



KNOWLEDGE MANAGEMENT (KM) PRACTICES IN EDUCATION AND LEARNING: ESTABLISHING A KNOWLEDGE ECONOMY IN SAUDI ARABIA

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ABSTRACT

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Knowledge-management (KM) has received much attention because of the rapid growth of computers and information technology in shaping products and services. While new learning and innovations added value to the existing products and services, they also added a new dimension to economy, popularly coined as knowledge-based economy. The 21st century is often described as an era of “knowledge capitalism.” This study has attempted to find links between KM practices and modern education and learning. This study has shown how KM practices can be used for education, training and learning purposes which in turn can help organizations leverage the skills and expertise of their workers and transform them into knowledge capital. This study also aims to identify such KM practices that create a knowledge economy. Data has been collected from six universities in public and private sectors in Saudi Arabia where KM practices can be seen and which have contributed to the national economy.

Contribution/Originality: This study is going to be a useful contribution to the domain of knowledge economy in the Saudi Arabian context, particularly when the country is looking for a non-oil based economy, pursuing the 2030 vision. This study shows how learning and KM practices build up a knowledge economy.

1. INTRODUCTION

Davenport and Prusak (2000) defined knowledge management as a process of “collection, distribution and efficient use of the knowledge resource.” Bejinaru (2016) asserts knowledge management as an organizational strategy that a firm adopts to ensure its functioning, while Bratianu (2014) called knowledge management “a process of knowledge creation, validation, presentation, distribution and application.” Harris (2001) defines knowledge management as a “set of procedures, infrastructures, and technical and managerial tools, designed to create, share and leverage information and knowledge within and around organizations.” These definitions vary in their description of knowledge management, yet a consensus is visible in their treatment of knowledge management as a set of procedures to achieve organizational goals. Additionally, a few other studies equate KM with knowledge generation and knowledge creation (Nonaka and Konno, 1998; Von Krogh, 1998; Nonaka *et al.*, 2000; Bratianu, 2015) to help organizations become more competitive (Grant, 1996) to replicate and validate and update the existing knowledge (Shattock, 2009) through investment in R&D and training and development (Bratianu *et al.*, 2011).

On the economic front, under the impact of IT and artificial intelligence, the digital age has also given a new dimension to KM in the form of knowledge economy. This knowledge economy is the product of intellectual capital or the brain power of economists and financial academia. The use of technology keeps the knowledge graph growing which fuels the economy of the developed nations. Godin (2006) rightly observed that knowledge economy is a departure from traditional resources, such as labor and capital, to create wealth through new knowledge and innovation and adapting technology to achieve economic growth. The knowledge-based economies use ICT, innovation and research, higher education institutions and specialized skills to create, disseminate, and apply knowledge for growth. Their main concern is also to bring in technological advancement and unburden the current economic structures from old practices, paving the way for new knowledge-based practices.

The Organization for Economic Co-operation and Development (OECD) defines a country with a knowledge-based economy as one where “the production, diffusion and use of technology and information are keys to economic activity and sustainable growth” (Organization for Economic Cooperation and Development OECD, 2004;2005;2013). The World Bank defines knowledge economy as one that helps a nation to build institutional infrastructures through a good education system (World Bank, 2007;2012). OECD and World Bank have also confirmed the Knowledge Economy Index of several world economies that have successfully shifted from agriculture to manufacturing and recently to knowledge-based industries. The World Bank also suggested a framework of knowledge economy comprising key pillars of education, like R&D, Information Technology and state-of-the-art infrastructure dissemination of knowledge through various transfer methods. According to the World Bank, if the industrial economy required energy and machinery, the knowledge economy requires brains of the intellectual capital. It requires research, technical support and consulting in this Information Age. The intangible human expertise and trade secrets are intellectual assets and crucial to forming a knowledge economy.

A knowledge economy works on a correlation between education and knowledge (Harris, 2001). A good education can produce good knowledge workers called "human capital" who can prove a productive asset to bring in innovation in business models and eventually yield profits to businesses. An important component of knowledge economy is therefore the intellectual capabilities of educated intellectuals more than natural resources or physical assets. A knowledge economy also depends upon adaptive and creative thinking skills of such educated intellectuals. They are responsible for differentiating the knowledge economy from its predecessors. Examples of a knowledge economy include academic institutions and R&D organizations that are engaged in knowledge development, software and search engines. They also work on digital data to improve the economy. These institutions and organizations are comprised of individuals who share their knowledge and services with rest of the society. For example, digital solutions and app usage is a step towards facilitating a knowledge economy.

