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INCUBATORS BEST PRACTICES IN DEVELOPED AND DEVELOPING COUNTRIES: QUALITATIVE APPROACHES

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ABSTRACT

This paper aims to investigate and identify the best practices of incubators in developed and developing countries based on the incubators outcomes such as economic growth, fostering innovation and entrepreneurship. The study nature of this research is mainly qualitative approaches (multi-case studies, literature review). This investigation uses ten case studies, and the data was mainly collected by direct interview with four international incubator managers and organizational documents from the United States, Europe and other developing countries. The authors' professional experiences on the topic provide the foundation for the paper. Results will provide incubators a roadmap for the development of new economies based on technology, as well as value added in technology transfer, innovation development, and an entrepreneurial climate. The finding of this research can help incubator managers, policy makers and government parties for successful implementation. Also, add new knowledge for academic literature incubators best practices in developed and developing countries. The authors believe that this paper has proven successful implementation of incubators in developed and developing countries and demonstrates a weight study to the current literature on incubator's as a tool for economic growth, fostering innovation and entrepreneurship. Its beneficial outcomes provide useful information about developed and developing countries for both academicians and practitioners who are interested in incubators model.

Keywords: Economic growth, Incubators, Innovation, Entrepreneurship

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INTRODUCTION

Business incubation is a relatively new phenomenon. The industry began in the late 1950s, experienced early-stage development in the 1980s, and grew steadily through today. Business incubation research also has evolved as the industry has grown. Business incubators are viewed by many countries' governments as vibrant tool for nurturing innovative ventures regarding economic development and job creation, and as critical components of entrepreneurial infrastructure. It is proven that business incubation is a tool for economic development. Business incubation is an important economic development tool that–when conducted in accordance with best practices and based on due diligence–can foster job creation, increase wealth creation, and provide as an chief contributor to the national economy. As such, business incubation has played an imperative position in economic development theory. Business incubators help to strengthen the local economies because their small business tenants and clients survive inside the incubators the survival rate 90% (Info Dev., 2009; Molnar *et al.* 1997; Al-Mubaraki *et al.,* 2010). There are five main objectives of the incubators: 1) economic development; 2) technology commercialization; 3) property venture/real estate development; 4) entrepreneurship, and 5) job creation (Al-Mubaraki and Busler, 2011a and 2010b; Al-Mubaraki, 2008; Mian, 1994 and 1997; Phillips, 2002; McAdam and McAdam, 2008).

The problem specifically addressed in this research is primarily related to the incubators in developed and developing countries using qualitative approaches (interview and case studies). The obstacles of current literature of incubators are: 1) lack of common criteria or methodology for evaluating both business and technology incubators in developed and developing countries simultaneously; 2) lack of real international interview with case studies; and 3) lack of guidelines for successful implementation of business incubation programs in developed and developing countries simultaneously. This gap of studies led the authors to present this research to focus on the developed and developing countries based on the best practices of case studies and international interview to support the academia and practitioner such as governments, policy maker academic institutions. The objective of this paper is to investigate and to identify the best practices of incubators in developed and developing countries, based on the incubators outcomes such as economic growth, fostering innovation and entrepreneurship.

The paper is structured as follows: Section 2 provides a thorough review of the literature on incubator model in developed and developing countries. In Section 3, the authors provide the research methodologies with analysis of successful case studies and international interview in developed and developing countries. Section 4 concludes with implications of the business incubation program as an active tool for economic development, fostering innovation and entrepreneurship.

