportunities and skillful enough to convert those opportunities into wealth. Why, then many developing countries have been slow to identify the strands of global knowledge, if the basic components of the knowledge economy are readily available, why not appropriate for developing countries for growth and innovation? The challenges are due to a weak institutions, limited awareness and disincentives preventing them from taking the root to the knowledge economy. Drucker (1998) suggests that knowledge is quickly turning into a factor of production and has the capacity to sideline labor and

capital. This supportive of the fact that no nation can do away without knowledge. Every single effort must be made to invest into knowledge. OECD and Asia-Pacific Economic Cooperation (APEC) have both agreed that wealth creation, growth of economy and general well being of the citizens depend on "production, distribution and use of knowledge" The developing countries should work to raise awareness among national policy makers should consider embarking on knowledge and innovation based development process to encourage economic actors to combine global and local knowledge to accentuate comparative advantage, and to help leaders to build institutions that foster, rather than discourage, individuals' attempts to exploit the competitive opportunities available to knowledge-powered enterprises.

To become a successful knowledge economies, countries must act simultaneously on their education base, their innovation systems and their information and communication technology infrastructure, while also building a high-quality economic and institutional regime. Strategies must be adapted to a country's level of development and progress is usually gradual, but some countries have been able to achieve spectacular progress in a decade. Knowledge and innovation have always played a crucial role in economic and social development. Earlier versions of human capital theory have been invigorated by new growth theorists who argue that it is not just more education that matters, but the kinds of education experiences that foster active learning (Arrow, 1962) and innovative aptitudes (Romer, 2007), have promoted concepts like the 'creative class' as the basis for producing competitive economies. We have also seen intense focus on research and evidence and how this might inform evidence-based, or evidence-informed, policy making. But globalization and the technological revolution of the last few decades have made knowledge the key driver of competitiveness and are profoundly reshaping the patterns of the world's economic growth and activity.

A knowledge based economy is one where ideas and technologies are ingredients, intellectual property is the merchandise, people expect smarter products with more convenience and technology leaders fuel the innovation. The term "knowledge-based economy" was coined by the OECD in 1996 and defined as an economy which is "directly based on the production, distribution and use of knowledge and information" (Altacit Global, 2004). Realizing the potential of knowledge economy requires economic, institutional and regulatory environment that fosters the acquisition, development and use of knowledge, an education system that supplies citizens with the ability to create and use knowledge, a dynamic information infrastructure, innovation systems and networks. There is a strong link between investment in the research and innovation base of the economy and sustained economic growth. The accumulation of knowledge capital will facilitate the evolution of the

knowledge-based economy.

Knowledge is the most powerful engine of production. The extraordinary progress in information and communications technology, coupled with the increased speed of scientific, technological advance and global competition along with changing demand is the reason why knowledge is becoming more important. It is important to be a part of the knowledge based economy because information and knowledge are replacing capital and energy as primary wealth-creating assets. We are moving from the industrial revolution to globalization and liberalization in international trade where there is free flow movement of capital, information and workers. Major changes such as in workforce diversity, would require the human resources development strategy to meet the needs of the industries in both public and private sector. People are the ultimate resource. And they must be given the fullest emphasis possible for development towards the highest standards of skills, knowledge upgrading, competencies, work attitudes and motivation. In the broadest terms, all sectors of the economy become knowledge-based when strategies are adopted to increase productivity via the application of knowledge, rather than via increased input of capital or labor (Fong Chan Onn, 2006).

EDUCATION AND LIFELONG LEARNING

A flexible education system underpins the knowledge economy. That system begins with basic education that provides the foundation for learning continues with secondary and tertiary education that develops core skills (including technical skills) and encourages creative and critical thinking for problem solving and innovation and extends into a lifelong learning system that extends from early childhood to retirement. Human resources in science and technology are important because investment in human capital is a key to innovation and growth. As both the producers and users of knowledge and technology, men and women in science and technology are at the core of the technology-led economic expansion that is creating jobs and raising living standards in developing countries. Educated workers are among the key services that the public sector provides to the private sector. However, human capital acquired during formal schooling is subject to some depreciation due to technological change and other factors (Ramirez, 2001). These effects put downward pressure on the earnings of older workers. As basic research becomes more important for technology and innovation, continued investment in Science and Technology (S and T) personnel is critical for exploiting the benefits of public research. The long-term sustainability of science and the innovation process will depend on an adequate and well-trained supply of new researchers and teachers, especially as many older researchers and professors are about to leave the workforce.

