

Indicators of the Innovation: The case of the United Kingdom

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Abstract

The purpose of this paper is to describe and identify key performance indicators of the innovation program landscape in the United Kingdom (UK). The identification will focus on the four categories: policy, culture, economy, and industry, and each category will use four indicators for a total 16 indicators. The nature of this research is mainly qualitative. This investigation uses one semi-structured interview based in the UK, combined with an examination of organizational documents. The research findings indicated high ratings for indicators in all four categories of culture, policy, economy, industry, averaging 90%, 90%, 90%, and 100%, respectively. The authors believe that this paper presents added value to the current literature and for practitioners of innovation programs, including governments, policy makers, funded organizations, and strategic institutions.

Keywords: Innovation, technology commercialization, entrepreneurship, incubators, economic growth.

1. Introduction

Innovation is the driver of our future growth (White House, 2010; EURP, 2010; EBN, 2010; EC, 2010; Eshun, 2009). Successful implementation of a strategy for innovation requires improving the quality of education, strengthening research performance, promoting innovation and knowledge transfer throughout the Union, and making full use of information and communication technologies. In addition, it requires ensuring that innovative ideas can be turned into new products and services that create growth, quality jobs, and help address European and global societal challenges. However, to succeed, this must be combined with entrepreneurship, finance, and a focus on user needs and market opportunities (EC, 2010).

The objectives of this paper are to describe and identify key performance indicators of the innovation program landscape in the United Kingdom (UK). The identification will focus on the four categories: policy, culture, economy, and industry, and each of the categories uses four indicators for a total of 16 indicators.

The structure of this paper is as follows: Section 2 provides a literature review of the innovation program. Section 3 provides the research methodology included the evidence from the literature review and the interview of the Sussex innovation center program located at Sussex University in the UK. In section 4, the authors briefly discuss the findings of the study drawn from qualitative analysis of innovation. Section 5 concludes with implications of innovation in developed countries.

2. Literature Review of Innovation

Innovation is the process of making change, difference, and novelty in the products, services, adding values and business practices to create economic and social benefit (EC, 2010). The Organisation for Economic Cooperation and Development (OECD, 2010) defines innovation as the implementation of a new or significantly improved product, service, or process; a new marketing method, organizational method in business practices, workplace organization, or external relations. Innovative entrepreneurship is especially important within the economic cycle. Therefore, the basic concepts of entrepreneurship, innovation, and incubation and the associated terminology must be commonly accepted and shared when putting into practice actions towards the creation of new innovation-based incubators (EC, 2010).

The European Business and Innovation Network (EBN, 2012) indicates that innovation groups in Europe can be divided into three groups such as technological innovation 51.49%, non-technological innovation 38.34%, and non-innovation 10.16%. Innovation was considered the main activity of the business innovation center (BIC) in its effort to start new firms. In addition, the BICs supported 2491 companies and requested 666 patents for companies and entrepreneurs with total of 307 patents granted.

Innovation systems merge all the necessary aspects for the development of innovative businesses, such as the economic, social, political, organizational, and institutional aspects. They also provide an array of development services and facilitate the diffusion of new technologies in compliance with government policy. Padilla, Vang and Cristina (2008) indicated the importance of innovation through interaction between foreign subsidiaries, universities, and research centres. Vang and Cristina (2007) focused on the role of universities in an emerging regional innovation system. In another study, Lundvall, Joseph, and Cristina (2009) demonstrated the links between innovation system analysis and economic development.

Various researchers (Astrid, Andrew, & Cristina, 2009; Arocena & Sutz, 2000; Cassiolato et al, 2003, Lundvall,

Joseph, & Cristina, 2009) discussed the role of innovation in developed and developing countries. Further, Braczyk, Cooke and Heidenreich (1998) indicated that regional innovation systems based on the interaction between technology and policies lead to powerful economies. In addition, Hollanders, Tarantola, and Loschky (2009, 2010) report that the European Regional Innovation Scoreboard's (2010) comparative assessment of innovation performance across the regions of the European Union provides important indicators for economic development and for innovation policies. Doloreux and Parto (2005) argue that the concept of innovation systems is widely used by policy makers.

Al-Mubarak and Busler (2010b) indicated that an innovation program can help young firms to survive and grow during their start-up years, and can play a key role in the economic development of a community or region. In developing countries, business incubators are particularly valuable in helping to develop local economies, promote technology transfer, create new enterprises, and generate jobs. In conclusion, their outcomes are used to make recommendations for maximizing the success of incubators.

