Vol. 06, No. 1 (2024) 69-78, doi: 10.24874/PES06.01.009

Proceedings on Engineering Sciences

www.pesjournal.net

TECHNOLOGY BUSINESS INCUBATION CENTRE IMPACTS ON STARTUP COMPANIES, COIMBATORE (INCUBATE PERSPECTIVE)

K. Karthikeyan [1]
K. Ramya

Received 09.02.2023.
Received in revised form 17.05.2023.
Accepted 01.06.2023.
UDC – 005.521:334.7

Keywords:

Technology, Incubates' Performance, Start-up support, Incubation centre

A B S T R A C T

This study focusing on the orientations of role of Technology supports towards the development of incubators, incubate development, problems and challenges of startup companies towards the acceptance of technology, various programes organized by incubators, benefits and achievement of incubates. Further to technology impacts on start up entrepreneurs'' that the key internal variables contributing for technology adaptability, available technical relevant facilities of incubators, skill & knowledge transfer effectiveness. As interest in the part of future India with creativity of business, this study will helps to understand the gap between the existing incubation cell and the incubates requirements. According to articulated reviews, the research work is categories into 4 chapters. The model is also developed to attain the effective achieving the progression of phases. The questionnaire and interview schedule will be circulate among the 120 incubates in Coimbatore. Finally, 104 responded to the core study of this platform

1. INTRODUCTION

Technology Business Incubation (TBI) is a key factor for business development of an organization. To strengthening business development, technology development and its ideas and concepts are playing major role to achieve business success. Technology Business Incubation (TBI) is provided to understand the business environment, to share the technological services, to avail mentoring services, legal advice, marketing services and networking which are all in line with developing entrepreneurial skills. According to S. Almakenzi (2015) knowledge, technology, entrepreneurship, and innovation are the major factors for the countries to seeking that improve the quality of life of their citizens

This attribute support for launching viable and sustainable enterprises while focusing on technology transfer, on innovation and entrepreneurship, and on the interaction between researchers and industries. This study investigates whether the application of Technology Business Incubation will assist in the development of the entrepreneurs in Coimbatore. The location wise Information Communication Technology (ICT) sector how supported predominately for the development of companies and assesses their impact on the environment and performance with satisfaction of incubation centre. Mason (2010) found that Small and

[1] Corresponding author: K. Karthikeyan
Email: kkarthierp@gmail.com

Mid-sized enterprises are crucial in enhancing innovation, productivity, competitiveness, employment generation, and social cohesion.

2. CONCEPTUALIZATION OF BUSINESS INCUBATION

According to Allen and Rahman (1985) an incubator is a 'facility that aids the early stage growth of companies by providing rental space, shared office services and business consulting assistance'. Business incubators are designed entrepreneurial programs that supports for startups innovate and grow. Business incubators roles are like providing workspaces, training, mentorship, education and fund raisers.

Hackett and Dilts (2004) define an incubator as 'a shared office space facility that seeks to provide its incubates with a strategic, value adding intervention system (i.e. business incubation) of monitoring and business assistance'. The International Business Incubation Association (InBIA), the global association of incubators, defines incubation as, 'a business support process that accelerates the successful development of startup and fledgling companies by providing entrepreneurs with an array of targeted resources and services.

Sundarajan (2004) lay emphasis on the process of incubation and view it as a 'support environment for startup and fledgling companies'. India is ranked 40th position out of 132 in the Global Innovation Index (GII) 2022 rankings released by World Intellectual Property Organization (WIPO). Rural India have more opportunities for explosive entrepreneurship development (Kalpeshkumar L Gupta, 2015). Incubation centre ensure the development of micro and small size companies to manage the competitive environment by mentoring and guidance supports. The following types of incubation centres supporting to the incubates viz Business Incubation centre, Technology incubators and Technology business incubators. During the start-up stage, the incubate raised the required fund by seed grant and incubators assistance. Technology Business Incubation unit (TBIU), IIT Delhi is basis for Institute and Industry interface that actively operating their services in the areas of creativity and innovation of product, simulated business activities, software testing and implementation, customized training programs and market trail of the products.

