

Categories of incubator success: a case study of three New York incubator programmes

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Abstract

Purpose – The purpose of this paper is to investigate and identify three categories of incubators in the USA located in New York (NY). The incubator categories are: technology commercialisation; economic development; and entrepreneurship.

Design/methodology/approach – The study uses a qualitative approach based on interviews concerning three incubator programmes selected for their successful outcomes.

Findings – The research findings suggest four priorities for incubators: to be dynamic models of self-sustainable, efficient business development; to provide helpful tools for generating jobs; to foster and support enterprise and innovation to create the best environment for the start-up and smart growth of businesses; and to support value-added businesses through various means, such as developing the region's science parks and R&D centres, improving collaboration between universities, and supporting business investment and growth.

Originality/value – The research adds value to academicians and practitioners such as government, funded organisations, institutions and policy makers.

Keywords Economic development, Entrepreneurship, Incubators, Technology commercialization, New York, Business growth

Paper type Research paper

Introduction

In developed and developing countries, there are more than 7,000 incubation programmes worldwide engaged in supporting the development of new high-growth businesses (EDA, 2011; Monkman, 2010). Several research studies on incubators have been undertaken, particularly in the USA and other countries worldwide (Temali and Campbell, 1984; Allen and Rahman, 1985; Plosila and Allen, 1985; Campbell *et al.*, 1985; Brooks, 1986; Fry, 1987; Merrifield, 1987; Smilor, 1987; Hisrich, 1988; Campbell, 1989; Allen and McCluskey, 1990; Mian, 1994b; Culp, 1996; Mian, 1996a, b, 1997; Autio and

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Kloftsen, 1998; Thierstein and Wilhelm, 2001; Colombo and Delmastro, 2002; Hsu *et al.*, 2003; Abetti, 2004; Pena, 2004; Lee and Osteryoung, 2004; Peters *et al.*, 2004; Rothschild and Darr, 2005; Etzkowitz *et al.*, 2005; Totterman and Sten, 2005; Chan and Lau, 2005; Rothaermel and Thursby, 2005a,b; Wynarczyk and Raine, 2005; von Zedwitz and Grimaldi, 2006; Kim and Ames, 2006; Studdard, 2006; Gassmann and Becker, 2006; Chandra *et al.*, 2007; Aerts *et al.*, 2007; Hytti and Maki, 2007; Hughes *et al.*, 2007; McAdam and Marlow, 2007; Akçomak and Taymaz, 2007; McAdam and McAdam, 2008; Schwartz and Hornych, 2008; Chandra and Fealey, 2009; Akçomak, 2009; Atherton and Hannon, 2006; Schwartz, 2009; Voisey *et al.*, 2006; Monkman, 2010; Al-Mubarakhi and Busler, 2012a, b, c, d, e; Al-Mubarakhi *et al.*, 2014; Al-Mubarakhi and Schrödl, 2012a, b). Business incubators act as an economic strategy to develop new and emerging social and economic opportunities in the growth and commercialisation of new products, new processes and new business models. The strategic benefits and objectives lead to several elements such as creativity, innovation and entrepreneurship with respect to business incubation models (Joseph, 2009; Allen and Levine, 1986; Roper, 1999). Furthermore, many studies have identified the successes of incubators and the fact that they support new venture creation and add value (Culp, 1996; Lumpkin and Ireland, 1988; Merrifield, 1987; Kuratko and LaFollette, 1987; Bearse, 1998; Mian, 1994a, 1997; Phillips, 2002; McAdam and McAdam, 2008).

This paper is structured as follows: the next section provides a thorough review of the literature on the details of incubators. The research methodology section follows, including the successful interviews describing three categories of incubators in the USA: economy development, technology commercialisation and entrepreneurship. This is followed by a brief discussion of the findings of the study drawn from the analysis of US incubator programmes. The final section presents a conclusion based on the study's discussion and results.

