The Mushrooming Impact of Technology Business Incubators on Economic Development: A Case Study from Kingdom Of Saudia Arabia

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Abstract
Entrepreneurship and the technological innovation have been widely acknowledged as the key drivers of business success, job creation and overall economic development. There have been diverse frameworks and mechanisms put forth to streamline and support the idea of innovative technological entrepreneurship. The mushrooming mechanisms germinated technology business incubators and its relevant enterprise support systems which became quite successful in both developed and developing economies. The methodology gave a boost to the promotion of economic development not only confined to industrialized countries but also emerging and restructuring countries besides their discussions focus on impact or either performance. In contemporary times many types of research have been conducted focusing on empirical finding to assess their performance or impact. The purpose of this study is two-fold. Firstly, to provide a conceptual approach based on resource-based dependency theory to determine the impact of technology business on economic development. Secondly, to review the mushrooming impact of technology business incubators as a stimulus for Small and Medium Enterprises (SMEs) networks with special focus on the valuation of the performance of the incubators for the case of Saudia Arabia. Ucinet software is used for establishing the incubator network analysis. Lastly, this study will provide policy recommendations to Kingdom of Saudia Arabia for enhancing their current technology incubators to a level compatible with international economy using the development stages concept.

Keywords: Mushrooming, Technology Business Incubators, Economic Development and Small and Medium Enterprises

1.0 Introduction
There are many changes and consequential experiences being advent since the globalization, technological advancement, rapid innovation and demographic fluctuations ringing the bell for crucial emergence and improvement in prevailing ideology and methodology of entrepreneurship. Entrepreneurship is considered to be driving factor in the economic growth and development as it helps in facilitating poverty elimination, generation of employment opportunities, and structural changes in the economy, improved living standards and overall well-being of the society. Besides this, in contemporary world creation of new businesses, germination of start-ups and the opening of new ventures is another important dimension explored and supported by both developed and developing world governments in the quest of sustainable national economic growth and development. This element is also of significance to establish liaisons in international economy to stay competitive.

The span of last decade is marked as stepping stone for launching the practical ideology of entrepreneurship and innovation in the Kingdom of Saudia Arabia (KSA). There is dire need to establish and open such ventures to remain competitive internationally. This initiative is considered to be an important feature

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for KSA to be driven by entrepreneurship, innovation and creativity. Thus, it explains how significant is entrepreneurial activities in accelerating the economic growth and development in the developing economies. According to the economic empirical research SMEs establishment in developing countries contributes to 92 percent of businesses approximately and providing employment opportunities to over 80 percent of the total workforce. This is the main reason for developing countries to promote, establish and nurture the idea of entrepreneurship, innovation, start-ups, and technology business incubators to achieve sustainable growth and economic development simultaneously (Michelle, 2003).

The emergence of several business support programs in KSA targets at improving the performance of SMEs, fostering talent, promoting entrepreneurial skills and provision of entrepreneurial training programs. Moreover, the establishment of technology business incubators just as the KSA initiated is specifically crafted to encourage their entrepreneurial talent and innovation to stimulate entrepreneurial growth and ventures which further result in increased job avenues and improved economic growth. Besides this, promoting technological innovation and technology transfer through learning institutions as conducted by KSA university incubators leads to economic growth (Alfantookh and Bakry, 2013). In addition, entrepreneurial training programs provide a platform for several business support programs and essential for new start-up firms. Similarly, KSA government has taken initiatives in promoting young business firms and leads to a positive and significant impact on improved performance and sustainable growth.

The development of technology incubators climate in KSA is also had a cross-border impact as the major changes are streamlined in the Middle East and North Africa (MENA) region. Moreover, among a diverse range of mechanisms, programs, incentives and technology business incubators act as a tool to generate new business start-ups, avoid business failures and establish friendly entrepreneurial sector which is not only confined to developed world but also developing countries in recent times (Bergek & Norrman, 2008, Scillitoe & Chakrabarti 2010, Bruneel et al. 2012, Schwartz & Gothner 2009, Udell 1990, Aerts et al. 2007, Allen & Rahman, 1985, Gribaldi & Grandi, 2005, OECD 1997, Ratinbo et al. 2010). It further explains the increasing emergence of technology business incubators around the globe (Udell 1990, Ratinbo 2011, Ratinbo & Henries 2010, OECD 1997, Schwartz & Gothner, 2009). The existing literature provides evidence of its growing culture and importance (Aermoudt, 2004). Although, Poter believe there are considerable differences among countries entrepreneurial and incubators growth (Acs & Szerb, 2010). Therefore, a different dimension should be used to measure the mushrooming impact of Technology Business Incubators (TBIs) on economic development.

