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Innovation and Incubators: A Qualitative Description of St. John's Innovation Centre

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The aim of this paper was to describe and identify key indicators of St. John's Innovation Centre located in Cambridge, United Kingdom (UK).
Methodology: The methodology was mainly qualitative based on a literature review and one semi-structured interview in the UK, along with a review of organizational documents. Sixteen key indicators, arranged into four categories, were used to assess the work of the innovation centre. Each indicator and each category were given ratings of Low, Medium, or High to signify their importance in describing the centre.
Results: The research revealed ratings in the High range for all four categories. The Culture and Economy categories received ratings of 95%, while the Policy and Industry categories received ratings of 80%. None of the sixteen key indicators received low ratings. This study supports the importance of indicators in all four areas as measures to accurately describe the innovation centre studied.
Conclusion: The research adds value to academicians and practitioners in government, funded organizations, institutions, and policy makers.

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1. INTRODUCTION

In recent years, innovation center and business incubation programs have been successfully implemented internationally as strategies for increasing job creation, accelerating innovation, providing physical places to foster entrepreneurship and start-up companies, technology transfer, and commercialization. In addition, incubation practitioners, stakeholders, and policy makers agree on the potential impact of incubators as powerful economic development tools for long term investment [1,2,3,4,5,6,7,8].

The objective of this paper is to describe and identify key indicators of St. John's Innovation Centre located in Cambridge, United Kingdom (UK). The identification will focus on the four categories: Policy, Culture, Economy and Industry, and each of the categories will use four indicators for a total of 16 indicators.

The structure of this paper is as follows: Section 2 provides a literature review. Section 3 gives the research methodology including the evidence from the literature review and an interview with St. John's Innovation Program. In section 4, the authors briefly discuss the findings of the study. Section 5 briefly presents the study conclusions.

2. LITERATURE REVIEW

Al-Mubaraki [9] indicated that business incubators are vital tools in economic development and economic diversification. Al-Mubaraki and Busler [10] argued that the adaptation of a business incubator model leads to: (1) the support of diverse economies, (2) the commercialization of new technologies, (3) job creation, and (4) increases in wealth, given that weaknesses can be overcome.

Al-Mubarakiand Busler [11] examined ten international case studies chosen on the basis of their well-known success and a sample of 105 surveys. The results of the survey and case studies indicate the value-added of job creation, technology transfer, commercialization, reduction of indirect start-up costs for companies, and graduation companies in the market. Moreover, the lessons learned from the case studies indicate that the success of incubatees to sustainable graduation is reliant upon: (1) clear objectives, (2) incubator's location, (3) access to services, (4) employment creation, and (5) economic development strategy.

Al-Mubarakiand Busler [12] concluded that entrepreneurship, incubators, and innovation contribute to the international economy and play a vital role not only in economic recovery but also in smart growth and economic development.

AL-Mubaraki and Busler [13] demonstrated that innovation centers or science parks act as powerful models for fostering technological innovation, technological entrepreneurship, commercialization, and technology transfer.

Al-Mubarakiand Busler [14] argued that business incubators aim at promoting economic development of their community by supporting start-up companies and their business development and offering services to support the establishment and development of new as well as existing small and medium companies.

In another study, Al-Mubaraki and Hamad [15] argued that business incubation programs are designed to accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed by incubator management. The study concluded that business incubators are model accelerator tools for the 21st century.

Anderson and Al-Mubaraki [16] found that a business incubator can be successful if there is appropriate understanding of the requirements for success including clear planning with appropriate resources and required skills and knowledge to run a successful operation.

Al-Mubarakiand Schrödl [17,18] discussed four measured indicators including: (1) graduation of incubated businesses, (2) success of

businesses incubated, (3) jobs created by incubation, and (4) salaries paid by incubator clients. The study indicated business incubators as best practice models for economic development worldwide and in the GCC.

Al-Mubaraki, Sharp and Busler [19] indicated that innovation is a long-term investment to establish self-sustaining technology to accelerate the successful development of innovation and commercialization of technology through an array of support resources and services, such as the improvement of R&D to foster high quality products.