LITERATURE REVIEW

In 1997, the National Business Incubation Association (NBIA) defined business incubation as a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. There are many studies discussed the value of incubator for community's cultural values and technology diversification, economic development, job creation, viable firms and profits from successful products (Hisrich, 1988; Campbell *et al.* 1985; Smilor, 1987; Autio and Kloftsen, 1998; Bearse, 1988; Allen and Rahman, 1985; Kuratko and LaFollette, 1987; Lumpkin and Ireland, 1988 ;Culp, 1996 ;Merrifield, 1987; Campbell, 1989). Additionally, there are a number of articles that review the incubators literature in developed countries In Finland and the US (Studdard, 2006) surveyed 52 firms with a RR of 18%. Zedwitz and Grimaldi (2006) in Italy investigated case studies of 15 incubators. Totterman and Sten (2005) discussed the case study of three incubators, three managers, nine tenants, and nine post-incubated clients in Finland. In the UK, Wynarczyk and Raine (2005) conducted, analyzed, and discussed surveys of 17 UK incubators. McAdam and Marlow (2007) evaluated a case study done on one university incubator in Ireland. Hughes *et al.* (2007) interviewed 211 UK business incubation programs within a population of approximately 1000 firms. Thierstein and Wilhelm (2001) investigated case studies of 9 incubators in Switzerland. In Germany, (Schwartz and Hornych, 2008) 37 expert interviews were conducted in sector-specific incubators. Al-Mubaraki and Busler (2010a) discussed three practical business incubation European models, the United Kingdom, France, and Germany based on their adoption as a case study examples. These three countries contain approximately 83% of all the incubators located throughout Europe today. A recent study showed results of quantitative and qualitative responses used to determine success rates and key indicators of incubators in various countries (Al-Mubaraki and Busler, 2012b; 2011c). Based on a mixed-method approach clearly stated that business incubation is a tool for economic development with incubation outcomes, such as entrepreneurs, companies created, jobs created, and incubator companies. Al-Mubaraki and Busler (2011b) examined case studies of 10 incubator organizations in developing countries.

In developing countries, few studies discussed the incubators best practices, for example, in Turkey. Another study (Akçomak and Taymaz, 2007) matched sample assessment of 48 incubator firms with a RR of 60%. Akçomak (2009) drew lessons from country experiences and assess the appropriateness of incubators as a tool for entrepreneurship promotion in developing countries. Al-Mubaraki and Busler (2012b) presented the quantitative and qualitative approaches of incubators in various countries. Another recent study (Al-Mubaraki and Schrödl, 2011; 2012) proposed measurement models relevant to the international context based on the developing countries as well as gulf council countries (GCC). In another study, Al-Mubaraki and Busler (2010b) indicated the survey results could be used to make recommendations for how to maximize the success of incubators, including matching services offered to the needs of clients and involving a range of

community stakeholders in the development of their programs. A number of options are proposed for developing and expanding the business incubator concept in Kuwait and the GCC member states.

METHODOLOGY

The case study

Studies that seek to measure the outcomes and impacts of business incubation programs focus generally on the economic-related value of the return on investment. The study employs a multi case study methodology which evaluates each case studies used six key performance indicators of incubators: 1) incubators goals, 2) incubators types, 3) services offered by incubators, 4) foundation year, 5) number of client firms inside the incubators, and 6) number of graduate firms from incubators. This type of approach is closely linked with qualitative research, which also frequently uses semi-structured interviews (Yin, 2004). The multi case study allows the researcher to gain an in-depth understanding of the research context and a rich insight into the issue being examined (Yin, 1994). In addition, this paper looks at additional ways to measure the positive outcomes of incubators as a tool for economic development, fostering innovation and entrepreneurship based on the current academic literature, international interview and successful international case studies in developed and developing countries. The case study method is recongnised as the most effective research strategy to capture the rich experience of complex projects (Eisenhardt, 1989; Yin, 1994). A business incubator's triumph is sturdily tied to the outcomes of its clients and graduates. The investment of funds, time, and expertise by incubator management and the technical assistance provided by professional service providers are expected to yield a return – and that return on investment is a significant measure of incubator success.