Review of the literature

Al-Mubarakhi and Busler (2010a) indicated that business incubators contribute to the international economy and play a vital role not only in the economic recovery but also in economic development. International adaptation leads to the support of diverse economies, the commercialisation of new technologies, jobs creation and wealth building. Al-Mubarakhi and Busler (2010b) stated that business incubators are being used as economic development tools by nearly every country. This study identified the strengths, weaknesses, opportunities and threats (see Figure 1).

Al-Mubarakhi and Busler (2011a) indicated four priorities; first, business and technological incubators have considerable potential for contributing to economic development, as demonstrated by evidence of job creation, enhanced firm survival rates and increased technological innovation. Second, apart from the role of the impact of business incubators, contextual factors may also play an important role. From the studies conducted in the USA, it can be argued that business incubation may only have a significant impact on economic development if it occurs in the context of broader economic reforms and investment in infrastructure, led by governments. Third, some of the aspects and activities of business and technology incubators can hinder rather than promote economic development, for example, by promoting an approach which is too academic, or by creating industrial or geographical clusters of firms rather than the diversification which may be needed for healthy economic growth. Fourth, the role of business and technology incubators in generating social and intellectual capital and the impact of these forms of capital on economic development are hard to measure, largely

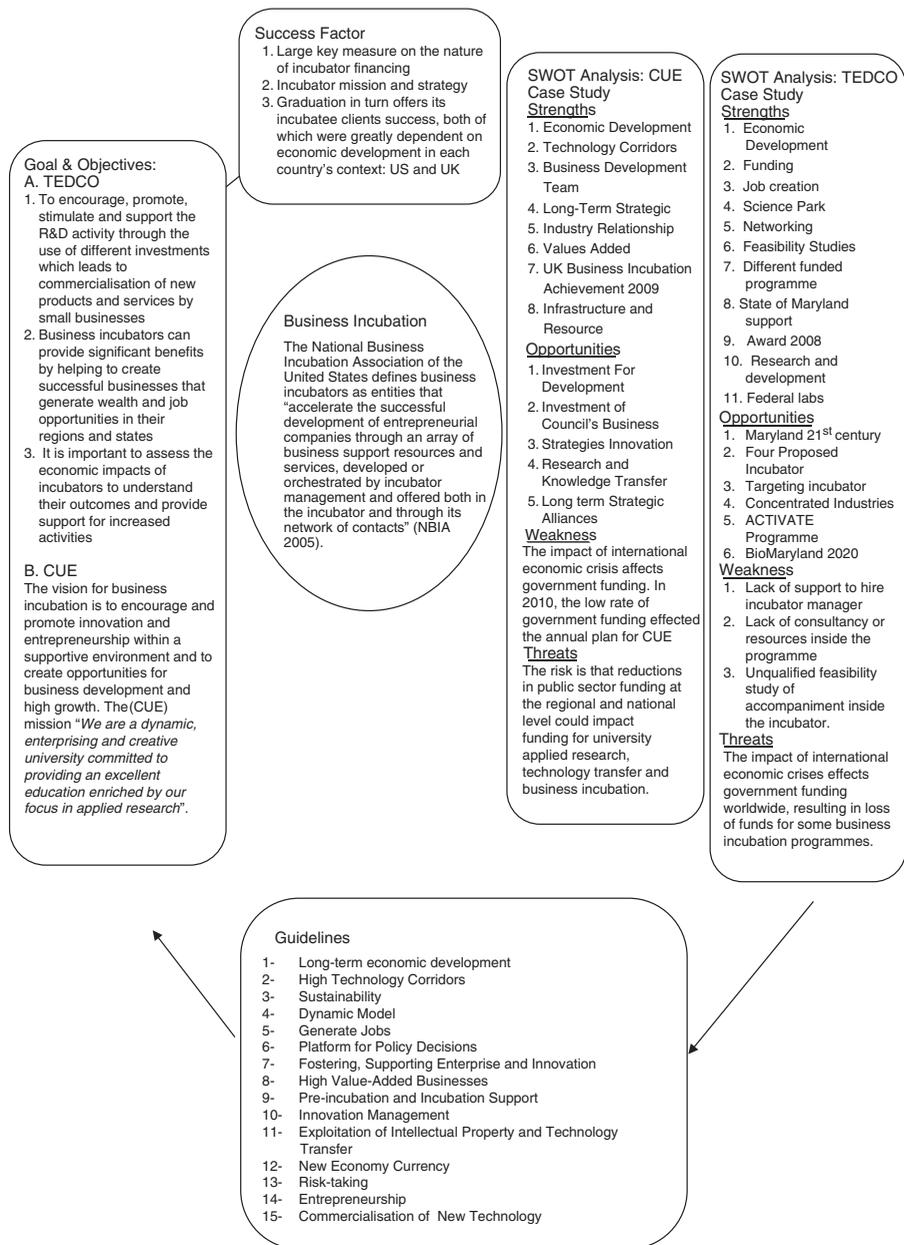


Figure 1.
SWOT result

due to the difficulties of even defining these forms of capital; moreover, the available research evidence in this area is very limited.

Another study by Al-Mubarak and Busler (2011b) identifies the strengths of the European case studies as: to support economic development by creating new jobs; to accelerate the modernisation and diversification of the region's economy; to foster and

support enterprise that creates the best environment for businesses to start up; to invest time and effort long-term to strengthen the relationships between academia and industry; to provide networking opportunities between academia and industry to collaborate for mutual benefit; and to commercialise knowledge and build relationships that give value to new economies.

In their study, Al-Mubarak and Schrödl (2012b) proposed a measurement model concerning the international context. The four measured indicators are: graduation of businesses incubated, success of businesses incubated, jobs created by incubation and salaries paid by incubator clients. The recommendations from the study could be of help in developing business incubation guidelines for best practice in GCC, which leads the economic development worldwide. Al-Mubarak and Busler (2012a) concluded that incubators or innovations are a vital tool for technology transfer, jobs creation, entrepreneurship and the commercialisation of technology.