Al-Mubaraki, Busler, and Al-Ajmei [20,21] and Al-Mubaraki, Busler, Al-Ajmeiand Aruna [22] indicated that business incubators support economic diversification, technologies commercialization, fostering entrepreneurship, and job creation.

3. RESEARCH METHODOLOGY

The research was undertaken using an in-depth literature review and an interview as part of a qualitative research methodology. This methodological approach is most appropriate because it allows the researcher to observe the information and focus on understanding the dynamics present [23]. Semi-structured interviews are valuable tools for gathering qualitative data [2,24,25]. Furthermore, the semi-structured interview is a good technique as open-ended questions encourage the respondents to answer in their own words and because it uses questions whose content and sequence are not fully specified in advance [2]. The interview was conducted with the Director of the St. John Innovation Center located in University of Cambridge, UK, to assist in the development of relevant questions and the protocol used to guide the research.

The in-depth 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

United Kingdom Business Incubation defines business incubation as a combination of business development processes, infrastructure, and people designed to assist new businesses to survive and grow through the different incubation development phases [26]. Business incubation offers many activities for client companies including infrastructure, business assistance, and networking [27,28,29,30,31,32,33,34,35]. Furthermore, many studies discussed the success of business incubation programs [36,37,38,39,40,34].

Chart 1, St. John's Innovation Centre Radar Chart, shows the responses to the interview. The category of Culture received a rating of High, with only one the four indicators in the Culture category receiving less than a High rating--the *Training program* indictor was rated as Medium. The Policy and Industry categories received ratings of Medium for all indicators, and the Economy category received a rating of High, with only the indicator *Number of patents receiving* a rating of Medium.

Table 1 presents the average of indicators from the radar chart as 88%, which indicated High outcomes. Each category from the radar chart received outcomes of High; the categories of Culture, Policy, Industry, and Economy were rated at 95%, 80%, 80%, and 95% respectively. See chart 2 for a summary of the category ratings.

Chart 3 presents the total indicators for St. John's Innovation Centre includes four categories, and 16 indicators indicated 87.5%, which divided into high and medium outcomes, 37.5% and 50% respectively. In addition, this chart reflects vertical analysis of four categories include culture, policy, industry and economy, where the 16 indicators combine and overlaps.