This paper is divided into five sections. The first section reviews the literature on the relationship between entrepreneurship, innovation, technology business incubators and economic development. The second section provides an overview on technology business incubators followed by the development stages and the measures used to assess the technology business incubation programs and their respective impact on economic development. Thirdly, a detailed analysis of the characteristics and technology business incubators in KSA will be discussed. The fourth section provides a conceptual framework and design of TBIs in KSA along with policies and recommendations. The last section will provide the overall conclusion of the research hypothesis.

2.0 Literature Review

There is growing amount of literature on Technology Business Incubators due to its increasing popularity for creating and promoting new business ventures as a source of economic development and generating employment opportunities from past three decades (Phan et al. 2005, Hackett and Dits 2004, Tamasy 2007). This study will provide information on technology business incubators concept, assessing the business incubation programs, the role of technology business incubators and economic development and the development stages and the measures used to assess the TBIs.

2.1 Technology Business Incubators Concept
There is no one standard definition of the type of technology business incubators. The idea of technology business incubators emerged with knowledge of resource sharing initiatives. With the passage of time TBIs role and characteristics have further evolved and marked as an essential tool for providing important services like training, consulting and networking channels (Peter et al. 2004). The existing literature provides many definition and types that represent the dimensions of national policies, domestic cultural environment and a wide range of approaches (Ratinho & Henriques, 2010 and Chandra 2007).

Therefore, Aermoudt (2004) explains the term “incubator” as an umbrella concept which covers a diverse group of institutions. There have been multiple studies defining technology business incubators and their differentiated dimensions such as ownership structure defining whether they are publicly or privately owned (Grimaldi & Grandi 2005), purpose (Bollingtoft & Ulhoi 2005) and service portfolio and management features (Aerts et al. 2007). Besides this, there is one common feature observed in all the definitions of technology business incubators which includes facilities designed to generate a favorable environment for the new start-ups, businesses and prevailing small ventures in their initial stages of development for their survival and growth to succeed as more developed and flourishing businesses. Moreover, services provided by technology business incubators could vary at some instances however the main features includes physical office workspace at very subsidized and economical rates, shared business ventures and equipment at minimal rates, business assistance and government funds and financial supports (Burneel et al. 2012, Bergek & Norman 2008, Chandra 2007, Ratinho et al. 2010, Bollingtoft & Ulhoi 2005, Ratinho & Henriques 2010, Allen & Rehman 1985). In addition, these services can be further classified under three dimensions which includes infrastructure that covers localities, administrative services and office facilities, business support programs linked with counseling and training activities both publicly and at the university level (Bergek & Norman 2008, Schwartz & Gothner 2009, Chan & Lau 2005). In the existing incubator literature the relative locus of incubation dimension is varied from time to time such as initially focus was on administrative services whereas it has been pivoted towards more university incubators to support start-ups that further contribute in economic development (Bergek & Norman 2008). Figure 1 represents the technology business incubators network diagram where nodes reflect the technology business incubators varied dimensions chronologically.

*Figure 1: Technology Business Incubators Dimension Clusters (1988-2018) using UCINET*

*Source: Author’s Own Findings*
2.2 Assessing the Business Incubation Programs

With the expanding enthusiasm towards the Business Incubation, the high-level discussions on the advantages, adequacy, accomplishment and additionally the economic and social commitments of the Business Incubators have likewise gotten extensive consideration from the specialists and policymakers (Bergek and Norrman 2008). Numerous experimental studies have been connected to survey the Business Incubators. These inquire have a tendency to reflect alternate points of view, examples and evaluation criteria in the literature which are centered around estimating execution of Business Incubators globally (Phan et al. 2005). The literature proposed for TBIs success to be estimated at numerous levels, more particularly at the incubation related and firm-level associated effects (Hamdani 2006). There are range of measures of technology business execution or results, for example, inhabitance rate, included estimation of incubation benefit, the number or extent of firms graduated, development of the occupant firms, occupations and wealth creation (Chan and Lau 2005, Hackett and Dilts 2008) and number of patent applications per firm (Colomba and Delmastro 2002).