Recently, Al-Mubarak and Busler (2013) discussed a best-practice model based on the lessons learned from quantitative and qualitative approaches of incubators, including five international case studies and survey findings indicating that in order for business incubators to be inclusive and create smart, sustainable growth, they should follow certain criteria:

- (1) clear incubator goals can increase the rate of graduation companies from incubation programmes;
- (2) high survival rate of companies ranged at 81-90 per cent; this percentage leads to the sustainability of companies in the market;
- (3) high rate of employment creation leads to economic development; and
- (4) active role of cooperation of R&D contributes positively on technology transfer and increment in the rate of patents.

Methodology

The research was undertaken using an in-depth literature review and interview as part of a qualitative research strategy. The three interviews were undertaken with the directors of each incubation programme as listed in Table I, which includes the location of the incubators in New York City, USA. In addition, the in-depth interview used a radar chart including three categories: technology commercialisation, economic development and entrepreneurship. Each category was measured on three key

No.	Institute	Web site	Contact details
1	Entrepreneurship Space-Mi Kitchen es su Kitchen	www.mikitchenessukitchen.com	Kathrine Gregory founder and director, Mi Kitchen es su Kitchen, NY, USA
2	New York University (NYU) Incubator	http://w4.stern.nyu.edu/berkley/student.cfm?doc_id=2494	Micah Kotch Director of Operations, NYU Incubator, Brooklyn, NY, USA
3	Stony Brook University Office of the VP for Research	www.lihti.org/	Dr Ann-Marie Scheidt Stony Chair, Tenant Selection Committee Brook Univ Office of the VP for Research, Stony Brook, NY, USA

Table I.
US interview
developed by
the author

indicators, and each indicator is a rank-order independent variable (e.g. low (L, 60 per cent), moderate (M, 80 per cent), and high (H, 100 per cent)).

During the interview with the director of the first case: “Entrepreneurship Space-Mi Kitchen es su Kitchen”, the answer for categories included the following: technology commercialisation – high; economic development – high; entrepreneurship – high (see Figure 2). The second interview, with the director of “New York University (NYU) Incubator”, produced high answers for the three categories (see Figure 2). Finally, the third interview, with the vice president of “Stony Brook University”, produced high answers for three categories (see Figure 2).

