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Incubators, Economic Development, and Diversification in Developing Countries

Hanadi Mubarak AL-Mubaraki[1*] ,Ali Husain Muhammad[2] ,Michael Busler[3]
1.College of Engineering, Kuwait University, Kuwait
2.College of Business Administration, Kuwait University, Kuwait
3.Richard Stockton College, USA
*E-mail of the corresponding author: dralmubaraki@live.com

Abstract
Purpose: The aim of this paper is to investigate, analyze, and identify the ratio of performance indicators for each incubator over the years of establishment in developing countries including Kuwait as well as GCC.
Design methodology/approach: The methodology of this study is qualitative, consisting of literature review and multi-case studies. This investigation uses three case studies and the data was mainly collected by direct interview with five managers and analysis of organizational documents from Kuwait. The authors' professional experiences on the topic provide the foundation for the paper.
Findings: The findings of this research can help incubator managers, policy makers, and government parties for successful implementation. Also, the findings add new knowledge for academic literature on incubators and economic development.
Originality: The authors believe that this paper has proven successful implementation of incubators and economic development. The recommendations will be helpful for both academicians and practitioners who are interested in incubators.
Keywords: Economic development, incubators, economic diversification, job creation, entrepreneurship.

1. Introduction

Business incubation programs are distinguished by commitment to industry best practices for economic development and diversification (Allen, 1988; Gerl, 1996; Hayhow, 1997; Meeder, 1996a, 1996b; Rice, 1992; Roper, 1999; Sherman, 1999; Whettingsteel, 2000; Adkins, 1996; Bearse, 1993; Bruton, 1998; Bykova, 2000; Forst, 1996; Jorge, Malan and Lalkaka, 2002; Mian, 1994; Carroll,1986; Al-Mubaraki, 2008; Al-Mubaraki et al., 2014; Al-Mubaraki and Busler 2013a). The incubator itself is a dynamic model of sustainable, efficient business operation and has positive impacts on its community's economic growth by maximizing the success of emerging companies, having the means for selecting clients helps differentiate between business incubation programs and other entrepreneurial support initiatives (NBIA, 2010). Many studies have proven the success and importance of incubators (Culp, 1996; Lumpkin and Ireland, 1988; Merrifield, 1987; Kuratko and LaFollette, 1987; Bearse, 1988). In addition, there are several success factors from three perspectives: 1) Community – entrepreneurial community support, networking, education and linkage with university; 2) Incubator– success indicators, finance, follow up for incubatees, managerial support, clear policies of entry/exit; and, 3) Incubatee – business awareness and success survival rate (Smilor, 1987; Campbell et al., 1985; Merrifield, 1987). Furthermore, there are several services offered by the incubator management such as assisting with business planning, mission statements, strategic planning, and budgets, although only half of incubator managers participate in the planning process (Fry, 1987).
The objective of this paper is to investigate and identify the ratio of performance indicators for each incubator over the years of establishment in developing countries including Kuwait as well as other Gulf Cooperation Council (GCC) member states. The paper focuses on two performance indicators including the number of client companies in the incubation program and the number of graduate companies from incubation programs.
The remainder of the paper is as follows: Section 2 provides a thorough review of the literature on incubator success worldwide. Section 3 shows the results of four successful case studies in order to illustrate different approaches of value-added incubators and five interviews in Kuwait. In section 4 the authors briefly discuss the study's findings. Section 5 concludes on incubators as value-added programs from developing countries.

2. Review of the Literature on Incubator Success

Al-Mubaraki et al. (2013a) conducted a qualitative study that included ten multi-case studies in developed and developing countries and four interviews in United States. The findings of this study clearly indicate that incubators in developed and developing countries can play an active role in local and regional economic development based on their growth, the number of clients served, and the number of graduate companies. Most of the incubator programs offered a wide variety of strong, tangible services, such as facility, finance, and advisory services. They also tend to focus on mentoring, networking, strategic partnering, promoting culture change, and fostering an entrepreneurial environments, technology transfer, and commercial technology. This is

evident in both the developed and the developed countries.

Al Muburaki et al. (2013b) used a qualitative approach consisting of one semi-structured interview and a review of organizational documents to study an incubator in the United States. The research findings suggested three key categories of outcomes: 1) high number of jobs creation, high number of graduate companies and high survival rate of tenants lead to economic development, 2) high cooperation of R&D and high innovation lead to technology commercialization, and 3) high sustainable growth, high entrepreneurial climate and high smart-growth networking lead to fostering entrepreneurship.

