



# DEVELOPMENT ALTERNATIVE: BUILDING CAPACITY FOR A KNOWLEDGE-BASED ECONOMY IN BAHRAIN

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**Abstract:** *Purpose:* The aim of this paper is to examine some of the challenges and opportunities to build a knowledge-based economy in Bahrain. Recent trends in development studies have focused on building knowledge capacity to foster economic growth and promote development. Bahrain has limited natural resources, and, therefore, investment in knowledge creation helps the country to compete in the global markets by producing high-tech products and manufactured goods.

*Design/methodology/approach:* The study is a descriptive assessment of Bahrain's initiatives using statistical data and digital indicators to analyze the process of building a knowledge-based economy.

*Originality/value:* The paper contributes to the literature by helping students and policy makers understand the main components of the knowledge-based economy and what measures need be taken to promote such an economy. In Bahrain, as well as in the rest of GCC countries, knowledge applications allow economic diversification and job creation.

**Keywords:** *Knowledge; ICT; Innovation; Education; Skills; Bahrain*



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## INTRODUCTION

In this age of global interdependence, socio-economic transformation requires the development of technological capacity to enhance productivity and promote competitiveness. Technological capacity develops through investment in human capital, building physical infrastructure, innovation and digital connectivity which in turn lead to strengthening the fundamentals of a knowledge-based economy. In the case of Bahrain, the important challenge is to promote knowledge transfer and gain access to global markets. The government needs to formulate policies and make decisions to stimulate knowledge intensity in the economy and provide greater incentives for innovation, creativity and knowledge transfer.

In recent years, there has been growing interest in building knowledge capacity among nations to accelerate economic growth and deepen integration in the global markets. Knowledge has been viewed as an important factor of production largely responsible for creating wealth and generating employment opportunities. In this regard, knowledge has substituted for traditional factor inputs to play a determining role in productivity increases and global competitiveness. This has given advantage to those countries with adequate natural resources to broaden the productive capacity and promote socioeconomic development. However, building foundations for a knowledge-based economy will require investment in human capital to increase the country capabilities to become more creative and innovative. Creativity and new ideas are important for knowledge creation, and therefore, education and lifelong learning become essentials for promoting a knowledge society.

The main purpose of this paper is to highlight the importance of building a knowledge-based economy in Bahrain.

In recent years, the government has been making efforts to convert its economy into a knowledge-based economy by introducing reforms in such areas as trade, finance, education, skills and Information and Communication Technology (ICT). Also, the ICT industry in Bahrain has been growing rapidly which is important for building a knowledge society. Recently, Bahrain has gained number one status in the Arab World for ICT services, especially e-government.

### **THE KNOWLEDGE-BASED ECONOMY**

In this age of telecommunication, digitization and dissemination of knowledge in economic activities could speed up the process of economic development and sustain long term productivity increases. Recent policy directions and economic initiatives in Bahrain seem to recognize the importance of building capacity for a knowledge-based economy. In addition to economic liberalization and privatization, Bahrain has been making efforts to improve economic incentives, enhance financial services, increase demand for transparency and enhance equal access to market opportunities.

Knowledge and information are vital for economic competitiveness and, therefore, it is crucial that countries respond effectively and quickly to meet the challenges of globalization. Bahrain's limited resource endowments and small size, both geographically and demographically, highlights the importance of knowledge creation and skill development for sustaining economic growth and increasing global competitiveness. In the new economy, knowledge represents an edge that a country must acquire in order to cultivate global opportunities. Sound macroeconomic policies and effective use of technical knowledge strengthen the process of development and stimulate economic growth. Building capacity for ICTs enable the country capabilities to apply and create knowledge

which are needed for enhancing productivity and increasing economic diversification.