Al-Mubarak and Busler (2013) categorized the impact of innovation and entrepreneurship as a tool for a dynamic economic model. Their identification was based on case studies of successful innovation programs. They found that the adoption of innovation programs leads to 1) high rates of networking and outcomes, 2) high potential for financing and strategic planning, 3) fostering entrepreneurship and innovation, research commercialization, and technological entrepreneurship, 4) high number of jobs created, and 5) successful start-up companies with high survival rates. The empirical results suggest implications for practitioners such government and academic institutions and makes a contribution to knowledge about innovation and entrepreneurship in developing countries.

3. Research Methodology

The literature supports the importance of the semi-structured interview as an important tool for gathering qualitative data (Smith, 1972; Torrington, 1972; King, 1994; Jankowicz, 1995). Furthermore, the semi-structured interview effectively uses open-ended questions the content and sequence of which are not fully specified in advance and that the respondents are encouraged to answer in their own words (Jankowicz, 1995). The United Kingdom sample included one innovation center located in Sussex University. Interviews were conducted with innovation managers in 2013. The interview instrument for the semi-structured, in-depth interviews was developed after a thorough literature review and revised after pilot interviews with innovation centers in the UK. The pilot interviews served as a pre-test for instrument validation and changes were made to the interview instrument based on the findings and comments.

The international interview design is based on two charts. First, the radar chart consists of four categories: 1) culture; 2) policy; 3) industry; and 4) economy. In addition, each category is measured by four indicators and each of the 16 indicators is rank-ordered as an independent variable. Second, each indicator may be rated as Low (10%), Medium (20%), or High (25%), which will yield a maximum score for each category of 100%. Category scores range from 80% to 100% (High), 60% to 79% (Medium), and below 60% (Low).

4. Findings and Discussion

From the current literature, it is evident (see section 2 above) that innovation programs are effective tools for technology transfer, innovation, new technology, and research incentives (Al-Mubarak & Busler, 2011). In addition, innovation-based incubators are local economic development tools (EURP, 2010; Al-Mubarak & Busler, 2009; Eshun, 2009; Al-Mubarak & Busler, 2010a), which favour the conditions for creation and growth of novel business activities and contribute actively to the development of the regions where they operate.

Chart 1 shows the ratings for Sussex Innovation Center. All indicators received ratings of medium or high, and all four categories—culture, policy, industry, and economy—received high ratings. Chart 2 gives a summary of the category ratings.

Similarly, Table 1 presents the average of indicators as the result from the radar chart, at 93%, which indicated an average outcome in the high range. The percentage of each category from the radar chart showed high outcomes in all categories, including culture, policy, industry, and economy, which were rated at 100%, 90%, 100%, and 90%, respectively.

5. Conclusions and Reflection

The following general conclusions can be drawn from the previous overview of the findings:

- 1- The average of indicators of the Culture category indicated high outcomes of 90%;
- 2- The average of indicators of the Economy category indicated high outcomes of 90%;
- 3- The average of indicators of the Policy category indicated high outcomes of 90%; and
- 4- The average of indicators of the Industry category indicated high outcomes of 100%.

In conclusion, innovation programs are vital tools for economic growth, knowledge and technology transfer based on the several indicators such as creativity, entrepreneurship, role of government, role of university,

strategic focus, new products, survival rate, job creation, startup companies, and number of patents. The authors aim to conduct future research analyzing innovation case studies from developed and developing countries for policy implications worldwide.

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Dr. Hanadi Mubarak AL-Mubarak is an Assistant Professor in Kuwait University. She teaches project management in civil engineering for undergraduate and graduate courses as well as management courses in business schools. She has published scientific articles in various academic journals, a book, and has presented her research papers in many countries. Dr. AL-Mubarak is the recipient of several international awards and medals: for contributions to International Scientific Research in WHO'S WHO IN THE WORLD 2009, 2010, 2011 & 2012; 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-Mubarak serves on the Editorial Board of three international journals: Business, Economic Development, Management and International Business Entrepreneurship. She has substantial experience in research in 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, and sustainable development approaches and methods.