Data collection

This section describes multiple data collection methods used in conducting case studies. The applying different methods of data collection are supported by valid and reliable case findings and reports (Bryman *et al.* 2007; Yin, 2009). In a case study strategy, many sources of evidence can be used (Yin, 2009). Such sources include documentation, archival records, interviews and observation. Four interviews made up the main source of evidence used in the current study (Table-1). The interviewees involved the director of business incubation. The entire interviews were structured to best understand the situation while also giving the interviewees sufficient direction to ensure that they would provide as much information as possible. Every interview was recorded and transcribed for clarity and were then sent to the interviewees for review of the validity. All of the data from the interviews, multi case study, and documents were linked together. This study

suggested that a lot of energy is being devoted to creating new businesses in the United States. Figure 1 shows the process of developing a research methodology.

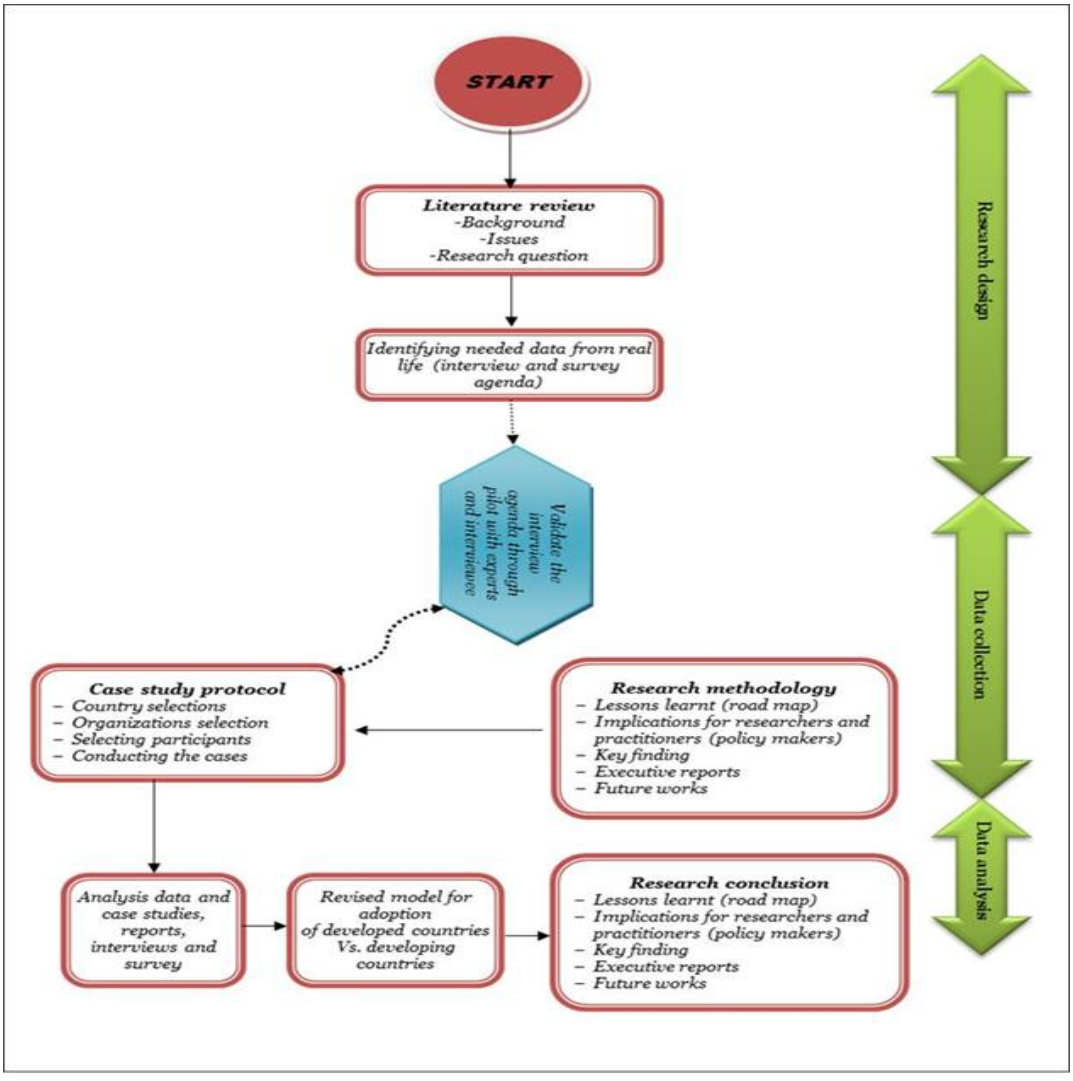

Figure 1: The process of developing a research methodology

Analysis of case study

Incubator models have altered over time as the requirements of communities and the overall national economic climate have evolved. This research arrived at the categories used in this work after careful deliberation, based on their relevance to the study, the number of incubators adequately described by the category, and the availability of data. Having lucid definitions allows to compare operational and outcome differences across the different models and sectors of business incubation programs. The context of each case described six key performances indicators (KPI) such as 1) incubators goals, 2) incubators types, 3) services offered by incubators, 4) foundation year, 5) number of client firms inside the incubators, and 6) number of graduate firms from incubators (See Table-1). As can be seen in Table-1, all cases presented here underscore the