In the case of Saudi Arabia, ever since the launch of Vision 2030, a paradigm shift can be seen in the form of changes in various sectors of business that have reinvigorated its economy. Previously, their failure in the oil business had resulted in setbacks. The World Bank recognized 2017 reforms brought to the SMEs of Saudi Arabia resulted in a 9% increase in revenues (small businesses) and a 14% increase in revenues (medium businesses) with a total expenditure of 926 Billion SAR, 12% more than 2016. Expenditures in education, health and social development and municipal services only summed up to 410 SAR billion - 44% of 2017 government spending. They plan to increase the share of SME financing in banks from the current 2% to 5% by 2020; As well, they want to increase the share of mortgages in bank financing to 16% from current 7% which will leverage its strengths and human capital, turning Saudi Arabia into a knowledge-based economy. However, Saudi Arabia will need to introduce supportive laws, infrastructure, reforms in trade and investment policies, a more skilled labor force and higher spending on R&D and innovative financing for SMEs.

Saudi Arabia is transitioning from an oil based economy to knowledge economy, as envisioned in NTP Vision 2020. The National Development Strategy therefore strives to impart quality education through a nation-wide network of universities, equipped with state-of-the art infrastructure, technical and professional courses training

and scholarships. The Education Evaluation Commission was established to monitor these activities. For instance, in March, 2018, King Abdulaziz University, Jeddah organized Times Higher Education Middle East & North Africa Universities Summit under the theme: “Fulfilling our Potential: Developing Knowledge-Based Economies in the Middle East and North Africa Region.” The main objective of this summit was to devise strategies to attract corporate investment and involvement in scientific research and curricula development for the future millennium. It also discussed how the universities could help the nation to transform its oil based economy into a knowledge-based economy (KAU, 2018).

2. PROBLEM STATEMENT

In order to become a knowledge-based economy, Saudi Arabia needs to establish research and entrepreneurial universities, which can produce knowledge workers for critical occupations, conduct research and encourage commercialization of new knowledge. Currently, the challenge faced by the Saudi Arabian education sector is the lack of alignment between universities and the national economy. The universities offer courses that are neither market-driven nor suitable for a knowledge-based economy. Because of the oil crisis and the recession, knowledge management initiatives were not taken in the entire MENA region and hence there is a dearth of appropriate research. A knowledge economy is a step towards a sustainable economy ensuring employment, research innovation and new knowledge creation. Therefore, such a shift requires new policies and regulations. This study will also attempt to find out what efforts have been made by Saudi Arabia to formulate regulations that would facilitate the growth of a knowledge economy.

The next section highlights the contemporary literature on KM practices and knowledge economy. Section 4 presents the research methodology adopted for this study including reference to sampling and theoretical framework. Section 5 presents the findings and discussions of the data collected.

3. LITERATURE REVIEW

i. Knowledge Economy

Knowledge economy is often defined as the result of “production and services based on knowledge-intensive activities that contribute to technical and scientific growth relying much on intellectual capabilities rather than on physical inputs or natural resources” (Lundvall, 2003). According to the World Bank (2007;2012) a knowledge economy is the end result of knowledge-based value-added activities; it focuses on production and management of knowledge. Knowledge creation is always a key factor for economic growth (Florida, 2002;2007; Bratianu, 2015). This may result in obstacles caused by lower returns of labor and lack of physical and financial capital but in the long run a consistent development of knowledge ends in a positive growth in per capita income. Advanced nations have already marched towards a knowledge economy and therefore there is big demand for a highly educated workforce, with university degrees to act as intellectual capital.

A knowledge economy requires intellectual capital for a competitive business (Bejinaru, 2016) as well as intangible assets (Bratianu and Orzea, 2013; Mazzota and Bronzetti, 2013) and a capital structure comprising know-how, skills, and professionalism (Tennyson *et al.*, 2013). The output is in the form of components such as “values, knowledge and intelligence which the organization integrates in order to generate synergy and performance” (Bejinaru, 2016). The more knowledgeable employees are, the greater their strategic decision will be in making abilities (Davenport and Prusak, 2000).

ii. Universities in Knowledge Economy

For the purpose of creating the intellectual capital, universities are knowledge intensive organizations (Bratianu *et al.*, 2011; Bratianu and Orzea, 2013) engaged in activities like creation of knowledge, knowledge acquisition and transfer and conversion into commercial products and services to boost the knowledge economy

(Bejinaru and Prelipcean, 2017; Bratianu and Bejinaru, 2017). Petrusson (2009) considers the role of a university as educating students and disseminating the scientific knowledge through research in the interest of the industry and the society. A university is the foundation of the economic “renaissance” in most countries resulting in economic growth, concluded the British Executive Summary (British Executive Summary, 2009; Petrusson, 2009). Universities determine a country’s economic success, and also define the vibrancy and depth that it would need to transform into a knowledge economy. A recent study (Wells, 2017) exemplifies the critical role of universities in developing strategic thinking to resolve issues and challenges facing the world which they accomplish through innovative study programs and collaborative research.