Findings

According to Table II, the scales of the three categories were high (H) 100 per cent for technology commercialisation, economic development and entrepreneurship. The results of average indicators of entrepreneurship for Space-Mi Kitchen es su Kitchen, NY, USA, were high (H).

In Table III, the scales of technology commercialisation, economic development and entrepreneurship were high (H), 100 per cent. The results of the average indicators of Stony Brook University, NY, USA were high (H).

As shown in Table IV, the scales of three categories were high (H) 100 per cent, including technology commercialisation, economic development and entrepreneurship. The results of average indicators for NYU Incubator, NY, USA, were high (H).

These findings show the positive outcomes from incubators as value added to the USA, specifically to New York.

Summary and conclusions

The following general conclusions can be drawn from the an overview of the findings of three US interviews concerning business incubation programmes including

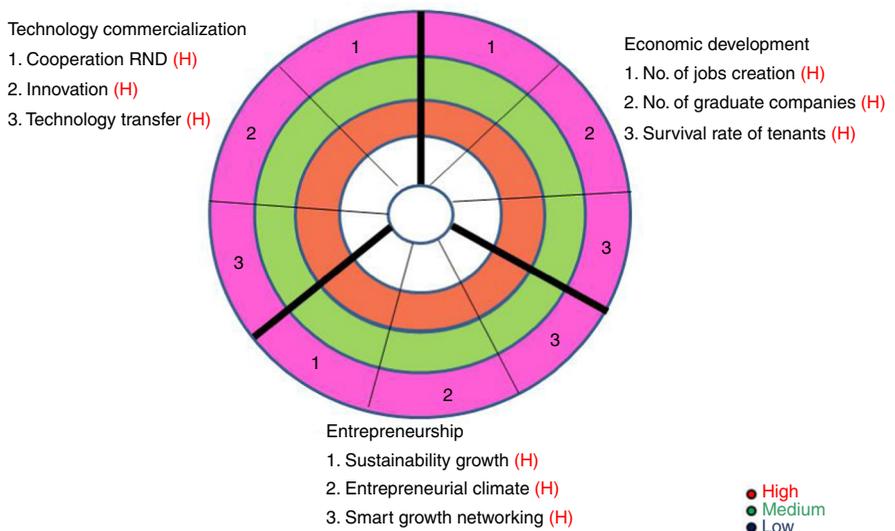


Figure 2. Radar chart of Entrepreneurship Space-Mi Kitchen es su Kitchen; NYU Incubator; and Story Brook University office of the VP for research, NY, USA

Table II.
Result of average
indicators of
Entrepreneurship
Space-Mi Kitchen
es su Kitchen, NY,
USA

Key indicators	Categories	Scale			Indicators (%)	Average (%) ^a
		High (100%)	Medium (80%)	Low (60%)		
Cooperation RND	Technology	100			100	
Innovation	commercialisation	100			100	100
Technology transfer		100			100	
No. of jobs creation	Economic	100			100	
No. of graduate companies	development	100			100	100
Survival rate of tenants		100			100	
Sustainability growth	Entrepreneurship	100			100	100
Entrepreneurial climate		100			100	
Smart growth networking		100			100	
Average ^b			H			100

Notes: ^aSum of indicators in each categories divided by 3; ^bsum of average categories divided by 3 (key indicators)

Key indicators	Categories	Scale			Indicators (%)	Average (%) ^a
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Cooperation RND	Technology	100			100	100
Innovation	commercialisation	100			100	
Technology transfer		100			100	
No. of jobs creation	Economic	100			100	100
No. of graduate companies	development	100			100	
Survival rate of tenants		100			100	
Sustainability growth	Entrepreneurship	100			100	100
Entrepreneurial climate		100			100	
Smart growth networking		100			100	
Average ^b			H			100

Table III.
Result of average
indicators of Stony
Brook University
office of the VP for
research, NY, USA

Notes: ^aSum of indicators in each categories divided by 3; ^bsum of average categories divided by 3 (key indicators)