In building a knowledge-based economy, the government's role is to ensure that decisions are made and implemented in those areas where knowledge can be applied, absorbed and created. Parallel policies, based on other countries experiences, such as those of Singapore, South Korea and Malaysia, can be constructed for narrowing the knowledge divide to reduce the time required for reaching the take-off stage. Unfortunately, most Arab countries are still behind the rest of the world in knowledge creation and e-readiness to speed up the process of transforming their traditional economies into knowledge-based economies. As pointed out in a recent study by Brooking Project:

“In countries across the Arab region, growing censorship threatens the development of knowledge society. The quality of education lags and educational institutions inadequately prepare young people for jobs.

Arab science and technology institutions are undefended and still too weak. Knowledge-based industries suffer from insufficient information and communication infrastructure, a high cost of doing business, and rigid labor markets. International trade trails other world regions. Arab societies still undervalue creativity and innovation. High levels of illiteracy endure. [Brookings, 2008]

Two classifications of knowledge are introduced in the literature; tacit and explicit. In the case of explicit knowledge, it is accessible and can be easily adopted and used by others whereas tacit knowledge is much more complex to be extracted and used unless the owners are willing to share it or make it available. In countries such as Bahrain, tacit knowledge

could be exploited by providing incentives for individual and enterprises to participate in the economy. The owners of intellectual capital could contribute to knowledge creation; given there are adequate institutional and digital infrastructures to facilitate the exploitation of ideas and to encourage creativity. Unlike service economies where services are produced and used, production of knowledge requires special skills and involves investment in both human and physical capital. In other words, in producing knowledge, workers are not treated just laborers but human capital. This is due to the fact that knowledge work is specialized depending not so much on the number of people employed but on their productivity.

A knowledge-based economy is defined as one where “knowledge is created, acquired, transmitted and used more effectively by enterprises, organizations, individuals and communities for greater economic and social development. It calls for:

1. An economic and institutional regime that provides incentive for the efficient use of existing knowledge, for the creation of new knowledge, for the dismantling of obsolete activities and for the start-up of more efficient new ones.
2. An educated and entrepreneurial population that can both create and use new knowledge.
3. A dynamic Information and Communication infrastructure that can facilitate effective communication, dissemination and processing of information.
4. An efficient innovation system comprising firms, science and research centers, universities, think tank, consultants and other organizations that can interact and tap into the growing stock of global knowledge, assimilate and adapt it

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to local needs; and use it to create new knowledge and technology.[World Bank, 2000]

The concept of a knowledge-based economy features an economy driven largely by production and distribution of products with high contents of knowledge. However, what unique about the new economy is not only production of knowledge-based products, but also an absorption, application and creation of knowledge. Such features are enhanced by the use of ICTs which enabled countries to access to global knowledge and information. This in turn has given the country greater advantage in global competitiveness due to increasing share of knowledge products in total production. Being part of the knowledge economy, enterprises and individuals are motivated to use and create knowledge in production. There will be greater pressure to compete reflecting the desire to employ greater scientific and technological means in production. Supporting such an economy underscores the importance of building capacity capable of providing incentives, enhancing education and skills, improving research and development, and creating a dynamic information and communication infrastructure. These measures help the economy to increase flexibility, improve economic efficiency and take advantage of the new global economy driven by globalization. Economic diversifications arise from linkages creation brought by the opening of new global opportunities.

Bahrain needs to take concrete steps to gain global access to knowledge and information. Such objectives can be achieved via re-engineering the economy and restructuring the productive sectors to strengthen the absorption and application of knowledge. The government should encourage hightech industries and knowledge-based products and services by providing adequate financial and incentive resources. In this regard, technology transfer should be selective to increase

global linkages and promote networking. The knowledge-based economy is a learning economy that provides equal opportunity and equity in educational attainment and training. In other words, accessibility and availability of educational institutions become vital for providing the necessary support to the knowledge-based economy. It depends on people capabilities to make use of modern technologies to produce knowledge and gain access to global markets.