Another study indicated that some innovation centres perform better than others. Several reasons may contribute to this difference in performance: 1) if the innovation centre is established earlier than other centres, this will reflect positively on the sustainable survival rate; 2) innovation centers that construct strategic relationships with an international organization such as European Business and Innovation Centre Network (EBN) and governmental bodies were characterized by technology transfer and successful best practices; 3) Incubators that offered value added tangible and intangible had a high number of tenants in incubators program and high number of start-up companies; and 4) a case study showed that the UK presented high numbers of jobs creation over the years (Al-Mubaraki and Busler, 2013b).

A study by Al-Mubaraki and Busler (2013c) used quantitative and qualitative approaches involving five international case studies and a survey. Their findings regarding sustainable growth of business incubators were: 1) clear goals

increase the rate of graduation companies from incubation programs, 2) a high survival rate of companies (ranging from 81-90% in this study) predicts sustainability of companies in the market, 3) a high rate of employment creation leads to economic development, and 4) an active role of cooperation of R&D contributes positively to technology transfer and growth in the rate of patents.

A comparative study of incubators in the United States and Brazil employs a case analysis which describes a number of aspects of business incubation and then compares them based on six dimensions, which include strategic focus, entrepreneurship, incubator funding, incubator's services, culture, and innovation. The study concludes with findings in the six dimensions studied: 1) Strategic focus: economic development, technology transfer, jobs creation are significant, 2) Entrepreneurship: very active in both the U.S. and Brazil, 3) Incubators funding: the stakeholders are mainly the government, businesses and universities, 4) Incubators services: both countries provide tangible and intangible services, 5) Culture: in U.S. it is risk-taking whereas Brazil it is risk-averse, 6) Innovation: very active in both the U.S. and Brazil (Al-Mubaraki and Busler, 2012).

A study by Schwartz (2009) examined the survival of 352 firms from five German business incubators after their graduation. The results suggest two points: 1) graduation causes an immediate negative effect on survival that lasts 3 years after graduation from incubators, and 2) the performance during the incubation period is an indicator of the propensity of business closure after graduation.

Scilltoe and Chakrabarti (2010) highlighted the importance of counselling and networking interactions with incubator management for enabling the incubation of new ventures. The study's findings suggest that: 1) business assistance, in the form of venture learning about buyer preferences, is best enabled through counselling interactions with incubator management, 2) learning buyer preferences was not enabled through networking interactions, 3) technical assistance, in the form of venture learning technological know-how skills, is best enabled through networking interactions with incubator management, and 4) learning technological know-how skills was not enabled through counselling interactions.

A final study indicated that the indirect effects of new business formation have greater magnitude than the direct effects such as job creation. The peak of the positive impact of new businesses on regional development is reached about eight years after entry (Fritsch and Mueller, 2004).

3. Research Methodologies

This present study concentrates on the specific context of incubators, economic development, and diversification. This study used a qualitative approach including three multi-case studies from the countries of Brazil, China, and India, and interviews of five incubator programs in Kuwait (Bryman and Bell, 2007). This approach allows a broader assessment of a particular and real situation and allows researchers to gain an in-depth understanding of the phenomenon under investigation (Yin, 1994, 2004, 2009; Eisenhardt, 1989). The multiple data collection methods used in conducting three case studies in developing countries by using different methods of data collection is supported by valid and reliable case findings and reports (Bryman et al., 2007; Yin, 2009). The sources for data collection include documentation, archival records, interviews, observation, and physical artefacts.

3.1 Case Studies in Developing Countries

3.1.1 Brazil

Chandra and Fealey (2009) and Chandra (2007) define incubators in Brazil as the provision of unique and specialized services to support new businesses by providing an innovative climate for their growth through

guidance and consulting in addition to offering space and operational infrastructure. There are 400 incubators in Brazil and most incubators were established in university and academic intitutions (Lalkaka and Bishop, 1996). Incubation programs promoted startup companies in a process that fostered entrepreneurship and economic development. The Brazilain incubators strategically focused on technology transfer, the reduction of unemployment by creating jobs and fostering an entrepreneurial climate as a means of social development (Chandra 2007; Akçomak, 2009; Al-Mubaraki and Busler, 2012).

Furthermore, funding for incubators in Brazil was based on government, universties,and business sources. While universities had a very active role , government had a more modest role with respect to other priorties. Both sources played vital roles in the establishment of incubators over the years. Well managed incubators act strongly with all tenants by providing an optimal mix of tangible and intangble services (Akçomak, 2009).