From an overall viewpoint the essential capacity of Business Incubators is to help newly settled firms to survive and aid the improvement and development of existing organizations (Allen and Rahman 1985). In any case, despite the fact that survivability of new organizations are frequently utilized as a measure to assess the execution of Business Incubators numerous researchers contend that it ought to be acknowledged as an important yet lacking condition for progress and stress the significance of the degree to which Business Incubators add to the development of firms and formation of employment (European Commission 2002, Aerts et al. 2007).

Besides this, Colombo and Delmastro (2002) in their study looked at 43 Italian firms situated on technological innovation incubator with a control sample of incubation firms comparable in age, division, and geography. They found that on-incubator firms displayed higher job creation while the outcomes affirmed that there is just a marginal contrast in innovative activity part of on-incubators and off-incubators firms. Moreover, Abetti (2004) conducted a study with an example of 5 incubators among 16 incubators in Finland found that Technology Business Incubators positively affects new pursuit creation, work creation, cost adequacy, development and unemployment. The survival rates of the incubation firms reach to 95% and incubators can make high-skilled practical occupations and get small financing from the government.

In contrast, Rothaermel and Thursby (2005) demonstrated that incubation firms holding a college innovation permits are essentially less inclined to fail. Aerts et al. (2007) hypothesized that incubations whose screen against an adjusted arrangement of indicators would have to bring down failure rates. In any case, there is additionally conflicting proof that recommends TBIs have practically no impact on the accomplishment of endeavors as far as survival (Tamasy 2007). Moreover, Chen's (2009) investigation of Taiwanese incubators found no immediate impact of new pursuit execution. Ratinho and Henriques (2010) contended that despite the fact that Technology Business Incubators are broadly acknowledged as a compelling device for economic development, the commitment isn't noteworthy in Portugal setting. There is the low effect on organization creation. Their commitment to work creation and economic development isn't extensive.

2.3 The Developmental stages and the procedures used to assess the Technology Business Incubators

One of the real issues in surveying the effect of the TBIs is that in spite of the fact that there is a tremendous measure of empirical investigations on the execution of TBIs, there is still an absence of accord on the estimation of the execution of TBIs. There is no single standard strategy to gauge the execution which makes it entangled to quantify the incubation execution and draw comparisons (Ratinho and Henriques ,2010, Phan et al. 2005).

The second issue is that the greater part of the researchers on business incubations are carried out in developed nations. There are just a few studies that quantitatively assess incubation execution in developing
nations (Akcomak and Taymaz, 2007). However Acs and Naude (2011) explore that the administration approaches should unequivocally be consolidated to the role of the entrepreneur and the formative phase of a nation. The role of entrepreneur contrasts crosswise over phases of advancement. Understanding the idea of the firm as depicted ought to be found in conjunction with the advances lately of recognizing the entrepreneurial enterprise crosswise over different phases of improvement created based on Porter's categorization. Watchman recognized three phases of formative after late improvements in the financial aspects of development: (Acs&Szerb 2010)

(1) a **factor-driven stage** that is set apart by high rates of independent agrarian work, little assembling and administration firms are for the most part sole proprietorship firms. Nations in this stage contend through ease proficiency in the generation of items or low value-added included items. Learning creation for advancement is extremely constrained.

(2) an **efficiency-driven stage** is set apart by diminishing rates of independent work. Capital and work assume an urgent part of profitability and the attention is on innovation, in the basic leadership process. Nations must build their creation proficiency and instruct the workforce to have the capacity to adjust to the consequent innovative advancement stage. Nations must have effective beneficial practices in huge markets, which enable organizations to exploit economies of scale. Ventures in this stage are makers that give fundamental goods and services.