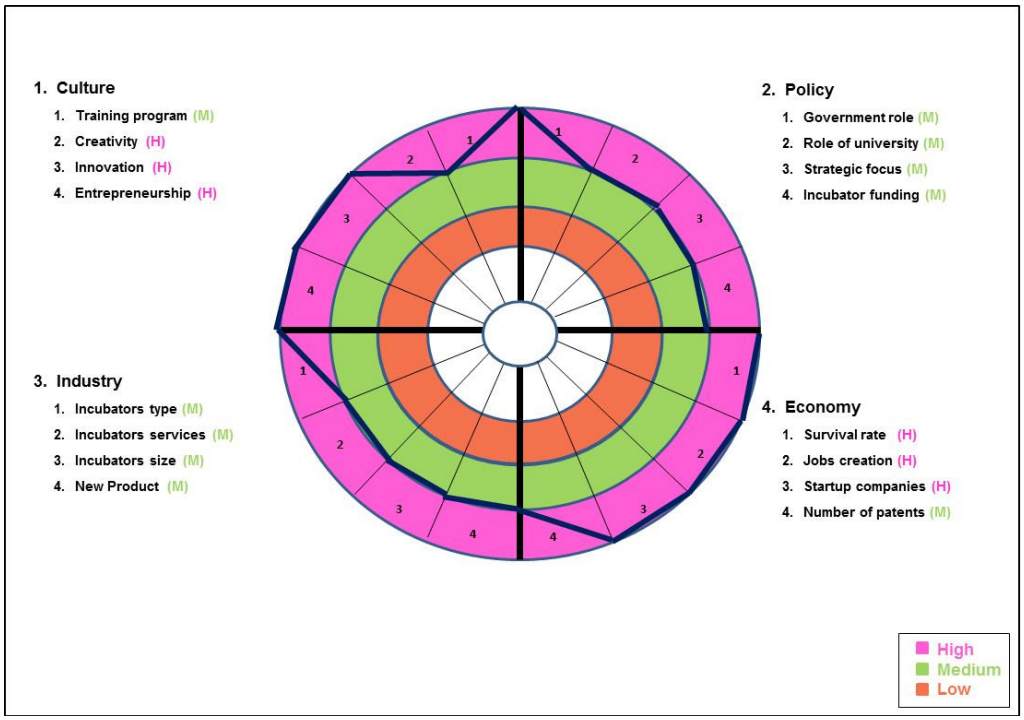

Chart 1. St. John's innovation centre radar chart

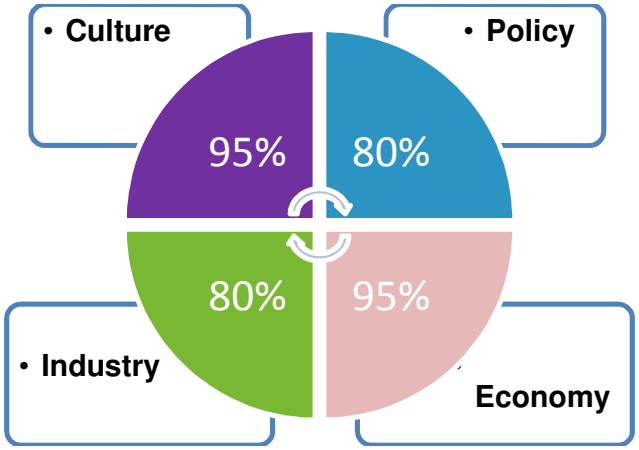

Chart 2. Horizontal analysis of percentage of total outcomes from radar chart

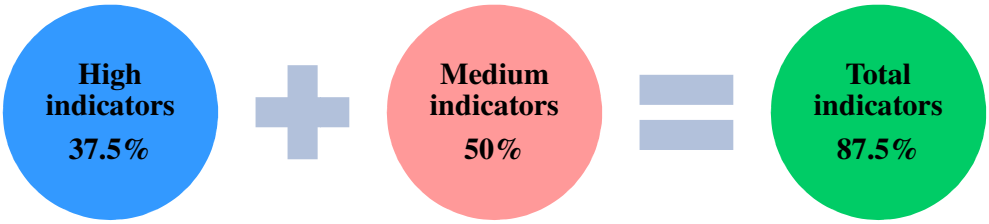

Chart 3. Vertical analysis of indicators

Table 1. Result of average indicators of St. John's innovation centre

	% 100	Scale			Indicators %	Total categories* %
		High (25%)	Medium (20%)	Low (10%)		
Culture	100					
1. Training program	25		20		20	95
2. Creativity	25	25			25	
3. Innovation	25	25			25	
4. Entrepreneurship	25	25			25	
Policy	100					
1. Government role	25		20		20	80
2. Role of university	25		20		20	
3. Strategic focus	25		20		20	
4. Incubator funding	25		20		20	
Industry	100					
1. Incubators type	25		20		20	80
2. Incubators services	25		20		20	
3. Incubators size	25		20		20	
4. New product	25		20		20	
Economy	100					
1. Survival rate	25	25			25	95
2. Jobs creation	25	25			25	
3. Startup companies	25	25			25	
4. Number of patents	25		20		20	
Total	**400**					**350**
Average	**100%**	37.5%	50%			**87.5%**