3.1.2 India

In India, the incubators' goals are entrepreneurship, technology transfer, and research commercialization with strategic focuses on jobs and ventures creation (InfoDEV, 2008; Al-Mubaraki, Amed and Al-Ajmei, 2014). The tangible and intangible services offered by incubation management include facilities, business information, advisory services and training in business management. Incubators funded in India by the government with present role of universities and goverment as main players in the success of incubators in India (InfoDEV, 2008). There are 50 incubators in India as compared with 400 in Brazil, based on the United Nation and World Bank. InfoDev, a partnership of international development agencies, supports financially the establishment of incubation programs in five locations including Mumbai, Tiruchirappalli, Ahmadabad, Chennai, and Tellore (Akçomak, 2009).

3.1.3 China

By 2007, there were more than 500 incubators in China that promoted over 600,000 employees (Chandra, 2007). The incubators' goals were entrepreneurship, income generation, job creation, policy impact, profitable enterprises, and research commercialization with strategic focus on social aspects such as fostering entrepreneurship. The main incubator funding bodies in China were the government and universities, often in active cooperation with each other in supporting incubator programs. In addition, incubator management offered mostly tangible and intangible services including facilities, finance, business information, advisory services, mentoring/coaching, training in business management, international business services, networks and synergy. Incubators in China facilitate linkages between incubatees, networking events, and technology transfer (Al-Mubaraki, Amed and Al-Ajmei, 2014). In China incubators established an average of 60-70 firms, and the incubators offered low cost services such as low rent which can be 50% below the market rent. Also, the incubators in China focused on innovation and techology to provide the industry with high technology–driven market economy (Harwit, 2002). With respect to the vital role of the Chinese government in supporting the incubation program, the ministry of science and technology developed a special program to serve the objectives of the incubators. The program's name is High Technology Industry Development Centre (Torch). This program is financially supported by the government. The main role of the Torch Program is constructing and operating the incubation program using the latest technology, for example, the innovative incubator type, by providing financial support and assistance for scholars who plan to implement a creative idea in China (Akçomak, 2009; Ling et al., 2007).

3.2 Kuwait Interview

Today, small and medium companies play a vital role in developing Kuwait's economy through jobs creation and fostering an entrepreneurial climate. Kuwait's government also has played a vital role in constructing and investing in small and medium enterprises via Kuwait Investment Authority (KIA), which focuses on entrepreneurship, economic development, and diversification. In addition, KIA developed three different portfolios in order to achieve these goals.

1) The National Investment Fund Portfolio developed three companies: i) Kuwait Small Projects Development Company (KSPDC), ii) Industrial & Financial Investments Co. (IFIC) (Al-Raeda), and iii) KIPCO Asset Management Company (KAMCO); 2) Handicraft and Small Enterprises Financing Portfolio, operated by the Industrial Bank of Kuwait (IBK); and 3) the portfolio developed by the National Technology Enterprise Company (NTEC). Furthermore, all these portfolios invest in different sectors including industrial, vocational, trade, and services. Finally, each portfolio includes general conditions for entrepreneurs in regards to the policy of entry and exit.

The interview respondents were asked a number of questions about their start-up companies and incubators in Kuwait. All interviewees reported that there are no incubation programs in KIA, but they investigate in venture capital. These five companies offered wide tangible services, such as finance, financial and management follow up after establishment, financial incentives for a few months in the start-up period, and the length of tenancy for the start-up companies towards exit policy. It was clear in all companies that the mechanism of incubators is passive.

As shown in table 1, the five companies present seven performance indicators including company goals,

company invested sectors, services provided by companies, company's year of establishment, number of client companies, number of graduate companies, and company success rate.

4. The findings

According to table 2, all countries are presented with three performance indicators: years of establishment, number of client companies, and number of graduate companies. The oldest program in Kuwait 5 was founded in 1997, and the newest program founded was Kuwait 1, in 2009. In addition, Kuwait 3 had the highest number of client companies, at 500, and Kuwait 1 had the lowest number, at 12. Furthermore, China1 had the highest number of graduate companies, at 45, and Kuwait 4 had the lowest number, 9.

Table 3 presents the ratio of performance over the number of years a particular incubator has been in operation. It is evident that some incubators are performing better than others. For example, Kuwait 2 presents the highest ratio of graduate companies, at 5.71 per year. Moreover, Kuwait 5 shows the longest time of operation, at 16 years. Furthermore, Kuwait 3 indicated the highest ratio of client companies, at 33.33 per year.

