

The collaborative roles of the government and private sector to foster innovation in Bahrain

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Abstract

Purpose – The purpose of this paper is to explore the government and private sector collaboration by focusing on their roles in influencing the innovation activities crucial for the development of a knowledge economy (KE) in Bahrain.

Design/methodology/approach – A qualitative methodology based on an explorative single multi-unit case study strategy was used with individual and focus group interviews as primary sources of data collection. Perspectives of 22 individuals and three focus groups involving participants working in private, semi-government and government sectors that influence the economy of Bahrain were collected along with reports and articles published regarding those sectors as second sources of data compilation.

Findings – The preliminary findings show that Bahrain's pursuit of a KE has already begun by the government developing policies and regulations for the financial sector to innovate in financial technology (FinTech). It was also found that in order for innovation processes and products to be developed further in Bahrain, the government had to play a stronger role in promoting, facilitating and incentivizing those processes and developments. The role of the private sector emerged as the sole producer of innovation and the main entity responsible for producing innovative products and services that would inject direct values into the commercial economy of the innovation ecosystem.

Originality/value – This is the first study that examines the influence of collaboration between the government and the private sector on innovation development in Bahrain. This research also provides an assessment tool that can serve as the groundwork for studies in the Gulf Cooperative Council countries since those countries share similar culture, language, religion and a hydrocarbon-dependent economy as Bahrain and are aiming to develop KE strategies.

Keywords Innovation, Bahrain, Knowledge economy

Paper type Research paper

1. Introduction

The kingdom of Bahrain is a small country in the Arabian Gulf, where oil has been the main source of economy since its discovery in 1932 and home to the first oil refinery in that region in 1936. According to the Economic Development Board (2017), Bahrain has long been a pioneer of economic diversification in the Gulf region and continues to record substantial progress despite a stern global recession since 2009, local political encounters in 2011 and oil production dips in 2012.

Bahrain's leaders in the year 2007 found their economy standing at a crossroads where future economic growth depended on whether they were able to make major modifications on several levels to keep stride with the competition regionally and worldwide. The "National Strategy Development" under the title of *Bahrain 2030 National Planning Development Strategies* was published in 2008 as *The Economic Vision 2030 For Bahrain*. In it, Bahrain conveyed that by the year 2030 its economy would be converted to a knowledge-based economy.

The researchers strived to shed light on where Bahrain stands a decade after drawing that vision, to assess where Bahrain's potential in the new economy is and evaluate its readiness to establish knowledge activities. To build its knowledge economy (KE), Bahrain's government must plan a system that stands and relies on many aspects such as investments in intangibles and building high human skills, while undergoing a long progression of developing regulations and policies in order to encourage those investments. With a specific



focus on the relationship between the government and private sector, this study revealed what the country has achieved so far in knowledge foundations and creations.

The purpose of this study is to investigate what a KE is according to international organizations, scholars and practitioners. This was achieved through studying the most globally used KE assessment models and frameworks to explore the elements that have been recognized as the pillars of KE – education, innovation, information and communication technology (ICT), and a conducive economic and institutional environment. After identifying the importance of the innovation pillar and the central role it has played in the economic development process, the researchers analyzed the collaborative roles the government and private sector play in influencing the innovation activities in the Kingdom of Bahrain. The innovation pillar was the focus of this research since it is one of the major pillars of a KE (The World Bank Institute, 2008) and Bahrain trailed behind the advance knowledge economies in innovation (World Economic Forum, 2018).

2. Foundational concepts

2.1 *Knowledge economy definition and development*

In today's economy, knowledge has become a new source of capital to be evaluated, advanced and managed as a business investment. Nowadays, the implication of knowledge is considered by what it can produce, has transformed to be the main factor of manufacturing and is the source of creating new knowledge (Drucker, 1994).

The Organization for Economic Co-operation and Development coined the term knowledge-based economy, more commonly referred to as a “KE” “an economy, which is directly based on the production, distribution and use of knowledge and information” (OECD, 1996, p. 7). Similarly, The World Bank (2007) considered knowledge application in all types of innovation in technology a major resource for creating capital and jobs and hence generating value and competitiveness for the development of countries.

In a KE, knowledge is produced, collected, transferred and used more efficiently by individuals, enterprises, establishments and communities to promote economic and social development. In other words, KE relies mainly on the use of intangibles instead of physical abilities and the utilization of technology as resources.

2.2 *The role of knowledge management and tacit knowledge*

According to Dunford (2000), the augmented emphasis on KE and knowledge society has certainly directed to the development of knowledge management (KM) regardless of the nature of business setup. Nonaka (1994) suggested that as knowledge has become a source of capital investment, a mindset shift regarding the process of creating new knowledge in organizations has to be developed.