In this study that discuss about the growth of incubation in India various decades, new incubation model, key influencing factors determine the performance of incubates are verified with the support of statistical tools follow the suggestions for improvement of incubate business operations in Coimbatore.

3. HISTORY OF INCUBATION CENTRE

The history of incubation centre is presented in Table 1. (Barrow, 2001; Lalkaka and Bishop, 1996) (Allen and McCluskey, 1990) (Bergek and Norrman, 2008) Milor and Gill, 1986). (Reich, 1991).

Table 1. History of incubation centre

Year / Phases	Development in Incubation Centre
1950s – 1970s	"Infrastructure: economies of scale" Office space and shared resources MSME & NSIC
1970s-1990s	"Business support: accelerating the learning curve" Coaching and training support including knowledge based services Science & Technology Entrepreneurs Parks (STEP) The Department of Science and Technology (DST), Small Industries Development Bank of India (SIDBI) and National Bank for Agriculture and Rural Development (NABARD) National Science and Technology Entrepreneurship Development (NSTED) Science and Technology Entrepreneurship Development Scheme (STEDs) Innovation Science and Technology based Entrepreneurship Development (iSTED)
1990s-2010s	"Networks & Value Chains" Networks: facilitating access to external resources, knowledge and legitimacy, Access to technological, professional, and financial networks. MSME Incubation Technology Business Incubators (TBI)
2010 Onwards	National Initiative for Developing and Harnessing Innovations (NIDHI) TBI and Centres of Excellence with scholarships and seed investment, scouting competitions, and accelerators and training programs for entrepreneurs. Various Government & private schemes. NITI Aayog, MEITY-2.0

4. REVIEW OF LITERATURE

The incubator start-up stage begins at the time a local community begins to consider establishing an incubator and ends once the incubator has reached full occupancy (Allen, 1988). One of the great challenges of conducting incubator-incubation research is the difficulty of creating a control group of nonincubated companies whose developmental outcomes could then be compared to incubated companies (Sherman and Chappell, 1998).

Over the history of business, support for young enterprises has been available in a variety of forms. In the family or community business context, young enterprises receive significant nurturance and support (Sharma & Manikutty) 2005. According to Spigel (2017), entrepreneurial ecosystems are comprised of material attributes (such as infrastructure, regulations and policies, educational institutions, and open and support services), social attributes (such as mentors, role models, worker talent, inexpensive investments, and access to networks), and cultural attributes (such as

entrepreneurship histories, and supportive culture and belief systems). Incubators in this wave were expected to provide a wide range of services including physical space, networking, coaching, access to networks, professional services and capital (Bruneel, Ratinho, Clarysse & Groen, 2012).

'Programs' that provide inputs to the participating entrepreneurs, coaching and equipping them to address their challenges, and thereby preparing them to present their businesses to investors and raise capital (Cohen and Hochberg, 2014). Allen and Rahman (1985) concluded that incubator facility plays a key role by providing the assistance that fills the knowledge reduces early stage operational cost and develops the local enterprise support network.

Campbell et al (1985) says that incubators deliver benefit through business analysis, introduction to peer group network and professional network and physical infrastructure. Patton et al (2009) states that a steady flow of new ideas, an empathy in founders, maintenance of internal and external network and

Vincent Rouwmaat (2003) identified the four incubator types a. For profit-property development , non-profit development organization, business and development. Further to that, the technology incubators roles are listed. Linking Research & development with the companies; its included the product. The concept of product Senevi Kiridena (2001), started with Research Park, Science Park, Incubator and Technology Park. Daniel Gredel (2012) respond to the academic university importance on industry market needs by offering innovative products or services. However, the following drawbacks to use the resources, uncertainty in the area of technological development, industry-market acceptance and limited entrepreneurial knowledge and skills.