Key indicators	Categories	Scale			Indicators (%)	Average (%) ^a
		High (100%)	Medium (80%)	Low (60%)		
Cooperation RND	Technology	100			100	100
Innovation	commercialisation	100			100	
Technology transfer		100			100	
No. of jobs creation	Economic	100			100	100
No. of graduate companies	development	100			100	
Survival rate of tenants		100			100	
Sustainability growth	Entrepreneurship	100			100	100
Entrepreneurial climate		100			100	
Smart growth networking		100			100	
Average ^b			H			100

Table IV.
Result of average
indicators of NYU
Incubator, NY, USA

Notes: ^aSum of indicators in each categories divided by 3; ^bsum of average categories divided by 3 (key indicators)

Entrepreneurship Space-Mi Kitchen es su Kitchen, Stony Brook University and NYU Incubator, located in New York:

- (1) the high economic development indicated a high survival rate of tenants, a high number of jobs created and graduate companies which lead to a positive impact of incubators as a vital tool for economic development;
- (2) the high technological commercialisation indicated high cooperation of research and development, high innovation and successful technology transfer; and
- (3) the high entrepreneurship fosters the entrepreneurial climate, leading to high sustainability and smart growth.

Based on the above, it can be concluded that the average of the three categories, including economic development, technology commercialisation and entrepreneurship indicates that the incubators act as:

- (1) a dynamic model of self-sustainable, efficient business development;
- (2) a helpful tool to generate jobs;
- (3) a method of fostering and supporting enterprise and innovation to create the best environment for the growth of businesses, both at start-up and to accelerate smart growth; and
- (4) high contributors that add value to businesses by developing the region's science parks and R&D centres, improving collaboration between universities and supporting business investment and growth.

References

- Abetti, P.A. (2004), "Government-supported incubators in the Helsinki region, Finland: infrastructure, results, and best practices", *Journal of Technology Transfer*, Vol. 29 No. 1, pp. 19-40.
- Aerts, K., Matthyssens, P. and Vandenbempt, K. (2007), "Critical role and screening practices of European business incubators", *Technovation*, Vol. 27 No. 5, pp. 254-267.
- Akçomak, I.S. (2009), "Incubators as tools for entrepreneurship promotion in developing countries", UNU-WIDER and UNU-MERIT research workshop on Entrepreneurship, technological innovation, and development, Maastricht, 30-31 October 2008.
- Akçomak, I.S. and Taymaz, E. (2007), "Assessing the effectiveness of incubators: the case of Turkey", in Ramani, V.V. and Bala Krishna, A.V. (Eds), *Business Incubation: An Introduction*, Icfai University Press, Hyderabad, pp. 234-264.
- Allen, D. and Levine, V. (1986), *Nurturing Advanced Technology Enterprises: Emerging Issues in State and Local Economic Development Policy*, Prager, New York, NY.
- Allen, D. and McCluskey, R. (1990), "Structure, policy, services and performance in the business incubator industry", *Entrepreneurship, Theory and Practice*, Vol. 15 No. 2, pp. 61-77.
- Allen, D. and Rahman, S. (1985), "Small business incubators: a positive environment for entrepreneurship", *Journal of Small Business Management*, Vol. 23 No. 3, pp. 12-22.
- Al-Mubarak, H. and Busler, M. (2010a), "Business incubators models of the USA and UK: a SWOT analysis", *World Association for Sustainable Development (WJEMSD)*, Vol. 6 No. 4, pp. 335-354.