KM is a combined term for the facilitation of enhancements to an institute's competencies, productivities and competitive advantage through the enhanced use of its individual and cooperative knowledge and information resources. There are a number of KM approaches (Alvesson and Kärreman, 2001; Prusak, 2001) but, basically, the aim is the effective utilization of information and knowledge within institutes, mainly the intellectual resources of individuals, that lead to improved performance.

Venkatraman and Venkatraman (2018) denote that knowledge is found in both tacit and explicit formats in institutions and is considered as the main source of its competitive advantage. They go on to clarify that explicit knowledge is information that is found in any written or codified form including internet. Whereas, tacit knowledge is profoundly engrained in the individual's minds and has been attained through experience and work done or knowledge acquired over opinions communed by professionals while solving problems and making decision strategies.

2.3 *The role of sharing knowledge and innovation*

KM is specifically concerned in transferring tacit knowledge into explicit knowledge and vice versa in an escalating cycle of development and renewal. Nonaka and Takeuchi (1995) created a spiral cycle for transferring Knowledge and coined it as the “knowledge spiral” which drives innovation specifically if networked and leveraged through numerous parties.

Sharing knowledge that comes in many forms and from anywhere internal or external to organizations results in new knowledge, hence innovation. Innovation can be a product or a service, which is either new or improved; and can be a process or a business practice in an organization, but whatever is the outcome of innovation, it is a major economic driver in all segments of the economy (OECD, 2007).

In their paper, Griffiths *et al.* (2011) discussed Bahrain’s stage of innovation as being at a primary stage, but asserted that the government had already acknowledged that, and had begun drawing new policies intended for, more transparent practices, and forceful quality assurance and control programs. Yet, it was observed in this research that in 2018, and after seven years of the Griffiths *et al.* (2011) recommendation, Bahrain still lagged behind in quality of scientific research institutions, capacity for innovation, company spending on R&D and university–industry collaboration on R&D being ranked 73, 67, 56 and 45, respectively out of a total of 137 countries as revealed in the 2017 Global Competitiveness Index (World Economic Forum, 2018).

As Modara and Bennet (2017) state, “Innovation is a process full of diversity and risk for creating something new. To understand the important role of innovation in an economy, one has to first understand the concept of innovation” (p. 515). This research addresses innovation in a macro level by examining the influence of the knowledge sharing of individuals in the government and the private sector in collaboration to influence the advancement of innovation activities in the developing KE of Bahrain.

2.4 *The role of the innovation ecosystem*

The notion of innovation ecosystem appeared in early 2000 to address the demands of the emerging KEs in which the creation of innovations and the related development processes for these innovations were gradually becoming non-linear and more network based (World Economic Forum, 2015). Jackson (2011) stated that an innovation ecosystem is an economic model that aims at enabling technology progress and innovation. It comprises two distinctive economies, the first one, KE, which has research as its driver, and the second one being a commercial economy, which is charted by the marketplace. These two economies are linked since the outcome of research, translates into innovation, converts into value in the commercial economy after which a part of that value would then inject back into the KE as an investment for R&D to produce new knowledge.

The researchers of this paper did not find in the literature one single formula for constructing a successful innovation ecosystem because these ecosystems depend on the local culture and environment, the nature of the innovation and its processes, the impact of those innovations on the local economy, and the period those ecosystems need in order to mature. Other difficulties involve the nature of each actor or stakeholder taking part in those ecosystems and their goals. The researchers reached a conclusion that an effective innovation ecosystem came by from lengthy development of collaboration of the tacit knowledge of those actors in order to reach a common goal.

2.5 *The role of collaboration and communities of practice (CoP)*

The researcher Nour (2014) reached the conclusion that in order for the Arab countries to transfer their economies to a KE, they had to recognize the vital role of the private sector and the important role that collaboration held concerning public and private sectors to generate clear tactics for this transfer. The researchers attempted to bridge the gap of the government

and private sector collaboration (GPC) in Bahrain by identifying the kind of collaboration needed to influence innovation activities in a developing KE.

Bennet *et al.* (2015) perceived collaboration as a procedure in which two or more units join to make new knowledge by tactics in bringing their mindsets and existing assets and knowledge jointly to share, relate and influence those mindsets to produce value to both of their units. Guzman and Sierra defined collaboration as a cooperative arrangement, in which two or more parties work jointly toward a common aim.

Lave and Wenger (1991) express that the term communities of practice (CoP) began as a means to enable knowledge sharing in a learning environment. CoPs are cooperative, collaborating networks of entities within a commonly distinct area of knowledge and have become a feature of KM literature in recent years (Lesser *et al.*, 2000). According to Wenger and Snyder (2000), “people in communities of practice share their experiences and knowledge in free-flowing, creative ways that foster new approaches to problems” (p. 140) and these new methods can produce progressive tangible benefits.