### **BAHRAIN: ECONOMIC PROFILE**

Bahrain is a small country located on the Arabian Gulf with approximately one million inhabitants one third of whom are expatriates. Rapid increase in population in recent years has increase the number of dependents in total population. By 2030 the population of Bahrain is projected to increase to 1.9 million putting greater pressure on the country to create employment opportunities and provide services. No doubt that the coming generations of Bahrainis will be better trained and more educated due largely to government awareness for greater investment in human resource development. At present, about 40 percent of the population in Bahrain is under 20 percent reflecting high dependency ratio at about 47 percent. Recent years have witnessed increase in female participation in labor market. In 2009 for example, female labor participation rate was 30 percent compared to 56 percent for male population. However, almost half of women in Bahrain are employed in public sector leaving the other half of employment in the private sector. The ratio of women to total student population, especially in universities, is increasing making future employment trends in favor of female population.

In 2009, Bahrain Gross Domestic Products (GDP) reached to BD 7,692 million at current prices. The GDP is expected to increase to 11,865 million in 2015. Future economic growth

will depend on restructuring the economy and diversifying output to promote a knowledge-based economy. The new economy to be driven by high quality knowledge products and services meant for exports. In recent years, Bahrain has increased the share of services in total output, especial those in the financial sectors. Bahrain global performance is reflected in the country global ranking. The Heritage Foundation's 2010 report has ranked Bahrain the only Middle Eastern country among the world's top 20 for ease doing business. In addition, the World Economic Forum Competitiveness Report 2009-10 ranked Bahrain the 35 place out of the 133 countries reviewed. These represent important measures for Bahrain global performance and economic diversification. [Bahrain Economic Quarterly, 2010]

In recent years, rapid increase in (ICTs) has put substantial pressure on many countries to take advantage of knowledge-based economy, driven by knowledge and information. In this age of global interdependencies, knowledge and information have become an important factor in global competitiveness. ICTs are enhancing the interactions of businesses and governments, both locally and globally, to increase output and promote competition. As a rapidly changing economy, Bahrain possesses all ingredients to deepen global integration and build a knowledge-based economy. In recent years, the government has taken radical measures to reform the economy and build capacity for technology transfer and knowledge creation.

### **EDUCATION AND SKILLS**

The educational system in Bahrain needs to be restructured to meet the current needs for labor quality and lifelong learning by integrating the current vocational and e-learning into the national educational policy. The government needs to

reorient school and university programs to ensure quality and also to address the equity issues in public and private education. Similarly, there is a need to strengthen the relationships between educational institutions in Bahrain and the global educational system. Incentives for universities should be provided to establish exchange programs and develop strategic agreements with good universities worldwide. Emphasis also should be directed at enhancing ICT and improving English in order to facilitate linkages and increase communications. In Bahrain 10 percent of schools are connected with internet and there are only 6 learners to one computer compared to 56 in Egypt, 174 in Morocco and 30 in Tunisia.[International Telecommunication Union, 2010]

The other important factor behind the rapid transformation into a knowledge-based economy is the creation of a dynamic and skilled labor force. Preparing the population to take part in the knowledge-based economy will require certain skills and expertise. Education and educational institutions represent the backbone behind the creation, absorption and share of knowledge necessary for people to participate. Investing in education enlarges people capabilities to make use of information and knowledge in production and networking.

The production of new knowledge and employing it in the economy is largely associated with institutions of higher learning and research centers. Universities should be given incentives to become active in research oriented problems and to become partners with the industry in sharing research and conducting scientific experiments. Endorsing these policies require the government of Bahrain to undertake radical steps in reforming education and encouraging research and innovation. These steps must involve the restructuring of the entire educational system to ensure delivery and increase labor market flexibility.

In the knowledge-based economy, workers are required to have high skills and e-literacy. A knowledge intensive economy underscores the need for knowledge workers who possess technical skills used in information technology, innovation, research and development and knowledge management. Such trends, if continue, however, they will require government support programs to ensure that workers are equipped with the right skills. Creating job opportunities in Bahrain underscores the importance of government involvement in providing the necessary funding for training and preparing the new generation for taking active part in implementing vision 2030. Changes in the labor market in recent years have been influenced by rapid technological changes brought by globalization and production of high-tech products. Technical change requires highly skilled labor capable of making use of modern technologies and applying of scientific methods. On the other hand, companies are forced to re-structure their operations to meet international standards and increase competitiveness.