Investment in human capital is critical in a k-economy. Human capital theory views education and training as an investment that can yield social and private returns through increased knowledge and skills for economic development and social progress (Schultz, 1963). The economic argument in favor of knowledge-based education and training is linked to the perceived need of the global economy. It is based on the assumption that economic growth and development are knowledge driven and human capital dependent.

The shift to the k-economy is part of a wider plan to achieve the objective of the nation's vision. Vision 2020 is a 30 year plan to "push" Malaysia to achieve a level at par with industrial nations in terms of economic performance and technological capability (Mustapha and Abdullah, 2000). With the move toward a k-economy, the country can achieve sustainable gross domestic product (GDP) growth rates in the long run with knowledge playing a dominant role in driving productivity and sustaining economic growth. It is projected that through an information and knowledge based economy, the level of the country's GDP can increase 4 fold within 20 to 25 years (Economic Research Services Department, 2000). The new global market calls for visionary leadership and the adoption and application of new management and organizational principles. The old command-and-control management system that many organizations are used to may not work in a new competitive environment. The education, training and employment policies have to change. Employers need to recruit "knowledge" workers for higher skills jobs. This requires our education system to produce graduates with relevant knowledge, critical and higher order skills and proper attitudes.

DEVELOPMENT OF KNOWLEDGE WORKERS

The creation of quality human resources is important in a k-economy. These individuals will form the backbone of the k-economy. Knowledge workers are versatile, autonomous and highly skilled and are able to leverage and build knowledge to produce useful action with very strong and analytical skills. They are flexible and have a high tolerance for ambiguity. For Malaysia to produce a pool of k-leaders and k-workers, the educational system needs to be revamped and restructured. The focus should be directed to making the existing curriculum more innovative to help students to invent and develop a critical and analytical mode of thinking and ultimately create a sufficient pool of well-educated, highly skilled and strongly motivated workers (Economic Research Services Department, 2000).

Observers make out that working habits are shifting from lifetime employment in a single organization to portfolio work. Knowledge workers produce and distribute ideas and information rather than goods or services. They are individuals with different aspirations from the hierarchy-conscious personnel of the past; they are also

mobile and they do leave. Hiring talented people is difficult and keeping them is also more difficult. So, to plug the drain of intellectual capital in a competitive knowledge economy, knowledge workers should be treated as an asset rather than as a cost. Preferably, they should be managed as though they were partners (or at least volunteers). Certainly, knowledge workers require knowledge managers, not bosses. These new-era managers need to set and enforce on themselves exacting standards for their performance of those functions that determine ability to perform. Time and again, traditional managers exercise no leadership at all but only position power. Many reach the top by being tough and self-affirmative or by being the kind of person that others feel safe in following or promoting. Yet managing knowledge workers requires that managers themselves act as good follower and team player as well as leader and technologist. Since the process of influencing the performance of knowledge workers is mainly developmental, they need also to hone skills in appraising, coaching, mentoring and providing feedback. One measure of their effectiveness will be by the quality of the (internal and external) relationships that they create. (Olivier Serrat, 2008).

TRANSFORMATION INTO K-ECONOMY AND CHALLENGES

The world economy is experiencing the effects of rapid globalization and liberalization as well as the impact of the emerging information age. The prediction is that this information age will bring about a new global economic order to be dominated by information and knowledge-based economies (IKEs). Most African countries including Ghana are facing new challenges to their socio-economic development process as a result of this globalization process and the impact of the emerging new information age. There is no doubt that the information and knowledge-based economy is the economy of the future and the challenge facing African countries including Ghana relate to how they should go about formulating and implementing appropriated integrated ICT-led socio-economic development policies and plans that could aid the process of moving their countries to the other side of the digital divide. The link between education and economic growth strengthens as the rate of technology transfer increases (Sab and Smith, 2001). The fact that an impact on growth is observed only in more affluent countries, where the overall level of education is higher, suggests that technology adoption is strongly linked to the education of the labor force (Pohjola, 2000).

There is no doubt that information and knowledge economy is generating opportunities across all sectors in a number of developed and developing countries. It is a new source for the creation of quality jobs, wealth

generation, income redistribution and poverty alleviation, as well as for rapid economy development, prosperity and a source for facilitating global competitiveness. However if countries like Ghana are to move their industrially weak, subsistence agriculture based economy towards an information and knowledge economy they will need to develop and implement a comprehensive integrated ICT-led socio-economic development policies, strategies and plans (Economic Commission for Africa, 2002).