- Al-Mubarak, H. and Busler, M. (2010b), "Sustainable development through the inclusion of incubator: a SWOT analysis", *WASD 8th International Conference, Saint Louis, MO, 22-24 November*.
- Al-Mubarak, H. and Busler, M. (2011a), "Exploring the strategic benefits of business incubation: international perspective", *WASD 9th International Conference, Atlantic City, NJ, 26-28 October*.
- Al-Mubarak, H. and Busler, M. (2011b), "Application of business incubators in Europe: a SWOT analysis", *WASD 9th International Conference, Atlantic City, NJ, 26-28 October*.
- Al-Mubarak, H. and Busler, M. (2012a), "Exploring strategic benefits of innovation worldwide", *Academic and Business Research Institute International Conference – Las Vegas, NV, 4-6 October*, available at: www.aabri.com/LV2012Manuscripts/LV12082.pdf
- Al-Mubarak, H. and Busler, M. (2012b), "Quantitative and qualitative approaches of incubators as value-added: best practice model", *The Journal of the American Academy of Business, Cambridge*, Vol. 18 No. 1, available at: www.jaabc.com/jaabcv18n1preview.html
- Al-Mubarak, H. and Busler, M. (2012c), "Entrepreneurship spirit of Asia business incubation", *Academic and Business Research*, 22-24, available at: www.aabri.com/SA12Manuscripts/SA12036.pdf
- Al-Mubarak, H. and Busler, M. (2012d), "Innovation systems in European countries: a SWOT analysis", *European Journal of Business and Management*, Vol. 4 No. 16, pp. 106-117.
- Al-Mubarak, H. and Busler, M. (2012e), "Spark of business incubators roles: latin American case studies", *Global Review of Business and Economic Research*, 2013, Spring, available at: www.serialspublications.com/journals1.asp?jid=199&dtype=2&jtype
- Al-Mubarak, H. and Busler, M. (2013), "Incubators successes: lessons learned from successful incubators towards 21st century", *WASD 2013 Annual Conference, The London School of Economics and Political Science (LSE), 2-4 September*.
- Al-Mubarak, H. and Schrödl, H. (2012a), "Incubating success towards gulf cooperation council (GCC)", *International Journal of Innovation and Knowledge Management in Middle East & North Africa (IJKMMENA)*, Vol. 1 No. 2, pp. 31-56.
- Al-Mubarak, H. and Schrödl, H. (2012b), "Measuring the effectiveness of business incubators: a four dimensions approach from a gulf cooperation council perspective", *Journal of Enterprising Culture*, Vol. 19 No. 4, pp. 435-452.
- Al-Mubarak, H., Ahmed, A. and Al-Ajmei, R. (2014), "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, Brighton*, available at: www.amazon.co.uk
- Atherton, A. and Hannon, P.D. (2006), "Localized strategies for supporting incubation: strategies arising from a case of rural enterprise development", *Journal of Small Business and Enterprise Development*, Vol. 13 No. 1, pp. 48-61.
- Autio, E. and Klofsten, M. (1998), "A comparative study of two European business incubators", *Journal of Small Business Management*, Vol. 36 No. 1, pp. 30-43.
- Bearse, P. (1998), "A question of evaluation: NBIA's impact assessment of business incubators", *Economic Development Quarterly*, Vol. 12 No. 4, pp. 322-333.
- Brooks, O.J. (1986), "Economic development through entrepreneurship: incubators and the incubation process", *Economic Development Review*, Vol. 4 No. 2, pp. 24-29.
- Campbell, C. (1989), "Change agents in the new economy: business incubators and economic development", *Economic Development Review*, Vol. 7 No. 2, pp. 56-59.