### **INNOVATION, RESEARCH AND DEVELOPMENT**

Building knowledge capacity requires active government participation to implement programs and provide incentives for greater access to global knowledge. Such access enlarges the ability of the economy to leapfrog by encouraging local enterprises and individuals to create knowledge. In addition, the creation of competitive environment increases incentive for innovation and enhances market efficiency, i.e. availability of financial resources motivates enterprises to participate in the market economy and gain advantage of the potential success. Creativity, connectivity and market flexibility induce invention and encourage entrepreneurs to exchange information and share knowledge. By providing incentives, the government strengthens linkages between local and global markets paving the way for transfer of technology and knowledge absorption.

Thus, the institutional structure of the society could become the driving force for creating suitable conditions for promoting a knowledge-based economy. [World Bank 2008]

Universities in Bahrain should develop policies to enhance research capabilities to strengthen the foundation for building a knowledge-based economy. Future development prospects will be linked to the ability of educational institutions to pursue long-term research in order to exploit the country economic potential and create new knowledge. In Bahrain, research and innovation are still insufficient to accelerate the process of knowledge creation. The government must increase support to research institutions including universities by creating research environment suitable for scientific application and technological development. Most of the research in Bahrain remains under public control through state owned universities and institutions. Support for the private sector must be increased to involve enterprises and encourage industry to contribute to research. The government must take the lead by identifying the research problems and allocating funding for private enterprises to conduct scientific research and respond to the main challenges facing future development. The major deficiency of the current research practices in Bahrain is the separation of private enterprises from research and development. Most funding for research comes from government budget allocated mainly for public institutions and research centers sponsored by the public sector. Recently, however, the government has initiated programs including Tamkeen to broaden the research base by providing incentives including financial support for private enterprise to take part in research and development. These programs should strengthen Bahrain's capabilities in the longer term to achieve the proposed vision of 2030. To this end, the government should establish sound and effective criteria for conducting research not only in the local market, but also to

encourage technology transfer and increase access to global knowledge. Support should be directed at projects related to the future development of the country and its ability to increase the productivity of economic sectors.

Building capacity for promoting a knowledge-based economy also requires long-term planning and a clear vision about future trends. Knowledge strategy in such areas as information, education, human capital, and science and technology is necessary for ensuring Bahrain's development towards building global capacity. Modern economies depend heavily on continuous investment in learning and flexibility in adaptation of new ideas. The dynamism of the new global economy underscores the importance of rapid advances in information technologies for speeding up the process of global integration. A well-defined vision in Bahrain could enhance development by harnessing the benefit of information technologies and enlarging the knowledge revolution in modern economies.

### **E-GOVERNMENT IN BAHRAIN**

E-Government in Bahrain is an indicator of the recent efforts of the part of government of Bahrain to advance to cause of e government and build a knowledge society. Recently Bahrain has one three distinguished awards from United Nations at its Public Service Day 2010 for the Best Performance in the e-Government Arena, these awards are:

1. The Excellence Award for Best performance (positive change) amongst the world top 20 in the UN e-Government Readiness Report 2010: Bahrain reached No. 13 globally in 2010 report and it was ranked No. 42 in 2008. It has leaped 29 positions globally. Bahrain reached third in Asia, first at the Arab, Gulf and Middle East level.

2. Online e-Government portal on the internet in the category of (Improving transparency, accountability and effective response in the public service): an integrated and comprehensive electronic portal ([www.bahrain.bh](http://www.bahrain.bh)) supervised by the e-Government Authority (EGA) through which all Bahraini government entities are providing more than 150 electronic services 24 seven and these services shall reach to 200 electronic services by end of this year.
  