5. Conclusions

In conclusion, business incubators contribute positively in developed countries. They produce results such as: support of economic diversification, technologies commercialization, fostering entrepreneurship, job creation, and wealth building. The real interview with program president provided much vital information. Also the authors' experience in the topic will be helpful in presenting the policy implications as follows:

First, a clear scope of the work is needed for each funding organization, such as the government. Currently, Kuwait Investment Authority focuses on economic diversification, technology transfer, commercialization of new technology, fostering entrepreneurship climate, and innovation accelerator. All of these outcomes indicate the successful adoption of best practices for the 21st century. Second, clear marketing plans at the local level are needed to educate the market about the benefits and value of adding incubator models with clear missions, such as creating jobs, fostering entrepreneurship, smart growth, economic growth, and sustainable growth. Third, unifying performance indicators for industry outcomes allows the assessment of investment goals to support the country's strategic planning, which sparks innovation based on the incubator model. Fourth, government supported programs are needed to help educate entrepreneurs about risk taking in incubator programs and SMEs and to provide assistance with developing business plans. Fifth, clear exit policies are needed for companies with reasonable margin rates, with a focus on helping the start-up company to survive and self-sustain in the market.

Moreover, the cases presented in this paper are all from developing countries. In future work, the authors plan to examine cases from other regions such as the Gulf Corporation Council (GCC) and Middle East. By doing so, we intend to describe and analyze along key dimensions derived from the case studies. The results highlight the similarities and differences between the countries. Such analysis will add new and useful knowledge for both academics and practitioners who are interested in the incubators and innovation programs.

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Dr. Hanadi Mubarak AL-Mubaraki is an Assistant Professor in Kuwait University. She teaches project management in civil engineering for undergraduate and graduate courses as well as management course in business schools. She has published scientific articles in different academic journals, a book and has presented her research papers in many countries. Dr. AL-Mubaraki is the recipient of several international awards and medals for contribution to International Scientific Research in the WHO'S WHO IN THE WORLD 2009, 2010, 2011 & 2012 and Deputy Director General of Asia – IBC, Life Fellowship – IBA, International Peace Prize – United Cultural Conventions - UN, IBC Illuminated Diploma of honours of Professional Education 21st century award for Achievement, International Educators of the year 2004, Medal 2005, DDG Medal 2005, International Who's Who of Professional Educators 2003, 2004, 2005, 2006, 2007, 2012, Madison Who's Who professionals Life Fellowship, Marquis Who's Who, Master Degree Honour Medal 1996 – Kuwait University from HH Sheikh Jaber Al-Ahmed Al-Sabah, the Amir of Kuwait. Dr. AL-Mubaraki serves on the Editorial Board of three international journals: Business, Economic Development, Management and International Business Entrepreneurship. She has substantial experience in research entrepreneurial and small enterprise finance, entrepreneurship in developing countries, economic development, business incubators and impact of incubators on economic development, technology parks, government policies towards entrepreneurship, strategic benefits of business incubation and SMEs, in-depth case studies and lessons learnt with best practical business implications for strategy and competitiveness worldwide, innovation and Entrepreneurship, sustainable development approaches and methods.

Dr. Ali Husain Muhammad is an Associate Professor of Management and head of the Management and Marketing Department in Kuwait University. He teaches management courses in the business school for undergraduate and graduate students. He has published scientific articles in different academic journals. Dr. Muhammad worked as consultant in developing work systems and organizational structures for a number of public and private organizations in Kuwait. His research interests are in organizational development, organizational design, and employees' attitudes and behaviour.

Dr. Michael Busler is an Associate Professor of Finance, Finance Track Coordinator and a Fellow at the William J, Hughes Center for Public Policy at Richard Stockton College. He teaches undergraduate courses in Finance and Game Theory as well as Managerial Economics and Corporate Finance in the MBA Program. He has been published in eight different academic journals and has presented his research in ten countries. In

addition, he has worked as a Financial Analyst for Ford Motor Company and FMC Corporation and has been an entrepreneur having owned several businesses mostly in the Real Estate development field. He earned his Doctorate at Drexel University.