(3) an **innovation-driven stage** is set apart by an expansion in knowledge-intensive exercises. Learning gives the key input. The innovation-driven stage is one-sided towards high value-added industries including businesses in which entrepreneurial action is vital.

*Figure 2: Development Stages of Technology Business Incubators*

*Source: Author’s own findings*

ACS and Naude (2011) likewise explored that innovation and entrepreneurship as the basic drivers of economic development which make an alternate commitment over stages and various types of strategies, support from them are required at various phases of the economic improvement. The Technology business incubator programs are the parts of advancement and enterprise strategies of the nations. These arrangements ought to be firmly lined up with phases of the improvement. The exchange so far proposes emphatically that there are no 'one size fits'.

**3.0 Technology Business Incubators in Kingdom of Saudia Arabia Framework and Analysis**

Business incubators vary from different kinds of projects for improving business support. Government plan of business incubation is encouraging entrepreneurs through the arrangement of capital, training, and innovation exchange. This encourages startup of new organizations which is otherwise critical for economic development. These projects additionally concentrate on supporting business visionaries from the place through feasible business thoughts and ideas to guarantee launch of new items.
The Kingdom of Saudi Arabia applies the utilization of different kinds of business incubations in advancing business exercises inside the region, particularly in the foundation of new organizations and support for little and medium undertakings with a low financial limit. The arrangement of business incubation order embraced by Albert and Gaynor (2001) is essential in dissecting the sorts of business incubators utilized as a part of the KSA. The decision of the kinds of incubators utilized for advancing organizations in the KSA is imperative in deciding the accomplishment of the business incubation programs and ought to be in association with the particular business targets and objectives.

The essential sort of TBIs in the Kingdom of Saudi Arabia is the college based business incubators. As specified before, TBIs assume a key part in supporting and advancing emerging business visionaries, especially amid the startup times of their company's lifecycle. University sort of business incubators isn’t excellent in seeking such objectives and goals. College business incubators furnish customers with a scope of administrations that incorporate shared workplaces, access to advanced business hardware and programming administrations, and system pools that advance new businesses. These sorts of business support give business visionaries and their startup undertakings a generally secure condition and a head start over others (Peters et al., 2004). University business incubators, as utilized as a part of the KSA, give one of a kind chance to young individuals and exceedingly encouraging entrepreneurs to gain knowledge by the information gained in the university along with the extensive variety of resources and assets gave by the university, especially in beginning new business startups that require a more elevated amount of learning, research, and innovation.

The greater part of the business incubations utilized by the KSA is described by the association of private segments and observing of execution of entrepreneurs and new business endeavors. The Saudi Business Incubator Network (SBIN), for example, endeavors to screen the execution of entrepreneurship and the execution of new business ventures from startup to a point where such organizations can keep running without the help of incubation administrations.

Besides this, take note of those young student entrepreneurs in Saudi college’s advantage from college business incubation and research in enterprises to empower them startup of their organizations and innovation exchange. As per Grimaldi and Grandi (2005), university incubation likewise concentrates on age and exchange of innovative information from classroom setup to ventures and organizations. Much the same as in some other nations, the goals of business incubation programs in the KSA are those of commitment to economic development. The Saudi government and policymakers value the need to accomplish economic development through the incorporation of business incubation programs in the standard economic approach. In their journey for economic change that means manageable development and advancement, the Saudi experts go for utilizing business incubations to accomplish new business arrangement and business extension.

Saudi Arabia's policymakers additionally have the goal of proposing to grow organizations through the start of business incubation programs in the district. Establishing business incubations in the offer to extend the current small and medium-size business undertakings is an imperative move in guaranteeing reasonable economic development.

3.1 Conceptual framework using Resource Dependency Theory for the analysis of Technology Business Incubators

In order to successfully implement the technology business incubators and have it's relevant positive and significant impact on overall economic development the ideology of Resource dependency theory should be applied. Resource dependency theory (Pfeffer and Salancik, 2003) explains that organization behavior and conduct is influenced by the management of its dependence on external resources. From the point of view of resource dependency theory, organizations are self-obliged with respect to having the required assets for value creation. Thusly, associations need to build up interdependencies for collaborating each other and access assets to increment survival rate (Pfeffer and Salancik, 2003).
The thought of resource dependency theory lies in the open door that different organizations are having assets exploiting to pick up control i.e., control over an organization that needs assets. Resource dependency explains that the outside condition of an organization contains all the required assets; in this way, interdependencies with different organizations in such condition constitute a critical issue for a central organization. One of the principal subjects of this paper is interdependencies amongst TBIs and accomplices to determine its impact on economic development.