3. The Enterprise Architecture Project (Advancing knowledge management in the government): A project aimed at forming a strategic framework comprising all government ministries and institutions to unify policies and procedures among them when implementing ICT projects.[Bahrain E-Gov,2010]

### **KNOWLEDGE SHEARING AND GLOBAL ACCESS**

Knowledge can best be described as a public good which in can be shared with others without being lost. Although knowledge is expensive to produce, however, it can be customized and used by others in their development. In this age of global networking and connectivity, poor nations could have advantage by accessing to global knowledge with little user costs. This will require sound investment strategies capable of integrating the production of knowledge and innovation into the national economic policy to foster growth and strengthen the role of knowledge in the economy. As stated by the World Bank “Developing countries can take advantage of the large stock of knowledge only if they develop the technological competence to search for appropriate technologies and to select, absorb, and adapt imported technology. [World Bank, 1998]

With the exception of Bahrain, whose fossil fuel resources are nearing depletion, the Gulf Cooperation Council (GCC)

countries occupy an advantageous position to invest in modern technologies inasmuch as the energy surplus provides a source of capital accumulation to finance the knowledge-based economy. Given the constraints of labor markets, inadequate scientific and technological infrastructure, inefficient institutions and lack of entrepreneurial spirit, and, with the exception of Saudi Arabia, the small size of these countries, the potential for collective development towards building knowledge societies is much greater than the efforts of a single country. Cooperation through sharing resources, division of labor, and the exchanging of ideas creates greater opportunities to leapfrog development to achieve the knowledge economy. Interregional market integration endows the individual countries with the capacity to harness global knowledge. Collectively, these countries can establish a universal access by creating a network system that induces the absorption and creation of global knowledge. For Bahrain, the spillover effects of economic integration are vital to induce greater economic momentum in line with the government's diversification and reorganization of the economy to position it to become the Gulf's first knowledge economy. In sustaining future growth, Bahrain places paramount importance on the development of intellectual capital in terms of worker's knowledge, efficient management, brainpower, managerial and technical skills and flexibility in the labor market. Production of intellectual capital shared by all members of the GCC countries would serve to reduce costs as well as to enhance regional and global linkages. Bahrain has the potential to transform itself into a knowledge society provided that radical changes are made to reengineer the economy and increase knowledge acquisition.

Bahrain could also benefit from knowledge transfer and knowledge sharing. A knowledge-based economy requires the diffusion of knowledge which creates linkages and induces innovation. In this respect, building universities and research centers enable the society to create, transfer and share

knowledge among various users. Thus the institutional set up facilitates the distribution of knowledge and enlarges the economy capabilities to utilize and create new techniques and produce new products. Therefore, building distribution centers make it easier for knowledge to be diffused among sectors and enterprises, which will benefit the rest of the society by creating employment opportunities and improving the living standards. Furthermore, linking universities and industry could enhance research and foster innovation through additional funding provided by industry. New research findings speed up the process of building a knowledge-based economy and accelerate economic diversifications.

Bahrain can speed up the process of knowledge creation through the exploitation of the knowledge developed in other countries. There are several steps a country can take to exploit global knowledge including attracting foreign investment, increasing research collaboration with international research institutions and encouraging students to study abroad by providing scholarship. With the exception of few industries, foreign direct investment in Bahrain is limited to production of goods and services and not for research and innovation purposes. Industry in Bahrain has limited opportunities for research because of its dependency on foreign firms for technology and scientific methods. This is due perhaps to the low manufacturing production as well as to inadequacy of research facilities. The government of Bahrain needs to be aware that attracting foreign direct investment must involve high knowledge content to encourage acquisition and creation of knowledge in the local economy.

### **THE ROLE OF GOVERNMENT**

Bahrain seems to realize the importance of knowledge in building capacity and transforming its economy into a knowledge-based

one. In recent years, the Bahrain government has taken several initiatives to lay the foundations for building knowledge capacity to overcome some of the main challenges for promoting socio-economic transformation. The government has brought its long term strategy represented by the vision 2030 aiming at transforming Bahrain into an advanced society in which knowledge and information are to play key role in development. This is to be achieved by restructuring the political and administrative institutions to ensure delivery of services and enhance the country's capabilities to produce knowledge and skills.