**High = 80% - 100%*
Medium = 79% - 60%
Low = less than 60%

5. CONCLUSION AND REFLECTION

In summary, the results of qualitative research of St. John's Innovation Center provide ratings for 16 key indicators used to describe innovation centers, incubators, and similar types of business development programs. The 16 indicators were rated on a scale where Low = 10%, Medium = 20%, and High = 25%, for a maximum rating of 25% for each indicator. The indicators were grouped into four categories—Economy, Culture, Policy, and Industry—that combined the ratings of the indicators so that each category had a maximum rating of 100%. For St. John's Innovation Centre, all four categories had ratings in the High range, with two at the lowest point of the High range and two at the upper end of the High range. Specifically, the categories of Policy and Industry received ratings of 80%, with each of the four indicators in those two categories also receiving ratings of Medium. The categories of Culture and Economy both received ratings of 95%. For each of those categories, three indicators received ratings of High and one received a rating of Medium. None of the indicators received a rating of Low. Therefore, the program at St. John's Innovation Centre can be described with the highest emphasis on the indicators: *Creativity*, *Innovation*, *Entrepreneurship*, *Survival Rate*, *Jobs Creation*, and *Startup Companies*. Of secondary importance, but still significant, were the indicators: *Training Program, Government Role, Role of University, Strategic Focus, Incubators Funding, Incubators Type, Incubators Services, Incubators Size, New Products,* and *Number of Patents*. Thus, while significant levels of attention are given to the development of Policy to support innovation and efforts to track the progress of innovation efforts by means of Industry variables, even greater attention is given to the creation of a Culture to support innovation and measures of the overall impact of innovation on the Economy. Future work can be continued for other regions such as the Gulf Cooperation Council (GCC), the United States, and other European countries to learn more about the similarities and differences in the descriptions of business development programs among the countries.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Al-Mubaraki H, Ahmed A, Al-Ajmei R. Best practices of business incubators in developed and developing countries: The roadmap for the gulf cooperation council (GCC) countries. World Association for Sustainable Development, University of Sussex, United Kingdom; 2014. Online available: http://www.amazon.co.uk.
2. Jankowicz AD. Business research projects. 2nd Ed., London, Thompson Business Press. 1995;195.
3. Groen AJ, Wakkee IAM, De Weerd-Nederhof PC. Managing tensions in a high-tech start-up an innovation journey in social system perspective. International Small Business Journal. 2008;26(1):57-81.
4. Hackett S, Dilts DM. A systematic review of business incubation research. Journal of Technology Transfer. 2004;29(1):55-82.
5. NBIA Business incubation FAQ; 2007. Available online at: http://www.nbia.org/resource_center/bus_inc_facts/index.php.
6. OECD. Technology incubators: Nurturing small firms. Paris: Organisation of Economic Cooperation and Development; 1997.
7. Phan PH, Siegel DS, Wright M. Science parks and incubators: Observations, synthesis, and future research. Journal of Business Venturing. 2005;20:165-182.
8. UKBI. What is business incubation? 2007. Available online at: http://www.ukbi.co.uk.
9. Al-Mubaraki H. Procurement of international business incubation–quantitative and qualitative approaches. Melrose Books, U.K; 2008. Online available: www.melrosebooks.com.
10. Al-Mubaraki H, Busler M. Business incubators models of the USA and UK: A SWOT analysis. World Association for Sustainable Development. 2010;6(4):335-354.
11. Al-Mubaraki H, Busler M. Quantitative and qualitative approaches of incubators as value-added: Best practice model. Journal of American Academy of Business, Cambridge. 2012;18(1):238-245.
12. Al-Mubaraki H, Busler M. Entrepreneurship, incubators and innovation in Thailand. Journal of American Academy of Business, Cambridge. 2013;19(1):90-97.
13. AL-Mubaraki H, Busler M. Technopark models: University incubators worldwide. The Business Review, Cambridge. 2012;20(1):272-279.
14. Al-Mubaraki H, Busler M. Business incubation as an economic development strategy: A literature review. International Journal of Management. 2013;30(1):362-372.
15. Al-Mubaraki H, Hamad E. Business incubation accelerator tool for 21st century. Journal of American Academy of Business, Cambridge. 2013;18(2):233-237.
16. Anderson BB, AL-Mubaraki H. The gateway innovation center: Exploring key elements of developing a business incubator. World Journal of Entrepreneurship, Management and Sustainable Development. 2012;8(4):208-216.
17. Al-Mubaraki H, Schrödl H. Measuring the effectiveness of business incubators: A four dimensions approach from a gulf cooperation council perspective. Journal of Enterprising Culture. 2011;19(4):435–452.
18. Al-Mubaraki H, Schrödl H. Incubating success towards gulf cooperation council (GCC). International Journal of Innovation and Knowledge Management in Middle East & North Africa. 2012;1(1). Available online: http://www.worldsustainable.org.
19. Al-Mubaraki H, Sharp J, Busler M. Incubator: Innovation and technological transfer. Journal of American Academy of Business, Cambridge. 2013;19(1):209-215.
20. Al-Mubaraki H, Busler M, Al-Ajmei R. The key successes of incubators in developed countries: Comparative study. Journal of Economics and Sustainable Development. 2013;4(10):144-149.
21. Al-Mubaraki H, Busler M, Al-Ajmei R. Incubators as tools for economic growth and technology transfer in developed countries. European Journal of Business and Management (EJBM). 2013;5(16):113-119.
22. Al-Mubaraki H, Busler M, Al-Ajmei R, Aruna M. Incubators best practices in