Interdependencies in TBIs are key associations, TBIs deal with the control of assets by getting to assets from accomplices. Late examinations think about key associations as significant for resource dependency theory. A few procedures for interdependencies are coordination and reconciliation, for example, development of individual between associations, harmonious and vertical interdependencies, top managerial staff to give assets to the association, and accomplishment of administrators to conquer issues in the association (Hillman et al., 2009). In this sense, shared resources energize the development of vital associations while control unevenness can restrain the collaboration between organizations.

4.0 Technology Business Incubators impact on Economic Development

In the course of recent decades, business incubators have been pulling in many research areas in both developed and developing nations. This is achievable through the investigation of business strategies that help economic development and advancement. The term 'business incubation' suggests a business advancement system used by approaching producers and countries to guarantee feasible economic development and improvement through the production of entrepreneurial endeavors that are successful in the commitment of economic development and a wellbeing status of the economy. Effective incubators, as connected by different nations, includes a steady domain that encourages the formation of new pursuits and satisfaction of potential development and giving such ventures the entrance to an extensive variety of business advancement assets. It likewise involves giving new pursuits custom fitted administrations. In this way, business incubation is huge in seeding and growing new business start-ups close by innovation exchange to encourage potential development in most financial areas inside a nation (Pappas, 2003).

In different developed nations around the globe, the utilization of incubators rose as right on time as 1980's, and later on developed into small and profound business administrations for supporting a small set of organizations. In this manner, developing nations started to receive the idea of business incubations. The utilization of customary business incubation strategies, and their significance in upgrading development and advancement, was the inspiration factor behind the appropriation of business incubating programs among different developing nations. As explained by different market analysts, business incubation is an extremely fundamental apparatus in supporting enterprise and the advancement of small and medium enterprises to make more openings for work, therefore prompting enhanced ways of life (Volkmann, 2004).

Besides this, the foundation of such business incubations should rely upon the distinctive arrangement of goals to reflect particular working situations and the partners' needs. It is likewise vital to take note of that the plan of every incubation is in a specific way that tries to drive at least one destinations, similar to business reasonable wander, encouraging innovation exchange, improving advancement, and empowering financial improvement. As per Lalkaka (2002), different destinations may incorporate the production of new work openings, quickening business development, strengthening, and creating good examples to make a decent entrepreneurial culture.

Governments start business incubators to advance economic improvements and development of the whole country or to upgrade development in particular groups or areas of the nation. Specifically, this belief system is essential in districts like the United States where there are far-reaching application and usage of business incubators that generally depend on innovation to help neighborhood and state economic development. Wagner (2006) explains that the development of business incubators all around is reasonable through different
built up hypothetical measurements in view of past and existing observational proof that helps the part of advancement and innovation in advancing economic development. Such business incubators programs are additionally essential in accelerating the rate of development and improvement among the developing countries like the Kingdom of Saudi Arabia.

Moreover, business incubator projects are demonstrated powerful in guaranteeing to broaden of economies, technology commercialization, production of work openings, and wealth creation (Peters, Rice, and Sundararajan, 2004). The National Business Incubation Association (NBIA) additionally contends that business incubation programs are valuable in guaranteeing that business visionaries can make an interpretation of their thoughts into reasonable and profoundly fruitful and working business speculations by controlling them through the startup time frame and all through the developing and advanced stages. As specified before, the most urgent significance of business incubator programs

4.1 Technology Business Incubators Impact on Economic Development in KSA

The commitment of business incubations in economic improvement and development in many parts of the world is obvious by its application in developed nations. In like manner, the Kingdom of Saudi Arabia isn't an exemption in understanding the economic advantages of starting business incubation projects to encourage its aim of achieving supportable economic development and improvement.