Among the important challenges facing Bahrain in its drive to establish a knowledge-based economy are:

1. Increase the overall economic productivity by diversifying the economic structure of the economy. In the past, Bahrain growth was based on petroleum and petroleum products but recently the country reserves has been shrinking forcing policy makers to find alternatives. Building productive capacity will require investment in human capital, in research and development and in modern ICT technologies. These investments represent the backbone of the knowledge-based economy. In addition, knowledge creation has been positively linked to wealth creation, a necessary condition for promoting higher growth and increasing productivity. It is advisable that the country should capitalize on taking the benefits offered by globalization by providing the necessary economic incentive and institutional support to strengthen the foundation for productivity increases. In the future, economic growth needs to be driven by productivity changes requiring investment in human capital, physical infrastructure and knowledge.
2. The second challenge facing Bahrain is creating knowledge-based labor force. Education has special role to play in the

development of a knowledge-based economy. The question is how to construct policies and allocate investment strategies for enhancing educational facilities and training services to achieve the highest productivity. Universities must bear responsibility in promoting the knowledge based economy by contributing to productivity increases via research and development, innovation, knowledge creation and human resource development. Human capital increases with vocational training and education. One of the success factors behind the Asian miracle is the adaptation of an effective human resource strategy based on improving educational institutions and health facilities. It has been widely accepted that human capital is essential for economic growth.

3. The third important challenge is that the role of government needs to be restructured to meet the dynamic changes of the knowledge-based economy. In its early phase, there is no question about the role that the government must play in the development of the economy. Until recently, the public sector in Bahrain has been dominating the economy. To succeed, the government must encourage private sector contribution via sharing information, conducting research and development and devising effective incentives regime. The government must make the market function better by promoting human resource development and exploiting the power of the market. Also the government must initiate policies and institutions to promote entrepreneurship and support local enterprises.
4. The fourth challenging factor is closing the digital divide. ICTs facilitate the process of transformation into a knowledge-based economy by allowing the country to close the digital gap. In the new economy, availability of information and knowledge are vital for increasing productivity

and sustaining long-term economic growth. Again, the government should make extra efforts to building capacity for ICT in order to enhance the country capabilities for information flows and strengthening connectivity.

5. The other important challenges facing Bahrain is regional cooperation and networking. As a member of the GCC countries, Bahrain could benefit from the rest of countries in the region by sharing information and exchanging scientific programs. Being a small economy hinders rapid development due to high costs and inadequate technological infrastructure.

The development of a knowledge-based economy relies on providing support for research and development, enhancing innovation, increasing interaction with industry and encouraging contacts with foreign educational institutions. However, it is not enough to make decisions and construct attractive policies. Implementation of these decisions and policies are important if the government is serious in its reform initiatives. However, awareness about the importance of knowledge is not new to societies such as Bahrain in which the Islamic culture dominants. What is new in this age of globalization is the speed at which information and knowledge travel making access to global scientific and technological means much easier. Access to knowledge and increasing understanding of scientific methods facilities the development of new technologies and promote leapfrogging. Bahrain should take advantage of the new opportunities offered by globalization and increase access to global markets. For example, building ICT capacity fosters growth in connectivity

In Bahrain, government contribution to the knowledge-based economy must be reflected in constructing policies to facilitate the use of scientific and technological development.

Building capacity for knowledge requires infrastructures that induce technological change and increase innovation. In the early stages of capacity building, knowledge absorption, especially from external sources, induces linkages and promotes organizational restructuring to increase flexibility. Government policies should encourage such trends by providing infrastructure to enable companies and enterprises taking advantage of technological changes. Ensuring Bahrain's development will require:

- Increasing employment
- Promoting economic diversifications
- Maintaining high growth rates
- Regional cooperation
- Technology transfer and Foreign Direct Investment (FDI )