value of business incubators in revitalizing the economy of a community through the creation of jobs and start-up companies as well as through the nurturing of the entrepreneurial spirit in a local community, commercialization technology and technology transfer. The incubators offer a wide variety of strong tangible services, such as facility, finance, advisory services, mentoring, networking, strategic partners, technology transfer and commercializing technology. Finally, incubators can play an active role in local and regional economic development based on the growth, the number of clients and graduate companies.

Table 1: Key performance indicators (KPI) of developed and developing countries

	Countries	Key performance indicators (KPI)					
		KPI 1	KPI 2	KPI 3	KPI 4	KPI 5	KPI 6
		Goals	Types	Services	Foundation year	No. of Client Firms	No. of Graduate Firms
Developed and developing countries	Spain	1) Entrepreneurship awareness, 2) Job creation, 3) Commercializing technology, 4) Technology transfer	1) Technology 2) Mixed	1) Facilities, 2) Finance, 3) Advisory services, 4) Mentoring/coaching, 5) Incubation services, 6) International Business Services, 7) Networks and Synergy, 8) Technology Transfer, 9) Commercializing technology	1993	39	110
	Italy	1) Entrepreneurship awareness, 2) Job creation, 3) Commercializing technology, 4) Technology transfer	1) Technology 2) Mixed	1) Facilities, 2) Finance, 3) Advisory services, 4) Mentoring/coaching, 5) Incubation services, 6) International Business Services, 7) Networks and Synergy, 8) Technology Transfer, 9) Commercializing technology	1990	42	62
	Austria	1) Entrepreneurship awareness, 2) Job creation, 3) Commercializing technology, 4) Technology transfer	Technology	1) Facilities, 2) Finance, 3) Advisory services, 4) Mentoring/coaching, 5) Incubation services, 6) International Business Services, 7) Networks and Synergy, 8) Technology Transfer, 9) Commercializing technology	1981	170	404
	Australia	1) Job creation, 2) Profitable enterprises		1) Training, 2) mentoring, 3) advisory, 4) angel investing	1997	358	90
	Bahrain	1) Entrepreneurship awareness, 2) Export revenues, 3) Job creation, 4) Policy impact, 5) Profitable enterprises,	Government	1) Facilities, 2) Finance, 3) Business information, 4) Advisory services, 5) Virtual incubation, 6) International business services, 7) Networking, 8) Commercializing technology	2003	35	30