Advanced capitalist countries are shifting from an industrial economy, fueled by natural resources, to a service economy, fueled by human resources. This trend is reflected in the increasing gap between the book value and market value of corporations. Traditional corporate valuation factors no longer capture the real value of a corporation because what is lost in the accounting process are the intangible assets, the knowledge and skills of the employees and the organizational capacity to use knowledge and skills to create value (Sattar Bawany, 2008). In most companies, the value of intangible assets exceeds the value of tangible assets (physical resources and capital). The challenge to managers is to see their organization through the lens of knowledge structures rather than through physical structures. When they do, they will see the importance of developing the intangible assets. In the knowledge economy resources are unlimited, unlike resources in industrial society. Knowledge grows when it is shared.

EDUCATION, HUMAN CAPITAL AND ECONOMIC GROWTH

There is link between our educational output and what the economy requires for growth and development to take place. This gap requires a shift in policy towards a knowledge based economy. It is in the highlight of the above, that it becomes imperative to dynamise the school curriculum to reflect the changing realities. The importance of education and human capital in economic growth has been at the centre of recent economic planning and management. Education is a critical force that generates technological progress in an economy. Education and creation of human capital could be responsible for both the differences in labor productivity and the differences in overall levels of technology that we observe recently in different parts of the world (Daggash, 2008).

Education and human capital can also be viewed as a direct productive factor of production and therefore a source of economic growth. Economies such as Hong Kong, Korea, Singapore and Taiwan have achieved unprecedented rates of economic growth mainly due to their large investments in education. The neo-classical economics recognized only 2 factors of production: labor and capital. This is now changing. Information and knowledge are replacing capital and energy as the primary wealth creating assets, just as the latter 2

replaced land and labor in 200 years ago. Technological progress is likely to raise the value of education in producing human capital (Schultz, 1975). As developing countries liberalize their trade regimes and open themselves to technology transfer from industrial countries, the value of education rises. Education thus becomes more important. In a K-based economy, knowledge is the most critical factor of production. It generates more wealth than other traditional factors of production, land labor and capital. It is also a commodity in itself. This is in contrast to a production-based economy, where knowledge plays less prominent role and growth is driven largely by the accumulation of traditional factors of production. In a K-based economy, education and skilled human resource, or human capital is the most valuable asset.

NIGERIA ASPIRATION FOR K-ECONOMY

Nigeria aspires to be in the league of the 20 leading economies in the world by the year 2020. This aspiration emerged on the realization that the endowment of Nigeria in material and human resources placed her in good position to achieve this greatness. Education is a key to empowering Nigerians to acquire the right attitudes, skills and knowledge that would propel the achievement of vision 2020. The Human Development Report of UNDP (2008), show that Nigeria is still at the low level of human development compared to countries in emerging economies.

The report presented the human development Index (HDI) based on 2005 data as 0.47, the adult literacy rate of 69.1% and combined gross enrolment-ratio for primary, secondary and tertiary education stood at 56.2%. These and other indicators show that Nigeria is far behind in human capital development and this calls for a policy intervention towards transforming the economy from its present state to knowledge based oriented economy by 2020 through intensive effort in human capital development (Daggash, 2008). There are therefore, strong push and pull factors behind Nigeria's initiative to welcome a knowledge-based economy. Ultimately, the transformation will enable Nigeria to regain and enhance its competitiveness in the global economy.

GHANA OBJECTIVE FOR K-ECONOMY

Countries such as Malaysia and South Africa, though, developing nations, were able to achieve greater part of their knowledge society goals and therefore could be regarded as emerging knowledge economies. Ghana, a developing nation just like Malaysia and South Africa, however, is not able to get on par with these countries. Ghana has failed in most of her knowledge societal goals

even though it is located on the same continent with South Africa. Moreover, both Ghana and Malaysia were ruled by the British and had gained independence in the same year, 1957. Most of the characteristics of knowledge economy are lacking in Ghana. Ghana is highly endowed with natural resources and agricultural is the mainstay of the economy. It contributes about 37.3% to the gross domestic product with industry and service sectors making up 25.3 and 37.5%, respectively. Ghana depends largely on her natural resources for foreign exchange. Most of these resources are exported to other countries without any value addition. These raw products are processed and resold to Ghana as finished products.