National Business Incubation Association (NBIA) defines a business incubator as a catalyst tool for either regional or national economic development. At present, totally 329 incubation centre is spread across all region of India. According to (Robb & Robinson 2012) "Seed financing" is primary option to source the required capital for the start-ups. These sources included equity capital, term loans and credit card. On the other side the family members, friends and affiliates of the firm. During the incubation process start-up entrepreneurs face the challenges related to the technology, investment, mentoring services, strategies, and legal issues. (Mian et al., 2016).

Klofsten et al., (2019) measured the creation of obstacles with facilities management. Due to technological weakness, Start-up companies faces challenges and failure in cyber security, risky data management and misuse of technology against the company.

The technology-based incubations center helps to identify the innovation-based technology and business start-ups with the appropriate source and demands that evolved in the business maturity (Klofsten et al., 2020). In addition, it helps to develop the stage to promote the technology companies as well as to assist various competitions in technological field or undeveloped areas. Moreover, it provides a better interactions process, ease in doing the business as well as improved the ability on financial services. Training is an essential component to reduce challenges of technological incubators in India (Li et al., 2020).

5. STATEMENT OF THE PROBLEM

Incubation centre reduce the unemployment and encourage the entrepreneurship among the next generation. It contributes for the economic progress of country. Job creation and conducive government system strongly support for the new ventures in India. It measured by the state and union government through developing polices, analyze the gap between the incubate and incubation centre, evaluation of key variable performance. At present, most of the educational institutions opened the incubation centre to identify and support the young student entrepreneurs. But, the required system and business scenario are indifferent. To add value to incubation centre, this research to revealed that which are the key areas to be strengthening and technological schemes, programmes and training facilitation requirements are discussed.

6. OBJECTIVES

Technology business incubation centers are aimed to achieving the following objectives in the perspective incubate.

- To identify the key technological factors influencing the incubate performance metrics.
- To analyze the key internal factors impacts on Incubates' performance

7. SIGNIFICANCE OF STUDY

This study helps to support start-up companies in size of micro, small and medium in order to overcome the technological barriers. Also, It helps to know return on technology development, increase profitability & cost effective plan for product and market development. It helps to develop the entrepreneurial spirit among employees and define technology basis of strategies, solves the technological issues and expected technological services. In order to meet the global competition, the company has to create more technological infrastructure, better network and proper implementation of plans. This study supports for planning and setting the objective of the start-up companies through that creating job opportunity and utilize the infrastructure resources. For promoting, the new ventures in countries that balance the economic

development. To estimate the cost elements, technology investment, projected growth, manage the tax on basis of capital borrowing, conducting feasibility study and research aspects.

8. KEY INTERNAL VARIABLES OF TECHNOLOGY BUSINESS INCUBATION

Khadijah Mohamad Radzi1, Mohammad Nazri (2017) used the type of industry, year in business, annual sales turnover, number of employees and location factors to asses the business performance of the incubate. Entrepreneurial competency, Marketing capability, Financial resources, Technology usage and Knowledge sharing. In that research found that marketing capability impact positively to the companies. Marketing capability means that company's ability to use tangible and intangible resources to achieve the consumers' needs and brand development recognition. Nath, Nachappan, & Ramanathan, (2010). Valacich & Schneider (2014), found that companies that utilize the latest technology tend to have more attraction and capture the new customers comparing with their competitors. According to Ngah & Jusoff (2009), Knowledge should be the means for small businesses to overcome poor business environment and change the complex business environment to be manageable.

Wiggins and Gibson (2003) found that business incubators should achieve the five tasks to succeed in business performance. 1. Identify the clear metrics to evaluate the success, 2. Leadership qualities of the entrepreneurs. 3. Contribution to value added services providing to member companies, 4. New-company selection process, and 5) Access to know how to use the human and financial resources. Sheu-Usman Oladipo Akanbi (2015) identified the creativity is a function supporting the Expertise, Creative thinking skills and Motivation. Also, it helps the people to solve the problems. Creative thinking skills helps to achieve the Background / knowledge accumulation, Incubation process, Idea experience and. Evaluation and implementation. According to Francisco & Zapata-Guerrero (2019) the efficiency of the firm depends on the government funding to technology-based companies, Design decisions of institutions or business units, understand the purpose to change, productivity and comparison of the company with other companies in the same sector.