	6) Research commercialization					
Saudi Arabia 1	1) Entrepreneurship awareness, 2) Job creation, 3) Profitable enterprises, 4) Research commercialization	Government	1) Facilities, 2) Finance, 3) Incubation and Business Development, 4) Networks and Synergy, 5) Technology Transfer, 6) Other: Access to IP support, R&D support	2009	6	0
United Arab Emirates 1	1) Entrepreneurship awareness, 2) Income generation, 3) Job creation, 4) Research commercialization, 5) Entrepreneurship education	Academic	1) Incubation and Business Development, 2) Networks and Synergy, 3) Technology Transfer	2010	0	0
Qatar	1) Entrepreneurship awareness, 2) Export revenues, 3) Job creation, 4) Profitable enterprises, 5) Research commercialization	Non-Government Organization	1) Facilities, 2) Finance, 3) Incubation and Business Development, 4) Networks and Synergy, 5) Technology Transfer, 6) Other: Office and research services	2008	0	0
Jordan	1) Entrepreneurship awareness, 2) Export revenues, 3) Job creation, 4) Profitable enterprises, 5) Research commercialization		1) Facilities, 2) Finance, 3) Advisory services, 4) Virtual incubation, 5) International business services, 6) Networks and synergy, 7) Technology transfer	2004	6	3
Morocco	1) Entrepreneurship awareness, 2) Export revenues, 3) Job creation, 4) Policy impact, 5) Profitable enterprises	Private sector	1) Facilities, 2) Finance, 3) Advisory services, 4) Mentoring/coaching, 5) Incubation services, 6) International Business Services, 7) Networks and Synergy, 8) Technology Transfer, 9) Commercializing technology	2005	8	4

Source: www.infodev.org2012

Table 2 presents the key ratio of performance (KPI) over the number of years a particular incubator has been in operation. The analysis of developed and developing countries indicated that some incubators are performing better than others. For example, Austria presents highest ratio of graduate companies 13.47 per year, also, shown oldest funded incubation program since 30 years ago. Furthermore, Australia indicated highest rate of client companies 25.57 per year. Furthermore,

Saudi Arabia1 presented the newest incubation program since 2 years and Morocco indicated as lowest ratio of client and graduate companies.

Table 2: Ratio of key performance indicators for developed and developing countries

No.	Incubators	No. of years till 2011	Ratio of key performance indicators(KPI) for each incubator over the years	
			Client Firms	Graduate Firms
1	Spain	18	2.17	6.11
2	Italy	21	2.00	2.95
3	Austria	30	5.67	13.47
4	Australia	14	25.57	6.43
5	Bahrain	8	4.38	3.75
6	Saudi Arabia 1	2	3.00	0
7	United Arab Emirates 1 *ADU Enterprise*	3	0	0
8	Qatar	3	0	0
9	Jordan	7	0	0
10	Morocco	6	1.33	0.67

Analysis of international interview

This study was based on field interviews conducted by the author in the United States during 2011-2012. The interview instrument for the semi-structured in-depth interviews was developed after a thorough literature review. In addition, the supplementary information provided by incubator managers during the author's visit to United States, form the research information on which the interviews are based. Four incubators in the United States, which are located in two states, namely New York and New Jersey, were interviewed. Table-3 shows the international interviews of business incubators as the best program selected based on the best practices and the successful implementation.

Table 3: International interview of business incubators

No.	Institute	Website	Contact detail
1	Long Island High Technology Incubator	http://www.lihti.org/	Dr. Anil Dhundale Executive Director, Long Island High Technology Incubator, Stony Brook, NY, US
2	NYU Incubator	http://w4.stern.nyu.edu/berkley/student.cfm?doc_id=2494	Mr. Micah Kotch Director of Operations, NYU Incubator Brooklyn, NY, US
3	Enterprise Development Center (EDC)	http://www.njit-edc.org	Ms. Yvonne Drakes Assistant Director, Enterprise Development Center, Newark, NJ, US
4	Rutgers University Food Innovation Centre	http://www.foodinnovation.rutgers.edu	Ms. Margaret Brennan-Tonetta Executive Director Rutgers Univ Food Innovation Ctr, Bridgeton, NJ, US

The international interview design is based on radar charts. The radar chart consists of five categories: 1) Incubators overview; 2). Economic development; 3) Technology commercialization; 4) Entrepreneurship; and 5) Diversification of Economy. In accumulation, each category is measured by indicators and each indicator is rank-order independent variable [e. g. low (L), moderate (M), and high (H)]. The scale of each indicator is based on the authors' experience and previous studies. Although, the interview charts were answered by the President, Vice President or Incubator Manager. The author selected the United States for the international interview because the US has the largest number of business incubator programs in the world. In many ways, the US has been a pioneer in this industry, where the growth has been rapid from less than 100 in the 1980s to about 1,800 in 2010. The United States government has played a predominant role in supporting incubators with legislative allocations for economic development and job creation.