The economic perspective calls a university a “supermarket” and the educational services it offers ‘products’ which are ‘sold’ to a large scale of ‘customers’. Hence, it is safe to say that universities cater to the demands of a knowledge-based economy and are accountable to supply and satisfy those requirements. Universities that provide specialized technical or professional knowledge create profit opportunities to both the society and the individuals. Maret (2007) aptly puts it : A university produces an ‘entrepreneur’, knowledge becomes a ‘product’, the student becomes a ‘customer’ giving rise to a kind of knowledge or academic capitalism, thus strengthening the role of universities in a knowledge economy (Bratianu, 2014;2015).

Knowledge capitalism is another form of wealth creation which results from knowledge generation, acquisition, sharing, distribution, transformation, and consumption (Nonaka and Takeuchi, 1995; Sveiby, 1997; Stewart, 1999; Davenport and Prusak, 2000; Andriessen, 2004). It grows in dimension like any other form of capitalism (Bratianu, 2014;2015) with its increasing role in competitive advantage among businesses (Viedma and Cabrita, 2012) and meeting the demands of stakeholders (Prelipcean and Bejinaru, 2016). More specifically, knowledge is a strategic resource (Spender, 2014) and knowledge creation a function of a new capitalistic society (Florida, 2002;2007) adding value to stakeholders and society. Universities also enter into a strategic and synergistic partnership with business organizations (Gibb *et al.*, 2012) to help them face global challenges.

iii. Growth of Saudi Arabia as a Knowledge-Based Economy

Saudi Authority for Intellectual Property Rights (SAIPR) is an organization that is responsible for improving the work environment, enhancing the knowledge-based economy, boosting foreign investments and opening the door for the innovations of the Saudi youth (SAIPR, 2018). SAIPR works towards bringing innovations and promoting SMEs in order to boost the financial returns through intellectual property rights. In order to achieve the objectives laid down in National Transformation Program 2020 and initiate the process of building a strong knowledge-based economy in Saudi Arabia SAIPR has formulated a national level strategy for intellectual property rights. This strategy includes operational plans and schedules in collaboration with various departments and ministries. It also proposes laws and regulations related to the intellectual property rights.

Another initiative is evident in The Times Higher Education Middle East & North Africa Universities Summit hosted by King Abdulaziz University, Jeddah in March 2018. The goal was to develop knowledge-based economies in the MENA region (KAU, 2018). The summit emphasized switching from natural resources-based economies to knowledge-based economies. The role of the universities is significant as they must use the latest technologies, and conduct excellent scientific research. It is also necessary that universities adopt highly advanced curricula capable of using student potential and empowering them to face the economic challenges of this knowledge era. Saudi Arabia has already witnessed a knowledge society with the use of high-end technology and ICT methods in different sectors of life. The country is gradually shifting to knowledge-intensive activities, towards a learning economy, where the capability to learn becomes more important than given sets of specific capabilities (Lundvall, 2003).

4. RESEARCH METHODOLOGY

i. Theoretical Framework

An education system supports knowledge management practices in a number of ways. These practices vary from place to place and exist differently in each system. This study adopted a theoretical framework with two complementary perspectives. The first perspective dealt with the university curricula and learning processes that can be linked with knowledge management processes. This step included internal as well as external learning through lectures, demonstrations, practical outcomes and field work, jointly forming a learning management system. The second perspective identified how this learning management system would support the formation of a knowledge economy making use of the KM practices made available in the system such as scientific inventions, entrepreneurship projects, R&D, and like. These two perspectives are then combined into a matrix to determine the validity of implementation in the context of Saudi Arabia. The framework also includes classification of knowledge processes based on Jashapara (2004) classification of KM into a four-looped process : Knowledge creation, knowledge organizing, knowledge sharing and knowledge application. This study will revolve around these four processes in order to determine the level of implementation of best KM practices contributed from universities.

ii. Sampling and Data Collection

A randomized sampling procedure was adopted to select the universities for this study. The research design was based on Yin (2003) multiple-case design technique ideally suiting a comparative study where multiple institutions are units of analysis and where a content analysis of data is carried out.

Questionnaires in the form of online surveys were distributed to university faculty and staff members in six universities of Saudi Arabia. For triangulation, semi-structured personal interviews were also conducted with Deans and Vice Deans of a few selected programs.

The resulting data was analyzed through content analysis methods using abbreviation UN01, UN02 and like for each sampled university for reason of confidentiality. The data was also juxtaposed and triangulated with the time series data available from Central Department of Statistics and Information (CDSI) Saudi Arabia; management consultancy groups such as Strategic Gears Labor Market, and General Authority for Statistics (GAS).

5. RESULTS AND FINDINGS

A primary concern in this study was to establish a connection between university education and the resulting KM practices that would help the formation of knowledge economy in Saudi Arabia.