3. Research model and questions of the study

Concentrating on the Kingdom of Bahrain and its journey to build a KE, this research highlights where innovation development stands in Bahrain and determines what roles the government and private sector play in collaboration to advance the processes of this development. Recognizing the importance of the government and private sector in this venture, the main research questions are:

RQ1. What is the role of the government and private sector in collaboration to drive innovation forward in Bahrain?

A country goes through a long process to develop a KE, which in itself is inclusive of the existence of many crucial elements of which a major one is innovation. That recognition led to the first sub-leading question:

RQ1a. How is innovation defined and induced in a KE?

Once the first question is answered and the indicators of innovation inducement recognized, the investigation of where the government and private sectors stand in regard to their participating roles in a developing economy leads to the second sub-leading question:

RQ1b. What is the nature and current state of the GPC in support of innovation in Bahrain?

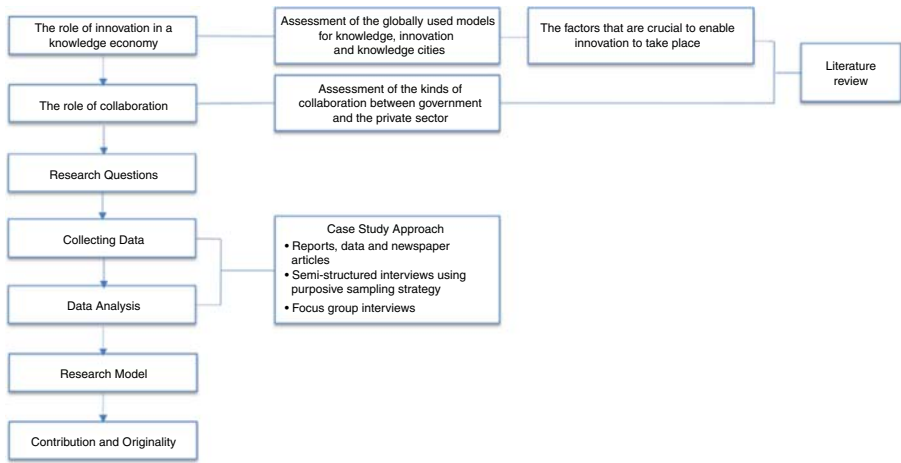
An illustrated framework (see Figure 1) was constructed by the researchers as a guideline during this study.

4. Research methodology

This study was based on constructionism epistemology, which views that all knowledge is subject to human practices constructed through the interaction between them and their world, which is further developed and conveyed within an essentially social environment (Crotty, 1998).

The qualitative research methodology was the most suitable choice for this study as it is a generic expression that denotes a collection of methods and means of data collection and analysis. The focus is on connotation of these data that are naturally interpretive or descriptive (Noble and Smith, 2014). Reality is constructed by the study of participants and the researcher, with the importance given to the intensity of data collected rather than the number of recruiting samples.

Figure 1.
Conceptual research
method map



This research model was tested through discussions and agreements between researchers, city planners, policy makers and leaders of the Kingdom of Bahrain as knowledge by its nature is context sensitive and situation dependent (Bennet *et al.*, 2015).

Case study was the method used. Yin's (2014) definition of case study research is "an empirical inquiry that investigates a contemporary phenomenon (the "case") in depth within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (p. 16), which is the situation with the government and private sector's collaboration in Bahrain. Given the nature of this research as an in-depth study of a contemporary phenomenon (i.e. collaboration of government and private sector), in a complex environment (i.e. Bahrain's economy), where a variety of stakeholder perspectives with specific focus on the four fields inclusive of the financial, education, ICT and the industrial sectors were sought, and where the underlying research philosophy was based on an interpretive understanding of the world, the case study strategy was chosen to meet the needs of this research.

According to Yin (2014), "A major strength of case study data collection is the opportunity to use many different sources of evidence" (p. 119). Analysis of case study methods done on cases that use several sources of data are regarded more highly with regards to their overall value. In addition, the furthestmost vital advantage offered by using numerous sources of data is the development of joining lines of inquiry (Yin, 2014). Figure 2 illustrates the five major sources of data for this case study.

5. Data collection and analysis

5.1 Data collection

In order to get to the crucial information needed to address the purpose of this study and pave the road for the end results, leaders of key entities in Bahrain's public and private institutions were interviewed; hence, a purposive sampling approach to target key entities in Bahrain's public and private institutions was opted for the interviews. Etikan *et al.* (2016) define purposive sampling as "The purposive sampling technique, also called judgment sampling, is the deliberate choice of a participant due to the qualities the participant possesses" (p. 2).