They have also provided support at both the local and federal level by providing sponsorship (Chandra and Fealey, 2009). In addition, there are currently thought to be around 900 business incubators in Europe (NBIA, 2010; Monkman, 2010). The estimated number of incubators worldwide is 7000.The response of Radar Chart in the following section shows the positive outcomes from incubators as valued added to the countries. Overall, both incubator programs indicated that the government plays an active leading role in managing the incubators towards the 21st century as a new financial model.

Interview 1: NYU incubator, NY, US

NYU-Poly started its first business incubator, at its downtown Brooklyn campus in 2004. In 2009 they partnered with New York City to open a second incubator, Varick Street, in Manhattan as a part of Mayor Bloomberg's Five Borough Economic Opportunity Plan. In 2009 they also began NYC ACRE, our incubator focused on supporting the efforts of clean-technology-oriented companies.

The goal of each of their incubators is to provide the guidance, expertise, and resources that organizations need to grow into successful ventures that bring economic growth to New York City.Chart-1 shows the five categories respondents answered high indicators for all categories. Only two indicators answered low growth of revenue and venture development.

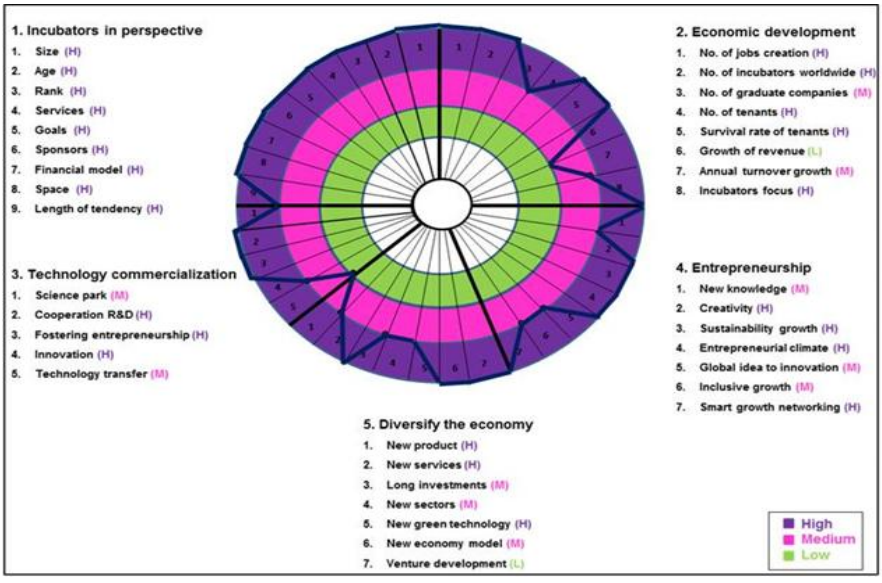

Chart 1: Radar chart of NYU incubator, NY, US

Interview 2: Long island high technology incubator, NY, US

The Long Island High Technology Incubator (LIHTI) is a non-profit organization dedicated to helping new technologically-innovative companies to grow by providing them with a variety of support resources and services. Since its opening in 1992, the Incubator has been associated with more than 70 businesses, and 44 companies have graduated successfully from the LIHTI program, contributing over $2.5B to the national economy and creating jobs for over 500 employees. Chart-2 shows the distribution of respondents by incubation manager. The results of key indicators are high. However, sponsors and venture development are described as low indicators.