- Campbell, C., Kendrick, R.C. and Samuelson, D.S. (1985), "Stalking the latent entrepreneur: business incubators and economic development", *Economic Development Review*, Vol. 3 No. 2, pp. 43-49.
- Chan, K.F. and Lau, T. (2005), "Assessing technology incubator programs in the science park: the good, the bad and the ugly", *Technovation*, Vol. 25 No. 10, pp. 1215-1228.
- Chandra, A. and Fealey, T. (2009), "Business incubation in the United States, China and Brazil: a comparison of role of government, incubator funding and financial services", *International Journal of Entrepreneurship*, Vol. 13, Special Issue, pp. 67-86.
- Chandra, A., He, W. and Fealey, T. (2007), "Business incubators in China: a financial services perspective", *Asia Pacific Business Review*, Vol. 13 No. 1, pp. 79-94.
- Colombo, M.G. and Delmastro, M. (2002), "How effective are technology incubators: evidence from Italy", *Research Policy*, Vol. 31 No. 7, pp. 1103-1122.
- Culp, R. (1996), "A test of business growth through analysis of a technology business incubator", PhD dissertation, Georgia Institute of Technology, Atlanta, GA.
- EDA (2011), "Incubating success: incubation practices that lead to successful new ventures", US Department of Commerce Economic Development Administration, available at: www.edaincubatorstool.org/pdf/Master%20Report_FINAL_DownloadPDF.pdf
- Etzkowitz, H., Carvalho de Mello, J.M. and Almeida, M. (2005), "Towards 'meta-innovation' in Brazil: the evolution of the incubator and the emergence of a triple helix", *Research Policy*, Vol. 34 No. 4, pp. 411-424.
- Fry, F.L. (1987), "The role of incubators in small business planning", *American Journal of Small Business*, Vol. 12 No. 1, pp. 51-62.
- Gassmann, O. and Becker, B. (2006), "Towards a resource-based view of corporate incubators", *International Journal of Innovation Management*, Vol. 10 No. 1, pp. 19-45.
- Hisrich, R.D. (1988), "New business formation through the enterprise development center: a model for new venture creation", *IEEE Transactions on Engineering Management, EM-*, Vol. 35 No. 4, pp. 221-231.
- Hsu, P.H., Shyu, J.Z., Yu, H.C., You, C.C. and Lo, T.S. (2003), "Exploring the interaction between incubators and industrial clusters: the case of the ITRI incubator in Taiwan", *R&D Management*, Vol. 33 No. 1, pp. 79-90.
- Hughes, M., Ireland, R.D. and Morgan, R.E. (2007), "Stimulating dynamic value: social capital and business incubation as pathway to competitive success", *Long Range Planning*, Vol. 40, pp. 154-177.
- Hytti, U. and Maki, K. (2007), "Which firms benefit most from the incubators", *International Journal of Entrepreneurship and Innovation Management*, Vol. 7 No. 6, pp. 506-523.
- Joseph, P.E. Jr (2009), "Business incubation as strategy", *Business Strategy Series*, Vol. 10 No. 3, pp. 156-166.
- Kim, H. and Ames, M. (2006), "Business incubators as economic development tools: rethinking models based on the Korea experience", *International Journal of Technology Management*, Vol. 33 No. 1, pp. 1-24.
- Kuratko, D.F. and LaFollette, W.R. (1987), "Small business incubators for local economic development", *Economic Development Review*, Vol. 5 No. 2, pp. 49-55.
- Lee, S.S. and Osteryoung, J.S. (2004), "A comparison of critical success factors for effective operations of university business incubators in the United States and Korea", *Journal of Small Business Management*, Vol. 42 No. 4, pp. 418-426.
- Lumpkin, J.R. and Ireland, R.D. (1988), "Screening practices of new business incubators: the evaluation of critical success factors", *American Journal of Small Business*, Vol. 12 No. 4, pp. 59-81.