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Chart 1: Sussex Innovation Center

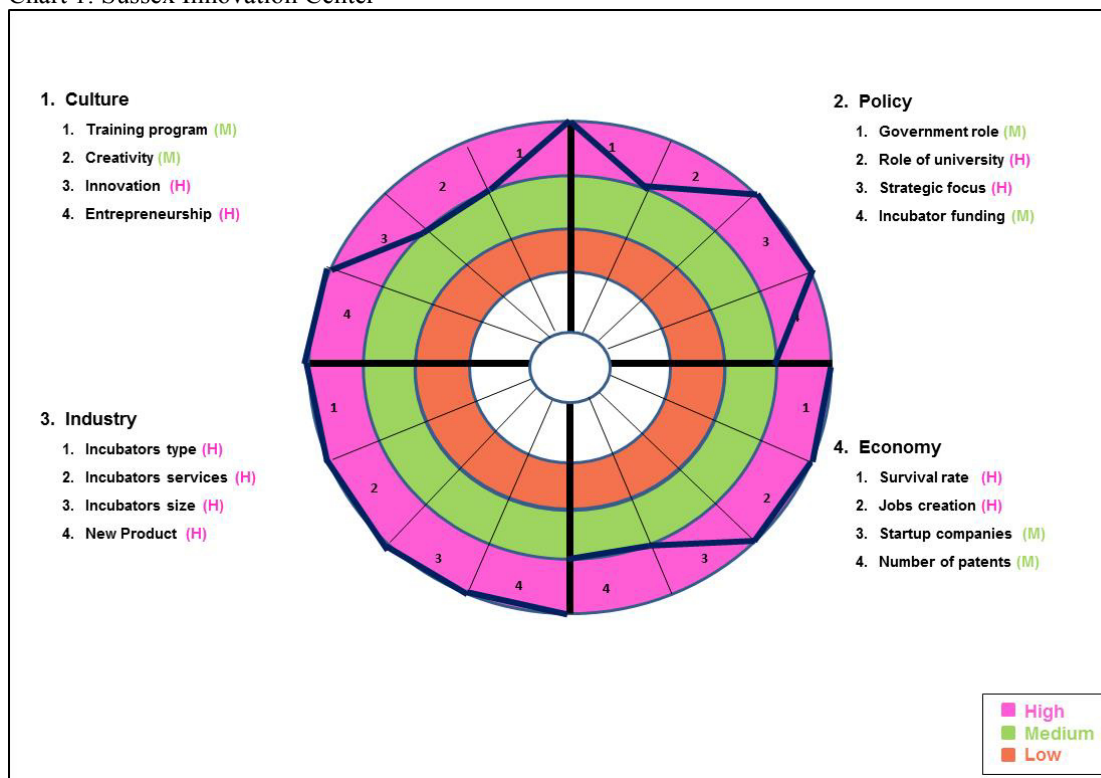


Chart 2: Percentage of total outcomes from radar chart

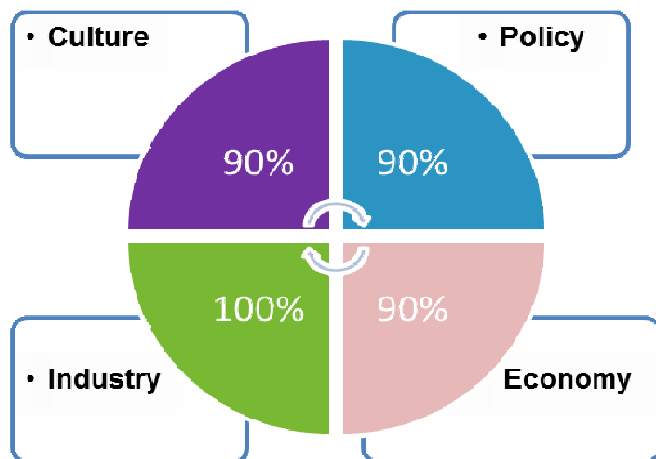


Table 1: Result of average indicators of Sussex Innovation Center

	% 100	Scale			Indicators %	Total categories %
		High (25%)	Medium (20%)	Low (10%)		
Culture	100					
1. Training program	25		20		20	90
2. Creativity	25		20		20	
3. Innovation	25	25			25	
4. Entrepreneurship	25	25			25	
Policy	100					
1. Government role	25		20		20	90
2. Role of university	25	25			25	
3. Strategic focus	25	25			25	
4. Incubator funding	25		20		20	
Industry	100					
1. Incubators type	25	25			25	100
2. Incubators services	25	25			25	
3. Incubators size	25	25			25	
4. New product	25	25			25	
Economy	100					
1. Survival rate	25	25			25	90
2. Jobs creation	25	25			25	
3. Startup companies	25		20		20	
4. Number of patents	25		20		20	
Total	400					370
Average	100%					92.5%

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