In terms of this research, 22 higher management professionals who held and were able and willing to offer the knowledge and/or experience they possess that was relevant to the study at hand were chosen from the four sectors of society that contribute to the economy in Bahrain. These sectors are the financial sector, industry, tertiary education and ICT and

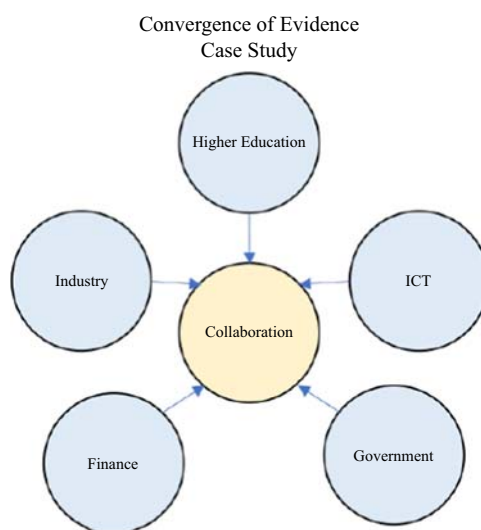


Figure 2.
The five major
sources of data for the
case study

were chosen to serve as the units of analysis for the fieldwork. The questions asked by the interviewers ranged from general innovation potentials in Bahrain, the status of ICT infrastructure and the nature of the existing collaboration between the government and the private sector in Bahrain.

In addition to the individual interviews, three focus group sessions were conducted as an added source of data triangulation to allow for more clarification and validation of the findings of the individual interviews and the support documents. In these focus groups, the researcher presented the findings of the individual interviews and allowed the participants in the focus groups to discuss and express their perspectives regarding these findings. The focus group participants were from investment, academia and project developers' arenas. The focus group participants' interactive responses enabled the researcher to explore the findings in greater depth from the perspective of knowledge workers' practical experience in contrast to the professionals' personal views interviewed individually. What emerged, after the group interviews were transcribed and analyzed, either validated the individual interview findings or allowed unforeseen ones to emerge.

Secondary evidence was also collected from such sources as newspaper articles, government reports and official documents which provided additional clarifications regarding what was stated by the interviewees and a valid point of comparison, thus allowing for limited data triangulation.

5.2 Research findings

The first sub-leading question of this research, *RQ1a* regarding innovation definition and its inducement elements in a KE was countered by studying the frameworks which are used to measure the capacity for and success of innovation in a country. Reviewing those frameworks gave the researchers parameters that are beneficial in recognizing appropriate elements and markers for innovation to be considered in a related frame for a developing KE. The three frameworks studied were KE Index (The World Bank Institute, 2008), Global Innovation Index (GII, 2017) and The Most Admired Knowledge City Index (World Capital Institute, 2008). The three frameworks' variables were explored and correlated by the researchers to investigate the commonality of innovation inducing factors amongst these

models that lead to knowledge creation, innovation and subsequently development of a KE. Collaboration for the sake of innovation as a market phenomenon (Lember *et al.*, 2014) correlated with the innovation inducing elements of the three frameworks analyzed earlier by the researchers and were added to them.

Putting together the innovation elements extracted from the four frameworks analyzed resulted into five distinct milieus: government; education; ICT; private sector; and innovation that steered the researchers in constructing Table I. This table facilitated the researchers in confining the areas that could be probed in relation to innovation progress in a developing KE and subsequently paved the road on which would be investigated to reach for an innovation ecosystem model for Bahrain as an end result needed to complete this project.

The answer to the second sub-leading question, *RQ2a*, regarding the current nature and state of the GPC emerged as a theme for specific innovation project that had already started for two years in the financial sector. The project contained various collaborative activities that were perceived to have increased especially amongst government bodies, specifically between the Economic Development Board (EDB), who are the promoters of investment in Bahrain, the Central Bank of Bahrain (CBB), which is the regulatory body of the financial sector, and the Ministry of Commerce, Industry and Tourism (MOCIT), which is comprised of the regulators and authorizers of the commercial and industrial sectors, respectively. All of those entities' collective activities would not have been possible without the presence of the state-of-the-art ICT infrastructure that Bahrain is globally known to own according to the International Telecommunication Union (2017) report and the e-Government portal (eGovernment, 2018).

These collaboration efforts were affirmed by the investment focus group as they agreed that "Based on our experience collaborating with other government entities has been much easier and smoother than collaborating with the private sector." According to this group it was the common interest of EDB, CBB and MOCIT, that of Bahrain developing a KE, and the openness of the individuals from these entities in sharing their expertise and tacit knowledge that facilitated in building a sense of community of interest and culture of trust.