In order to achieve knowledge economy agenda, Ghana needs to embark upon value addition process to most of her raw material. The economy depends mainly on 2 major exports- gold and cocoa. Gold accounts for 30% of the foreign exchange and the country is the world's second largest producer of cocoa (Sharma et al., 2008). For a country to achieve a knowledge society status, social cohesion is highly needed. Unity is required of such a nation in order to focus her strength on developmental goals. This means that lack of civil wars and tribal conflicts. Ghana experienced few civil disturbances in the northern part of the country. But that was not enough to disintegrate the social cohesion of the country. Intertribal marriage is a common feature of the Ghanaian society.

MALAYSIA CURRENT POSITION

Malaysia's concept on the knowledge-based economy is one where the generation and utilization of knowledge contribute to a significant part in economic growth and wealth developing Malaysia into a knowledge-based economy creation. Malaysia is facing increasing competition for its labor-intensive and lower-end manufactured products from the lower-wage and resource-rich developing economies such as China, Indonesia and Thailand. With respect to high technology and knowledge-intensive industries, Malaysia has yet to match the competency of the more advanced economies such as South Korea, Japan and Taiwan.

To maintain its competitive edge, Malaysia will need to aggressively under-take productivity improvements in traditional industries and at the same time, enhance its technological and knowledge capabilities to move into the midrange and higher-end products. In order to boost productivity growth, Blinder (2000) suggests doing one or more of these 3 things: (i) improve the quality of the workforce through education and training, (ii) equip the workers with more and better capital such as computers, and (iii) improve technology, so that the given input produces greater output.

According to Shankar, 2008 and quoting IDC figures, growth in the Malaysian ICT industry has spiralled in the

last decade, with Malaysia's ICT spending totalling US\$ 9.32 billion in 2006 alone. This year, the spending has grown 7.2%, and the compounded annual growth rate is expected to be maintained or excelled over the next 2 years. In 2010, Malaysia's ICT spending is expected to hit a high note with US\$ 12.31 billion. "Through the MSC Malaysia initiative, the government has attracted more than 1,900 local ICT companies across the spectrum - from software applications to internet-based businesses and provides them a conducive and enabling environment to harness the full potential of technologies.

According to the Malaysian communications and multi-media commission (MCMC) the internet dial-up subscription has 11.5 million users and the nation's broadband penetration rate is still low at 12.8% for every 100 households. Broadband growth encouraged by the government's broadband plan and the growth in WiMAX usage resulted in a reduction in the number of Internet dial-up users and increase in multimedia revenues. There were about 22 million mobile phone users in Malaysia in 2007. With the entry of new 3G service providers and introduction of mobile network portability (MNP) in 2008, calling rates are expected to decrease and more innovative value-added services, such as mobile advertising, mobile music, and mobile broadcast TV, are expected to be launched.

RESULTS AND FINDING

In the new economy, where jobs are driven by technology and information, lifelong learning is key to ensuring that Nigeria, Ghana and Malaysia continues to be productive, globally competitive and economically secure. The country's success in the knowledge-based economy depends on the ability of its workforce to respond to new challenges and pursue lifelong learning opportunities. The concept of K-based-economy has become an important issue for business and labour. In the knowledge-based economy, countries' success depends on the ability of its workforce to respond to new challenges. This is a national challenge that no single government can achieve alone. To achieve this goal, countries must continue to work together with other governments, global partners, and business and labour groups, to strengthen K-based-economy and other essential skills that are the foundation of lifelong learning.

A country's most important resource is its human capital. In order for those countries to move forward and be strong, must invest in their citizens, ensuring that no member of society is left behind in the knowledge-based economy. Although most people know how to read, the real question is whether their reading and writing skills are such that they are able to meet the challenges of living and working in society and the knowledge-based economy. Globalization and new technologies have brought about profound changes in the workplace.

These factors have set more demands, as well as

changing and rising expectations on employees.

CONCLUSION

Knowledge and innovation have played a crucial role in development from the beginnings of human history. But with globalization and the technological revolution of the last few decades, knowledge has clearly become the key driver of competitiveness and is now profoundly reshaping the patterns of the world's economic growth and activity. Both developed and developing countries should therefore think, with some urgency, about their future under a KE heading.

In addition to knowledge investments, knowledge distribution through formal and informal networks is essential to economic performance. Human capital indicators, particularly those relating to education and employment are central measures for the knowledge-based economy. Measuring the private and social rates of return to investments in education and training will help point to means of enhancing the learning capacity of individuals and firms.

ACKNOWLEDGEMENTS

Author would like to thank the editor and anonymous referees for their comments and insight in improving the draft copy of this article. Author further would like to declare that this manuscript is original and has not previously been published, and that it is not currently on offer to another publisher and transfer copy rights to the publisher of this journal after the paper is accepted.

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