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Table 1: Kuwait cases studies

Company Name	Goals	Sectors	Services	Funded Year	No. of Client Firms	No. of Graduate Firms	% Success Rate
1.Kuwait1 [KIPCO Asset Management Company- (KAMCO)]	The portfolio aims at achieving the goals of the Kuwait Investment Authority (KIA) which include developing the national economy and participating in building a human capital base in Kuwait by attracting talented and optimistic young Kuwaitis and training and preparing them to succeed in their own business, as well as creating new job opportunities in the private sector.	1. Small and medium-sized industrial, 2. technological, 3. professional, 4. craftsmanship, and 5. service projects where the capital does not exceed KD 500,000.	1. Studying the proposed project Phase 1: the initial study Phase 2: the feasibility study 2. Establishing the project 3. Managing the project 4. Exit strategy	2009	12	**N/A**	**N/A**
2.Kuwait2 [Industrial & Financial Investments Co.- (IFIC) (Al-Raeda)]	1. The establishment and participation in small and medium sized projects across all economic sectors in Kuwait. 2. Preparation of feasibility studies. 3. Financial and managerial advisory services. 4. Deal sourcing and opportunity creation.	1. Services 2. Craftsman 3. Medical 4. Food 5. Technology 6. Industrial 7. Consultancy 8. Trading 8. Educational 9. Media 10. Logistic	1. Definition and clarification of the conditions and procedures for NIFP. 2. Definition the financial procedures for the promoters and follow up implementation. 3. Financial control. 4. Follow up the projects work results. 5. Directing the Promoters to improve their projects.	2006	30	40	47 %
3. Kuwait3 [Handicraft and Small Enterprises Financing - The Industrial Bank of Kuwait (IBK)]	Portfolio financing activity and small craft			1998	500	N/A	92 %
4. Kuwait4 [National Technology Enterprises Company- (NTEC)]	1. Start-up or Partnering in high-tech specialized projects to develop the national economy and to diversify the nation's revenue streams 2. Assist in the development of nationals' technical skills and encourage their participation in high-tech projects 3. Carry out high-tech industrial, commercial, vocational, professional and service oriented projects' throughout all sectors relevant to the country's technology development needs 4. Provide consulting services for technology oriented projects as well as recommendations on the most appropriate mode of operation 5. Start or participate (invest) in technology investments and deals locally and internationally for financial gain as well as for the purpose of supporting local & regional technology developments.	1. Energy, renewable energy, environment, & water technologies 2. Information and communication technologies 3. Life sciences and biotechnologies	1. Late stage venture capital investments 2. Technology investments 3. Advisory services 4. Technology advisory services	2002	26	9	40 %
5. Kuwait5 [Kuwait Projects Company - (KDSPC)]	Industrial, service, Professional and Contracting SMEs	KSPDC have a major role in creating job opportunities, in addition to absorbing labour during the restructuring of the economy	1. The Company shall study and evaluate the economic feasibility study of the project. 2. The maximum limit of financing other local or	1997	98	N/A	N/A

5.	Franchise	and developing to meet the growing demand during the economic prosperity. The Company seeks to encourage the Kuwaiti youths to work as freelancers and works on assisting in establishing small and medium projects.		shall be K.D 400,000. 3. A special facilities program for professional projects (pharmacist, physicians, engineers) and knowledge workers. 4. Performance incentives reaching 60% offered to the initiator from the project profits, in addition to the profits due thereto against his share in the project capital. 5. The Company shall adopt the decreasing participation method as a finance of the projects so that the initiator owns the project shares on annual basis through the profits and incentives. 6. The Company shall participate in the projects established on a land owned by a Third Party, leased by virtue of an investment contract. 7. The Company shall not receive any fixed interests or fees against its participation. 8. The Company shall bear the project risks. 9. The participation of the Company shall not require presenting any mortgages or guarantees.				

Table 2: Case study performance indicators

	Case Study	Establishment Years	No. of Client Companies	No. of Graduate Companies
1	Kuwait 1	2009	12	N/A
2	Kuwait 2	2006	30	40
3	Kuwait 3	1998	500	N/A
4	Kuwait 4	2002	26	9
5	Kuwait 5	1997	98	N/A
6	China 1	1998	186	45
7	India 1	2001	18	11

Table 3: Ratio of performance indicators

No.	Case study	No. of years till 2013*	Ratio of performance indicators for each incubator over the years	
			Client Firms **	Graduate Firms***
1	Kuwait 1	4	3.00	N/A
2	Kuwait 2	7	4.29	5.71
3	Kuwait 3	15	33.33	N/A
4	Kuwait 4	11	2.36	0.82
5	Kuwait 5	16	6.13	N/A
6	China 1	15	12.4	3
7	India 1	12	1.5	0.92

*2013 (establishment year) ** No. of Client Firms / No. of years till 2013
*** No. of Graduate Firms/ No. of years till 2013

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