Based on the theoretical framework adopted for this study, with a multiple case study approach, the researcher approached the sampled universities in Saudi Arabia.

A consensus was observed regarding the four processes or knowledge loop that was included in the framework. The respondents were specifically asked about these four KM processes. These processes were explained to them comprehensively.

Table-1. Matrix showing KM processes in sampled organizations (based on Jashapara (2004))

	Knowledge Creation	Knowledge Organizing	Knowledge sharing	Knowledge application
UN01	88%	80%	78%	60%
UN02	70%	67%	56%	56%
UN03	39%	35%	37%	36%
UN04	45%	43%	41%	40%
UN05	56%	51%	50%	52%
UN06	38%	37%	36%	32%

Source: Based on Findings of this study

For instance, Knowledge creation was shown as life long process to create new ideas and achieve novel paradigms; Knowledge organizing was referred to as storage and preservation of knowledge in various forms for the benefit of others and was seen as a prerequisite to knowledge sharing; knowledge sharing was defined as a mutual flow of knowledge among people; Knowledge application was referred to as application of knowledge shared, without any bias or prejudice, irrespective of any discrimination.

Table 1 shows the percentage of respondents in agreement with the questions related to each of the four loops which ranged from 32% as the lowest in UN06 for knowledge application to 88% highest in knowledge creation in UN01. It was also discovered that knowledge creation could be accomplished in diverse ways such as combining one type of internal knowledge with another type to create a synergy or analyzing any information with a view to take a decision and create a new knowledge.

Knowledge organizing was seen more as knowledge gathering and storing. Knowledge sharing was termed as knowledge distribution or dissemination of available data through documentation. Lastly, knowledge application was deemed to be the function of the institution responsible for using knowledge including economic institutions.

A consensus agreed that knowledge acquired at the individual level must be shared by a community, to put that knowledge into practice for collective consumption.

This was crucial for economic development and creating a knowledge economy. In a knowledge economy, the competitive advantage of a firm or an organization is gained from the knowledge used in the process of manufacturing new products or delivering new services to the market.

A few respondents, which included university faculty, opined that knowledge management had become a critical determinant of competitiveness in both public and private sectors which has affected both service delivery and policy-making. In a knowledge economy, this spirit of competitiveness boosts only those competitors who have an extra edge of knowledge. Effective functioning of government regulations and execution of its policies also depends upon effective acquisition and dissemination of knowledge.

Table 2 reveals that R&D gained maximum attention of the respondents when asked about sectors that contribute to the making of a knowledge economy in Saudi Arabia. All these sectors are functions of universities, directly or indirectly. These functions carry a great potential and benefits for the future economy of the country. For instance, many of these functions such as R&D, engineering, ICT, inventions and entrepreneurship contribute to policy design and meeting economic goals and objectives.

Table-2. Matrix showing universities contributing to KM practices

	Inventions	R&D	Consultancy	Entrepreneurship	ICT	Engineering	Training
UN01	29%	80%	70%	40%	60%	71%	72%
UN02	20%	40%	40%	60%	50%	47%	57%
UN03	17%	47%	47%	37%	47%	36%	27%
UN04	17%	27%	17%	47%	27%	33%	44%
UN05	19%	20%	30%	30%	30%	27%	37%
UN06	13%	27%	27%	17%	22%	22%	27%

Source: Based on Findings of this study

In fact these functions of higher education have become increasingly essential for economic policy makers to gain economic competitiveness and international attention. Saudi Arabia has already achieved a globalized character in oil based economy, but in knowledge economy much depends upon the performance of higher education in the country. In policy research and formulation of regulations, Saudi Arabia is still far behind its competitors where higher education is used for creating goods and services for commercialization.

Respondents believed that broad distribution of knowledge can optimize the common good. It was also suggested that knowledge-intensive products must be subjected to intellectual property regulations, but without any undue restriction on the transmission of their know-how. The respondents felt that by being regressive, the

spirit of common good is reduced. These findings are consistent with a few recent studies on knowledge sustainability (United Nations, 2017) and on civic university and challenges (Goddard, 2017).

6. CONCLUSION

Knowledge management is a crucial field of study that impacts organizational performance as well as profitability. However, there is a lack of empirical studies that can measure the impact of KM practices in the context of Saudi Arabia despite the emphasis given on KM practices in the Saudi Vision 2030.

Also, the country has significantly transitioned from an oil based economy to a knowledge economy. Saudi Arabia is one of the developing countries with limited options of financial resources as most of its revenue comes from is the single source of oil. In such a state, there are several non-oil based revenue sectors such as chemicals, industrial polymers, fertilizers and metals that can contribute significantly as alternative revenue sources provided these organizations are aligned with educational institutions like universities.

Hence, this study was conceived to explore whether advanced KM practices were aligned to educational institutions and how far they contributed in creating a learning environment to facilitate the growth of a knowledge economy.

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