The result of this knowledge sharing collaboration was predominantly recognized when policies for the specific innovative financial technology (FinTech) regulations and its commercial registration counterparts were developed. Figure 3 is a representation of the collaborative roles of the government and the financial sector in the FinTech project. The role of the private sector was displayed in the financial sector as the innovation producers, where the banking sector started a trend of innovation activities by producing and offering services that were technology driven and regulated by CBB such as crowdfunding, the sandbox framework and cyber security for securing digital financial activities. Further, new bankruptcy laws were released by CBB to back those businesses that failed and could not survive in order for the government to encourage and incentivize entrepreneurs to build new and risky innovative businesses. These laws resulted into a new platform for entrepreneurs to be created.

The collaborative role of the government and the private sector for innovation activities was manifested into the government being the facilitator for the private sector's innovation activities and the private sector the producers of the innovative products and services as clearly stated by one of the financial managers interviewed "The government is a facilitator that should create the environment for companies to develop new products and business models and then get out of the way of their day-to-day work," That perspective was also perceived by the researcher in the academia focus group when one participant stated that "The government is about institutions, and in a KE it is the institutional structure of the state that basically provides the facilities for innovation."

GII	MAKCi	KEI	GPC market orientation
<i>Government environment</i>			
1-Nurturing an institutional framework that attracts business and fosters growth by providing good governance (1–1), correct levels of protection (1–2), and incentives (1–3)	2B2-City's Future Management. Existence of the City's Future Centre or formal enablement of its functions through another kind of innovation initiative (1–4) 5A1-Ethnic diversity (1–5) 6B3a&b-City's cultural diversity (1–6) and tolerance capacity (1–7) to relate empathically and assertively with people of a different race, social, cultural or economic background 8A1c-Innovation capacity of the public sector (1–8) Structural capacities of government bodies (1–9) 8B1c-E-government: coverage, transparency, accessibility, and usability, content, services, participation (1–10)	1–1Regulatory quality (1–11) 1–2Rule of Law (1–12) 1–3Government effectiveness (1–13) 3–11E-government (1–14)	a-Providing organizational framework for knowledge generation (1–15) and innovation activities (1–16) c-Delivering innovation policy (1–17) and linking to specific projects (1–18) d-Selecting suitable partners to produce innovative products, services, and processes (1–19)
<i>Education environment</i>			
2-The level and standard of education (2–1) and research activity (2–2)	5B1c-Number of individuals (2–3) and quality of their performance (2–4) in formal education system 8A1b-Innovation capacity of the education (2–5), university curricula life cycle (2–6)	2–1Adult literacy rate (2–7) 2–2Secondary Enrollment (2–8) 2–3Tertiary Enrollment (2–9) 2–11QualityICT of science and math education (2–10)	a-Providing organizational framework for knowledge generation (2–11) and innovation activities (2–12) d-Selecting suitable partners to produce innovative products, services, and processes (2–13)
<i>ICT environment</i>			
3- ICT access, use, e-government, online participation of citizens (3–1)	8B-Infomaiton and telecommunications functional capacities. (3–2)	3–1Telephones (3–3) 3–2Computers (3–4) 3–3Internet Users (3–5)	a-Providing organizational framework for knowledge generation (3–6) and innovation activities (3–7) b-Providing innovation related -infrastructure (3–8) d-Selecting suitable partners to produce innovative products, services, and processes (3–9)
<i>Private sector environment</i>			
4-The availability of credit (4–1) and an environment that supports investment (4–2), access to the international market	8A1a-Innovtion capacity of the private sector 4–4), new business incubation and creation (4–5), preparation of high-value new business	2–6Soundness of banks (4–8) 2–8Professional and technical workers in labor	a-Providing organizational framework for knowledge generation (4–11) and innovation activities (4–12) d-Selecting suitable

(continued)

Table I.
The innovation
conductive elements
for the five
environments

Table I.

GII	MAKCi	KEI	GPC market orientation
competition, and market scale (4–3)	creation (4–6), and survival of new businesses (4–7)	force (4–9) 4–17Availability of VC (4–10)	partners to produce innovative products, services, and processes (4–13)
<i>Innovation environment</i>			
5-Conduciveness of firms to innovation activities (5–1), employing knowledge workers (5–2), and R&D (5–3).	5B1e-Knowledge-intensive competencies (5–4) Individual capacity. Number of individuals and quality of their performance in formal production activities (5–5) 6B4-Entrepreneurship. Collective capacity to create new high-value businesses. (5–6) 6B5-Innovation. Collective capacity to conceive (5–7) and effectively develop new ways to add value in any relevant human activity (5–8) 8A1b-Innovation capacity of the scientific and technological establishment (5–9), scientific citations and networking, patents and licenses. (5–10)	4-2Patent Count (5–11) 4–3Scientific and technical journal articles (5–12) 4–6Science & engineering enrollment (5–13) 4–11Research collaboration between companies and universities (5–14)	