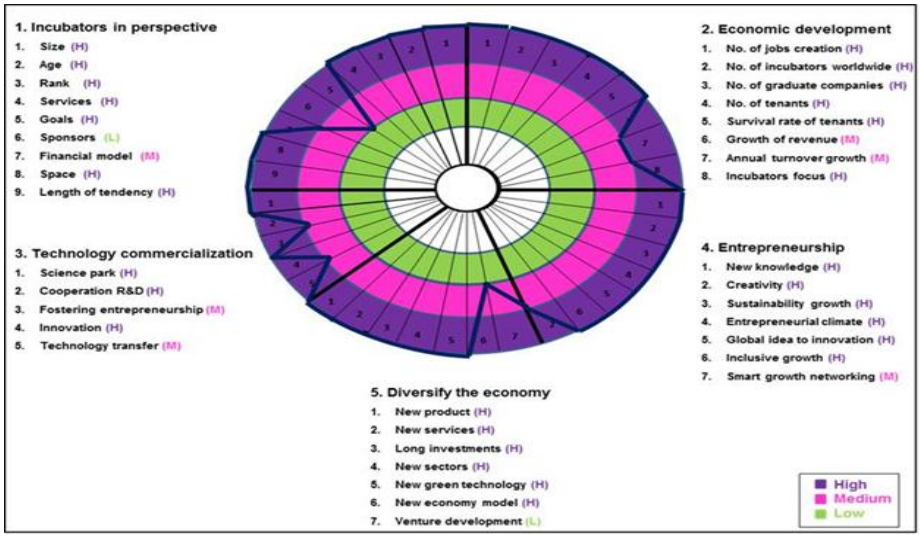

Chart 2: Radar chart of long island high Technology incubator, NY, US

Interview 3: Rutgers university food innovation centre, NJ, USA

The Rutgers Food Innovation Center is a unique business incubation and economic development accelerator program, which provides business and technology expertise to startup and established food companies in the mid-Atlantic region, and utilizes its outreach capacity to reach food and agribusinesses throughout the world. The Chart-3 Rutgers University Food Innovation Centre shows the responses of interview. The five categories, such as incubators in perspective, economic developments, technology commercialization and diversify the economy answered high indicators. Very few described the sub categories as low indicators; for example, the number of incubators worldwide and cooperation of R&D.