- McAdam, M. and McAdam, R. (2008), "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*, Vol. 28 No. 5, pp. 277-290.
- McAdam, M. and Marlow, S. (2007), "Building futures or stealing secrets? Entrepreneurial cooperation and conflict within business incubators", *International Small Business Journal*, Vol. 25 No. 4, pp. 361-382.
- Merrifield, D.B. (1987), "New Business Incubators", *Journal of Business Venturing*, Vol. 2 No. 4, pp. 277-284.
- Mian, S.A. (1994a), "US university-sponsored technology incubators: an overview of management, policies and performance", *Technovation*, Vol. 14 No. 9, pp. 515-528.
- Mian, S.A. (1994b), "Are university technology incubators providing a milieu for technology-based entrepreneurship?", *Technology Management*, Vol. 1 No. 3, pp. 86-93.
- Mian, S.A. (1996a), "Assessing value-added contributions of university technology business incubators to tenant firms", *Research Policy*, Vol. 25 No. 3, pp. 325-335.
- Mian, S.A. (1996b), "The university business incubator: a strategy for developing new research/technology-based firms", *The Journal of High Technology Management Research*, Vol. 7 No. 2, pp. 191-208.
- Mian, S.A. (1997), "Assessing and managing the university technology business incubator: an integrative framework", *Journal of Business Venturing*, Vol. 12 No. 4, pp. 251-285.
- Monkman, D. (2010), "Business incubators and their role in job creation", President and CEO National Business Incubation Association (NBIA), Athens, OH, available at: www.nbia.org (accessed 30 January 2014).
- Pena, I. (2004), "Business incubation centers and new firm growth in the Basque country", *Small Business Economics*, Vol. 22 Nos 3-4, pp. 223-236.
- Peters, L., Rice, M.P. and Sundararajan, M. (2004), "The role of incubators in the entrepreneurial process", *Journal of Technology Transfer*, Vol. 29 No. 1, pp. 83-91.
- Phillips, R.G. (2002), "Technology business incubators: how effective as technology transfer mechanism?", *Technology in Society*, Vol. 24 No. 3, pp. 299-316.
- Plosila, W. and Allen, D.N. (1985), "Small business incubators and public policy: implications for states and local development strategies", *Policy Studies Journal*, Vol. 13 No. 4, pp. 729-734.
- Roper, S. (1999), "Israel's technology incubators: repeatable success or costly failures", *Regional Studies*, Vol. 33 No. 2, pp. 175-180.
- Rothaermel, F.T. and Thursby, M. (2005a), "Incubator firm failure or graduation? The role of university linkages", *Research Policy*, Vol. 34 No. 7, pp. 1076-1090.
- Rothaermel, F.T. and Thursby, M. (2005b), "University-incubator firm knowledge flows: assessing their impact on incubator firm performance", *Research Policy*, Vol. 34 No. 3, pp. 305-320.
- Rothschild, L. and Darr, A. (2005), "Technological incubators and the social construction of innovation networks: an Israeli case study", *Technovation*, Vol. 25, pp. 59-67.
- Schwartz, M. (2009), "Beyond incubation: an analysis of firm survival and exit dynamics in the post-graduation period", *Journal of Technology*, Vol. 34 No. 4, pp. 403-421.
- Schwartz, M. and Hornych, C. (2008), "Specialization as strategy for business incubators: an assessment of the central German multimedia center", *Technovation*, Vol. 28 No. 7, pp. 436-449.
- Smilor, R.W. (1987), "Managing the incubator system: critical success factors to accelerate new company development", *IEEE Transactions on Engineering Management. EM-*, Vol. 34 No. 4, pp. 146-156.

- Studdard, N.L. (2006), "The effectiveness of entrepreneurial firm's knowledge acquisition from a business incubator", *International Entrepreneurship and Management Journal*, Vol. 2, pp. 211-225.
- Temali, M. and Campbell, C. (1984), *Business Incubator Profiles: A National Survey*, University of Minnesota, Hebert H. Humphrey Institute of Public Affairs, Minneapolis, MN.
- Thierstein, A. and Wilhelm, B. (2001), "Incubator, technology and innovation centres in Switzerland: features and policy implications", *Entrepreneurship and Regional Development*, Vol. 13 No. 4, pp. 315-331.
- Totterman, H. and Sten, J. (2005), "Start-ups: business incubation and social capital", *International Journal of Small Business*, Vol. 23 No. 5, pp. 487-511.
- Voisey, P., Gornall, L., Jones, P. and Thomas, B. (2006), "The measurement of success in a business incubation project", *Journal of Small Business and Enterprise Development*, Vol. 13 No. 3, pp. 454-468.
- von Zedwitz, M. and Grimaldi, R. (2006), "Are service profiles incubator-specific? Results from an empirical investigation in Italy", *Journal of Technology Transfer*, Vol. 31 No. 4, pp. 459-468.
- Wynarczyk, P. and Raine, A. (2005), "The performance of business incubators and their potential development in the North East region of England", *Local Economy*, Vol. 20 No. 2, pp. 205-220.

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