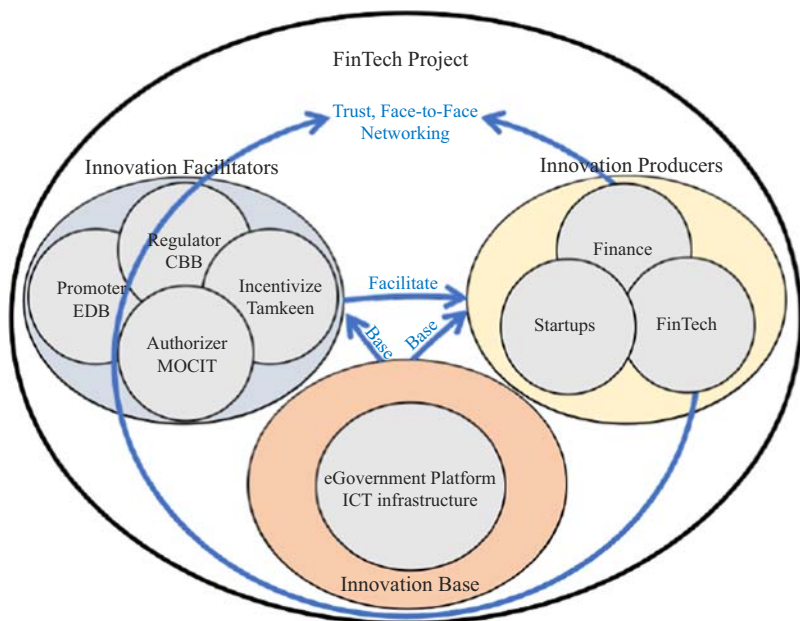


Figure 3.
The collaborative role
model for the
FinTech project

The role of the government was further dissected into promoter, facilitator and the entity that incentivizes and supports building the capabilities of the human capital. These incentives are provided through the human capital development body (Tamkeen), which produces programs for the new technology skills or financially supports individuals seeking certificates in those programs. This was expressed by one of the private sector interviewees as, “The government should incentivize as they did in the successful case of Tamkeen by supporting the capacity building of the small and medium enterprises indirectly.” Tamkeen is a public authority which was founded in 2006 with a primary objective of fostering the development and growth of the organizations and providing support to enhance productivity and training of the national workforce (Tamkeen, 2018).

Based on the FinTech project model as drawn earlier (Figure 3), and the innovation ecosystem model established by Jackson (2011), the researchers recognized the entities that would remain part of innovation projects and devised the collaborative role model as illustrated in Figure 4 to outline the different roles each actor plays to contribute effectively in partnership to influence the innovation activities in the developing KE of Bahrain. By modeling the roles of the government entities and the private sector, the answer to the main question of this research was realized. In this model the government entities EDB, MOCIT and Tamkeen stay constant, while the regulatory body changes according to the private sector which is innovating. The government was also seen as the entity that creates the intangible innovations that get diffused into the developing KE as policies and regulation processes. In order to support innovation activities in Bahrain to develop further, education sector's role was brought in as builder of individuals' creative capacities and skills in the base alongside ICT and e-Government. The private sector emerged as the sole producer of tangible innovations that have direct value that gets injected into the commercial economy of the innovation ecosystem.

6. Conclusions and recommendation

The objective of this study was to explore the GPC and how it influences the innovation activities in Bahrain. The study was based on an explorative single multi-unit case study.