To endorse its 2030 vision, Bahrain needs to adapt a new economic development strategy capable of meeting the internal as well as the global challenges. To compete and succeed in the new environment, Bahrain must continue to devise sound policies to harness the benefits of the global economy. An important element in this strategy is the shift from a resources-based production to a knowledge-based economy driven by knowledge and information. By doing so, Bahrain will be able to respond to many of the challenges it faces including maintaining high growth rates, creating employment opportunities and enhancing human development. Knowledge creation is associated with wealth creation which is important for improving living standards and increasing prosperity. The government needs to make sure that income inequality must be addressed to avoid marginalizing groups

and maintaining economic stability. Investment in education and knowledge infrastructure will help meeting the need of all people by providing equal opportunity and share the gain from the new economy. In addition, Knowledge makes the economy more competitive and encourages the production of new goods and services. On its part, the government must support such initiatives by improving the financial services and building ICT capacity to harness global knowledge and information. By doing so, Bahrain will speed the process of leapfrogging which advances scientific and technological development. Increasing connectivity promotes networking and induces the creation of different organizational and managerial styles capable of transforming the economy into a new phase driven by knowledge and information. Exploiting the power of the local knowledge creates new ideas and generate suitable environment which encourages innovation and increases global integration. Rapid integration in the global economy will give Bahrain an edge over other countries in the region to access to technical knowledge and to develop managerial and organizational skills needed for supporting the process of socio-economic transformation. Effective use of new technologies and development of new skills induces greater participation and increase labor productivity. The knowledge-based economy involves dynamic process which requires knowledge workers to increase flexibility and adaptability to the continuous changes. Bahrain must aim at replacing knowledge as key components in GDP growth instead of natural resources.

### **CONCLUSION**

In a small country , such as Bahrain, building a knowledge based economy to enhance knowledge society underscores the importance of facilitating labor market flexibility, strengthening financial institutions, developing an

effective communication system, investing in Research and Development (R&D), building ICTs infrastructure and promoting the growth of small- and medium-size enterprises. Similarly, building capacity to speed up the process of a knowledge-based economy will require exploring the pool of global knowledge as well as encouraging foreign capital flows and technology transfers. The developing countries can benefit from linkages to global markets and access to international educational institutions by making substantial cost reductions for advancing the knowledge society. Diffusing knowledge and disseminating information throughout the economy speeds up the process of growth by increasing specialization in production of high value-added goods and services.

In this paper, some of the challenges facing Bahrain to build a knowledge-based economy have been examined. In recent years, the shift towards knowledge creation and information dissemination as a prerequisite for global competitiveness has given incentives for nations worldwide to increase the knowledge components in the production of goods and services. Natural resources and financial capital are no longer sufficient for promoting rapid socio-economic development. Production of high-tech goods for global markets requires investment in knowledge creation and innovation in order to generate new ideas and develop new techniques in production.

Bahrain has been making efforts to take advantage of the new economy by building capacity to create knowledge and increase the share of high-tech products in total production. Several policy considerations have been made to strengthen the country's capabilities and integrate the local economy into the global markets. Globalization has opened new frontiers for nations to compete in a rapidly changing market. However, gaining access underscores the importance of investments in

human capital and in building institutional and ICT capacities to increase connectivity and generate linkages. Such policies will require sound planning and clear vision to strengthen the foundation for knowledge absorption and knowledge creation. Meeting its long-term objectives, Bahrain needs to undertake radical reform by diversifying its productive sector and deepening global integration. Ultimately, Bahrain has to meet the aspiration of its people by improving living standards and creating employment opportunities.

### **BIOGRAPHY**

**Hedeel Showket Al Obaidy** is currently teaching in the Department of Engineering at Ahlia University in Bahrain. Dr. Al Obaidy earned her Ph.D. from the University of Technology, Iraq in 2006. In addition to teaching, Dr. Al-Obaidy has been active in research. Her main areas of interest are software and web engineering and their applications in web-based applications such as search engine, E-government, E-learning, ontology web, semantic web and knowledge-based economy. Dr. Al Obaidy has published more than 20 articles and she co-authored four books. She is also active in the community by writing in the newspapers and magazines. She is a member of the Arabian Knowledge-Based Economy Association.

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