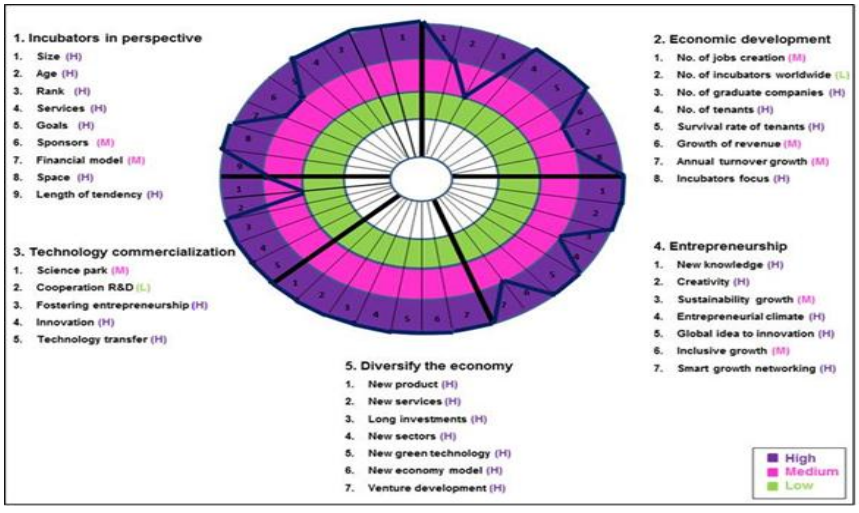

Chart 3: Radar chart of Rutgers university food innovation centre, NJ, USA

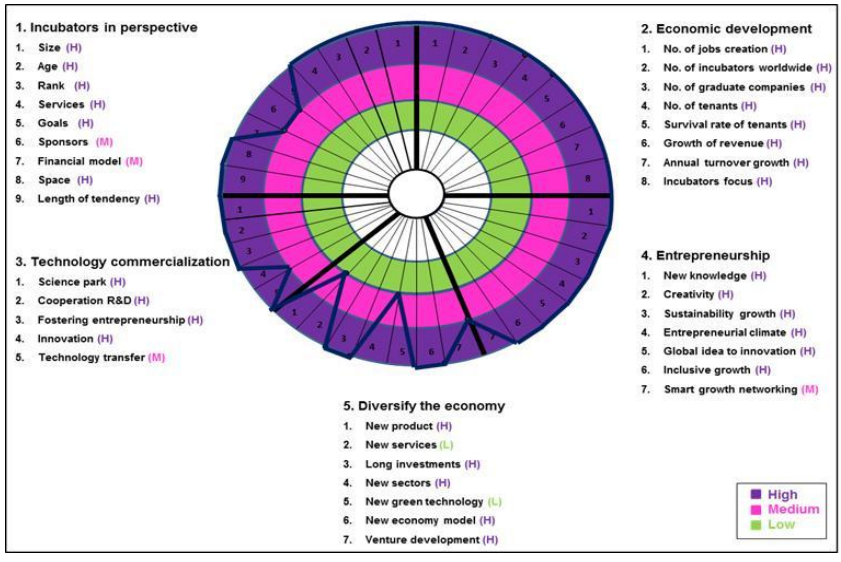

Chart 4: Radar chart of enterprise development center (EDC), NJ, USA

Interview 4: Enterprise development center (EDC), NJ, USA

The Chart-4 shows the distribution of respondents by their incubators manager. Just two elements indicated the low respondents such as new services and new green technology. The rest described thigh respondents for all elements. EDC has graduated over 85 successful businesses. Residence at the EDC is open to early-stage companies that have, or will have, proprietary technology as a significant source of revenue. The nearly 90 companies currently housed at the EDC employ over 300 people. They have attracted more than $55 million in third-party funding and in 2007 had revenues surpassing $40 million.

CONCLUDING REMARKS

This paper is based on qualities approach using this approaches would provide a deeper insight and understanding into the phenomenon under investigation. Ten developed and developing countries were selected based on the successful outcome. Each case study has investigated, addressed and explained the six Key Performance Indicators (KPI) are such as 1) incubators goals, 2) incubators types, 3) services offered by incubators, 4) foundation year, 5) number of client firms inside the incubators, and 6) number of graduate firms from incubators. Four international interviews were used in the United States as best practices incubation program. The radar chart was used for the analysis of interviews, which consists of five categories: 1) incubators overview; 2) economic development; 3) technology commercialization; 4) entrepreneurship; and 5) diversification of economy. Furthermore, based on the analysis of case studies and interview in developed and developing countries, all case studies presented here underscore the value of business incubators in revitalizing the economy of a community through the creation of jobs and start-up companies as well as through the nurturing of the entrepreneurial spirit in a local community, commercialization technology and technology transfer and fostering innovation, technology transfer and commercializing technology.

Finally, this study has clearly stated that the incubators in developed and developing countries can play a dynamic role in local and regional economic development based on the growth, the number of clients and graduate companies. Although most of incubators program offered a wide variety of strong tangible services, such as facility, finance, advisory services, mentoring, networking, strategic partners, promote a culture change and help in fostering an entrepreneurship environment, technology transfer and commercializing technology. This is evident in both the developed and the developed countries. For future research, using the findings that highlighted in this paper, the authors aim to conduct international surveys and comparative study between developed and developing countries, as well as the GCC states. Hence the authors are planning to develop a model applicable to developing countries, as well as the GCC states. Findings include information on employee growth and totals in client and graduate firms, revenue totals of client and graduate firms,

and, through the multiplier effect, an estimate of total economic impact of business incubators in the state.

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