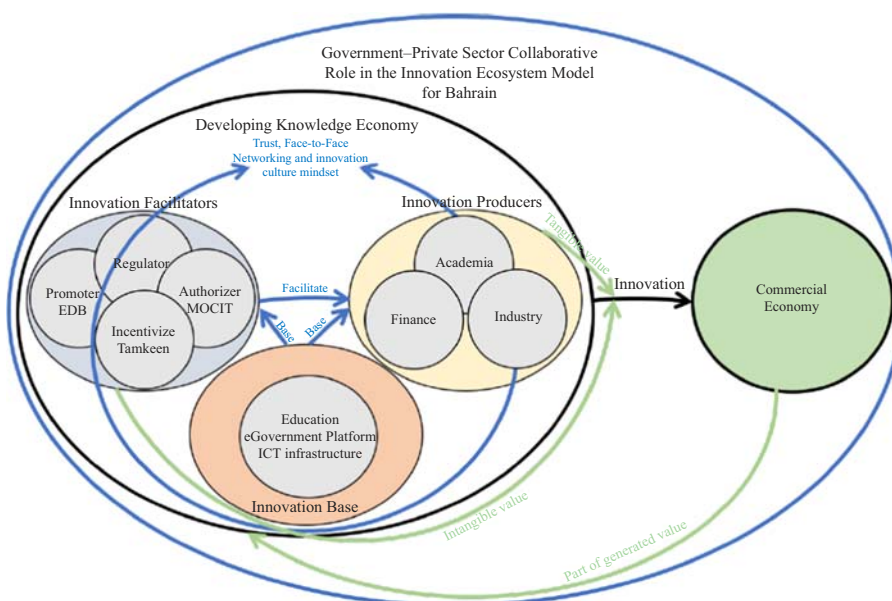


Figure 4.
The government and private sector collaborate role model for Bahrain

Establishing and maintaining a GPC strategy is a vital initiative that will nurture the innovation activities and processes in the Kingdom of Bahrain. By surfacing and defining this strategy, this research aspired to contribute to the determinations of the government leaders and the decision makers to diversify and shift the gas and oil dependent economy of Bahrain to one that is knowledge based.

Innovation in Bahrain requires an environment inclusive of material resources, human capital organizations and financial means. This environment is developed through collaborative roles taken up by all its stakeholders while enthused by policies issued and supported by the government of Bahrain as believed by the government industry expert interviewed who stated that “The private sector has to come forward. We as government need to know what they have to offer us.” On the other hand, the private sector industry professional stated that “The government should set the framework for collaboration and then set aside for the organizations to collaborate within that framework.” This necessitates strategic and active participation of both government and private sector decision makers with their unique knowledge each in their areas of expertise for the creation and management of this environment.

Hence, it is recommended that in order to get to implement the collaborative strategy, first a strategy specific to the GPC for knowledge sharing and understanding what each entity needs from the other be established for innovation processes. These strategies could be in systems based on CoP or Communities of Interest (CoI) models, which are used as tools in KM to facilitate knowledge sharing to connect expert individuals from both government and private sector involved in projects that draw policies by the government for innovation. These communities are recommended to be as centers established specifically for developing innovative projects for the city and are recommended to include amongst them EDB, MOCIT and e-Government as fundamental entities.

Management support from both government and private sector is very crucial in these centers in order to administer the collection and sharing of the appropriate knowledge needed for these guidelines such as the case in the FinTech model earlier. These CoP or CoI model-like centers would also assist in building a culture of trust amongst the government and private sector entities since they will be working toward a common goal, that of advancing innovation activities for the development of the KE that will ultimately benefit all market stakeholders and the country’s economy. This overall management will also ensure the continuity of innovation projects and the projects’ maintenance long after actualization of those ventures.

Future research could repeat this study in other units of analysis in Bahrain such as primary education, health and transportation, as this could further evaluate the current status of collaboration amongst these entities as compared to the units addressed in this research. Further, impending research should be undertaken in the industrial sector to promote innovation of scale possibilities in this sector.

7. Limitations

One of the key shortcomings of the current study was that its design was cross sectional (Saunders *et al.*, 2015); in that the findings of the project do not go beyond the current time period. Yet, it was vital to inform the decision makers the current status of the roles of the government and the private sector in influencing the innovation activities in Bahrain.

Another limitation was that this study was conducted in Bahrain and the results reached might not be generalizable to other countries. However, this research can still serve as the groundwork for further studies on the development of knowledge economies in this region, especially for the GCC countries based on their similar culture, language, religion and economies which are hydrocarbon dependent.