In the course of the most recent couple of years, Saudi Arabia's administration has been on a forceful heading of seeking after its development toward the learning based economy on the planet. The administration's strategies to appoint different private and government establishments to manage the system of such financial point of view is an essential move in accomplishing the measures and advantages of economic improvement and development that accompany business incubation. Establishments like the Prince Sultan Fund to Support Women's Small Enterprises, Saudi Arabian General Investment Authority (SAGIA), the Prince Salman Young Entrepreneurship Awards, the National Entrepreneurship Center, the Prince Salman Entrepreneurship Institute, and the King Abdullah University of Science and Technology (KAUST) are among the different organizations ordered by the legislature to encourage Saudi Arabia's economic change advancement. The administration likewise made King Saud University the home of the administration's approach named Riyadh Technology Incubation Center to supervise the advance of the business incubators programs in the Middle East locale (Alshumaimri, Aldridge, and Audretsch, 2010).

As per Al-Kurdi (2002), business incubation programs in the KSA have been valuable in guaranteeing reinforced mechanical norms of small and medium ventures in the place. The creator contends that the utilization of business incubations in developing nations guarantees the upgrade of enhanced patterns in business advancement. This suggests the advancement of business incubations in the KSA and the start of innovation parks are imperative in cultivating the nation's economic improvement and development (Al-Kurdi,2002).

Moreover, Radwan and Al-Kibbi (2005) give a scope of advantages that the KSA procures from starting business incubation programs. The creators contend that Saudi Arabia's small and medium enterprises continue picking up a great deal of progress through between firm linkages that fill in as components for upgrading singular skill and abilities through quickened aggregate enterprises established in the imperative territories of assembling value chain. The small organizations additionally advantage from an extensive variety of mass sourcing of crude materials and the encouraged sharing of key offices that incorporate testing adjustment and warehousing (Radwan and Al-Kibbi, 2005). This additionally infers Saudi business visionaries’ advantage from meeting market gauges, exceedingly improved innovation capacities, and group entrepreneurial preparing. The utilization of innovation in different parts of the economy additionally helps business people in getting to cutting-edge benefits that cultivate profitability inside their enterprises.
Besides, the university business incubators additionally assume an exceptionally urgent part in supporting entrepreneurial aptitudes among understudies. The principle goal of the college incubations is to give important administrations to young business visionaries by utilizing learning and ability inside the university and guaranteeing the practical formation of significant worth.

At last, the Kingdom of Saudi Arabia profits by business incubation programs through the help of business and modern administration condition, enhanced employment creation, extended business base for entrepreneurial cooperation, upgraded showcase and economic insight, reception of new mechanical ideas in unmistakable business thoughts, and decrease in levels of dangers of new business disappointments (Al-Dosary, Rahman, and Aina, 2006).

5.0 Conclusion and Policies Recommendations

This paper breaks down the part of business incubations in connection with Saudi economic development. Changes in the worldwide economy, combined with quickened innovative headways, require the business arrangements that assist in the change of nation, group, and district's economic advancement through reconciliation of business incubation programs in financial and economic strategies to realize the change in business and financial areas. It is consequently that most nations over the globe, and particularly developing economies, are setting out on forceful procedures to start business incubation methodologies to encourage their economic development and to address their issues for sustainable economic development.

This paper characterizes business incubation programs activities went for supporting entrepreneurs and raising small and medium enterprises to guarantee the production of work openings that, thusly, result in the development of money and value creation. At the center of business incubation activities lay the issue of commercialization and exchange of innovation. There is additionally a need to give entrepreneurs the vital prerequisites for beginning up a fruitful business, similar to capital, preparing, and strengthening of the minority gatherings. For example, the examination brings up Saudi Arabia's business incubation arrangements that advance women entrepreneurs along with sustainable initiatives. In order to conclude, the paper additionally investigates different kinds of business incubation programs. This paper additionally features the stages of economic development with respect to incubation programs, the resource dependency theory and the goals of the business incubation strategies started by the Saudi government went for setting up new organizations, making of openings for work, offer preparing to entrepreneurs, balancing out new organizations that have a poor money related base, and growing existing organizations.

6.0 References


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