developed and developing countries: Qualitative approaches. Asian Journal of Empirical Research. 2013;3(7):895-910.
23. Yin R. Case study research: Design and methods. 4th ed. Sage publications, Newbury Park, CA, US; 2009.
24. King N. The qualitative research interview. In qualitative methods in organizational research: A practical guide. Edited by C. Cassell and G. Symon, 14–36. London: Sage; 1994.
25. Smith JM. Interviewing in market and social research. Routledge, London; 1972.
26. Harman P, Read L. Supporting Incubation in the UK Through the Development of Benchmarks; 2003. Accessed on May 4, 2014 from: Available:www.sbaer.uca.edu/research/icsb/2003/148.doc.
27. Aernoudt R. Incubators: Tool for entrepreneurship? Small Business Economics. 2004;23(2):127–35.
28. Aerts K, Matthyssens P, Vandenbempt K. Critical role and screening practices of European Business Incubators. Technovation. 2007;27(5):254–67.
29. Bergek A, Norrman C. Incubator best practice: A framework. Technovation. 2008;28(1-2):20-28.
30. European Commission (EC). Benchmarking of business incubators. Final Report. EC, Brussels; 2002.
31. Grimaldi R, Grandi A. Business incubators and new venture creation: An assessment of incubating models. Technovation. 2005;25(2):111–21.
32. Lalkaka R, Abetti P. Business incubation and enterprise support systems in restructuring countries. Creativity and Innovation Management, Blackwell Publishers, Manchester; 1999.
33. Lalkaka R, Bishop J. Business incubators in economic development: An initial assessment in industrializing countries. United Nations Development Programme, New York, Organisation of American States, Washington DC, United Nations Industrial Development Organisation, Vienna; 1996.
34. Totterman H, Sten J. Start-ups: Business incubation and social capital. International Journal of Small Business. 2005;23(5):487–511.
35. Smilor RW, Gill MD. The new business incubator: Linking Talent, Technology, Capital, and Know-How. Massachusetts: Lexington Books; 1986.
36. Chan KF, Lau T. Assessing technology incubator programs in the science park: The good, the bad and the ugly. Technovation. 2005;25(10):1215–1228.
37. Davidsson P, Honig B. The role of social and human capital among nascent entrepreneurs. Journal of Business Venturing. 2003;18(3):301-331.
38. McAdam M, McAdam R. High tech start-ups in university science park incubators: The relationship between the start-Up's lifecycle progression and use of the incubator's resources. Technovation. 2008;28(5):277–90.
39. Peña I. Business incubation centers and new firm growth in the Basque Country. Small Business Economics. 2004;22(3–4):223–36.
40. Sofouli E, Vonortas N. S&T parks and business incubators in middle-sized countries: The case of Greece. The Journal of Technology Transfer. 2007;32(5):525-544.

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