References

- Alvesson, M. and Kärreman, D. (2001), "Odd couple: making sense of the curious concept of knowledge management", *Journal of Management Studies*, Vol. 38 No. 7, pp. 995-1018.
- Bennet, A., Bennet, D. and Lewis, J. (2015), *Leading with the Future in Mind: Knowledge and Emergent Leadership*, MQI Press, Frost, WV.
- Crotty, M. (1998), *The Foundations of Social Research: Meaning and Perspective in the Research Process*, Allen and Unwin.
- Drucker, P.F. (1994), *Post-Capitalist Society*, Reprint ed., Harper Business, New York, NY.
- Dunford, R. (2000), "Key challenges in the search for the effective management of knowledge in management consulting firms", *Journal of Knowledge Management*, Vol. 4 No. 4, pp. 295-302.
- Economic Development Board (2017), "About EDB Bahrain", available at: <http://bahrainedb.com/about-us/> (accessed 21 July 2017).
- eGovernment (2018), "About eGovernment", available at: www.bahrain.bh/ (accessed 5 March 2018).
- Etikan, I., Musa, S. and Alkassim, R. (2016), "Comparison of convenience sampling and purposive sampling", *American Journal of Theoretical and Applied Statistics*, Vol. 5 No. 1, pp. 1-4.
- GII (2017), *The Global Innovation Index*, Cornell University, INSEAD, and WIPO.
- Griffiths, D., Maraghi, F. and Hughes, A. (2011), "Taking the lead: innovation and higher education institutions in Bahrain", paper presented at 10th International Entrepreneurship Forum, available at: www.researchgate.net/publication/305996165_Taking_the_Lead_Innovation_and_Higher_Education_Institutions_in_Bahrain
- International Telecommunication Union (2017), *Measuring the information society report 2017*, Volume 1, Geneva, available at: www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017_Volume1.pdf
- Jackson, D.J. (2011), *What is an Innovation Ecosystem?*, National Science Foundation, Arlington, VA, available at: www.researchgate.net/profile/Deborah_Jackson2/publication/266414637_What_is_an_Innovation_Ecosystem/links/551438490cf2eda0df30714f.pdf
- Lave, J. and Wenger, E. (1991), *Situated Learning: Legitimate Peripheral Participation*, Cambridge University Press, Cambridge.
- Lember, V., Petersen, O., Scherrer, W. and Agren, R. (2014), "Innovation in public services: private, public, and public-private partnership", *9th Regional Innovation Policies Conference, Stavanger, 16-17 October*.
- Lesser, E.L., Fontaine, M. and Slusher, J.A. (Eds) (2000), *Knowledge and Communities*, Butterworth-Heinemann, Boston, MA.
- Modara, M. and Bennet, A. (2017), "The impact of government-private sector collaboration on innovation in a developing knowledge economy", *Proceedings of the International Conference on Sustainable Futures – ICSF*, pp. 513-521.
- Noble, H. and Smith, J. (2014), "Qualitative data analysis: a practical example", *Evidence-Based Nursing*, Vol. 17 No. 1, pp. 2-3.
- Nonaka, I. (1994), "A dynamic theory of organizational knowledge creation", *Organization Science*, Vol. 5 No. 1, pp. 14-37.
- Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company*, Oxford University Press, New York, NY.
- Nour, S. (2014), "Prospects for transition to a knowledge-based economy in the Arab region", *World Journal of Science, Technology and Sustainable Development*, Vol. 11 No. 4, pp. 256-270.
- OECD (1996), *The Knowledge-Based Economy*, Organization for Economic Co-operation and Development, Paris.
- OECD (2007), "Innovation and growth: rationale for an innovation strategy", available at: www.oecd.org/sti/inno/39374789.pdf

- Prusak, L. (2001), "Where did knowledge management come from?", *IBM Systems Journal*, Vol. 40 No. 4, pp. 1002-1007.
- Saunders, M., Lewis, P. and Thornhill, A. (2015), *Research Methods for Business Students*, 5th ed., Pearson Education, New York, NY.
- Tamkeen (2018), "Individuals support", available at: <https://portal.tamkeen.bh/ind/Public/CertificatesList?pro=BS>
- The World Bank (2007), "Building knowledge economies".
- The World Bank Institute (2008), *K4D Knowledge for Development*, Washington, DC.
- Venkatraman, S. and Venkatraman, R. (2018), "Communities of practice approach for knowledge management systems", *Systems*, Vol. 6 No. 4, p. 36.
- Wenger, E.C. and Snyder, W.M. (2000), "Communities of practice: the new organisational frontier", *Harvard Business Review*, Vol. 78 No. 1, pp. 139-145.
- World Capital Institute (2008), *The Most Admired Knowledge City: Executive Summary*, The World Capital Institute and Teleos.
- World Economic Forum (2015), "The global competitiveness report 2015-2016", Geneva, available at: www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf
- World Economic Forum (2018), "The Arab World Competitiveness Report", Geneva. available at: www3.weforum.org/docs/Arab-World-Competitiveness-Report-2018/AWCRpercent202018.0724_1342.pdf
- Yin, R.K. (2014), *Case Study Research: Design and Methods*, 5th ed., SAGE Publications, Los Angeles, CA.

Further reading

- Alwis, R.S., Hartmann, E. and Gemunden, H.G. (2004), "The role of tacit knowledge in innovation management", competitive paper submitted to the 20th Annual IMP Conference in Copenhagen.
- Bennet, A. and Bennet, D. (2004), *Organizational Survival in the New World*, Butterworth-Heinemann, Amsterdam.
- Creswell, J.W. (2014), *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 4th ed., SAGE Publications, Thousand Oaks, CA.
- Porter, M.E. (2001), "Strategy and the internet", *Harvard Business Review*, Vol. 79 No. 3, pp. 62-78.
- Swart, J. and Kinnie, N. (2003), "Sharing knowledge in knowledge-intensive firms", *Human Resource Management Journal*, Vol. 13 No. 2, pp. 60-75.
- United Nations Development Programme and Mohammed bin Rashid Al Maktoum Foundation (2014), "Arab knowledge report 2014: youth and localisation of knowledge", available at: www.undp.org/content/dam/rbas/report/UNDP-GENERAL-REPORT-ENG.pdf

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