Eshun (2009) defined business incubators are supporting for the new and start-up firms to support for the growth and development, improving their opportunities, acquisition of resources and facilitating the companies to new product development, commercialization of new products, new technologies, and new business models. K. Hoffman (1985) argued that adopting ICT tools impacts on international competitiveness, comprehensive customer services and functions. Incubator governance is playing the major role in incubation process. It helps to know expectation of an incubate, their performance, evaluation criteria, daily procedures, activities, and policies are, and the incubator provided for the development. The start-up companies should experience the problems and uncertainties in operating the business. Whether and how rapidly incubated companies develop depends on the relationship between the types of governance and the types of entrepreneur in the incubated companies Verma (2004) & R. W. Smilor (1987). On basis of the reviewed research works, the following key variables are identified.

Incubates' SWOT analysis b. Policies & Procedures of the concern, Idea, Creativity & Innovation, Resources & Network support, Area of operation, Product development, Job creation, Marketing support, Fund raising capability, Top management efficiency, Technology literacy, Awards, R& D / Future plans, Industry, Core products / Services, Business goals of the startup company, Any functional wise support requirements, Personality of the founders / start-up entrepreneurs, Number of people working in your company, Type of forms, Firm Age and experience of the incubate and Turnover of the company.

9. RESEARCH METHODOLOGY

The present study focused on start-up companies internal factors impact among the incubates' in Coimbatore. The primary data collected from incubates' through structured questionnaire. The representative organisations were selected by adopting judgement – sampling method. The questionnaires were distributed to incubate 120 questionnaires were issued and the researcher was able to collect 104 respondents. The tools of analysis such as percentages, ANOVA, and regression model were applied. The following hypothesis are developed to test the outcome of the works.

H0: There is no significant difference between the firm age and expertise technical assistance of Incubators

H0: There is no significant difference between Type of formation and evaluation of business performance.

H0: There is no significant difference between the

Business turnover and opinion on requirement of special technology:

H0: There is no significant relationship between the Incubates' opinion and Key Internal factors.

10. DATA ANALYSIS

To understand key technological factors influences the performances and its impacts on business performances among the incubates, the following data analysis tools were used. a. Descriptive analysis. b. ANNOVA. and c. Regression Analysis.

To identify the technological factors influencing the incubate performance metrics relevant descriptive statistics and ANNOVA are discussed with tables.

10.1 Firm Age and Expertise technical assistance of Incubators

The number of year in business operations and technical assistance acceptance level of incubators are presented in the Table 2.

Table 2. Firm age and Expertise technical assistance of Incubators

Firm Age group (In Years)	Number of Respondents	Percentage of respondents	Mean	Std. Deviation	Std. Error
Less than 2 years	67	64.4	3.6414	.26917	.01918
2-4 Years	29	27.8	3.4986	.28179	.01834
Above 4 years	8	7.6	3.5400	.21754	.03529
Total	104	100.0	3.5700	.27289	.01257

About the Expertise technical assistance of the firm age less than 2 years age category is the maximum (3.6414), 2-4 years firm age category is (3.4986) and Above 4 years firm age category is (3.5400).

The ANOVA is used to test the significance of difference between the means scores of three categories of respondents. The hypothesis is framed to study the significant difference between firm age of the respondents and Expertise technical assistance. The Table 3 is presented the ANNOVA regarding opinion between firm age and Expertise technical assistance of Incubators.

Table 3. Significance of difference in opinion between firm age and Expertise technical assistance of Incubators

Expertise technical assistance of Incubators	Firm Age	Sum of Squares	Df	Mean Square	F	Sig.
Expertise technical assistance of Incubators	Between Groups	.369	2	.194	2.528	.073
	Within Groups	32.612	102	.074		
	Total	35.000	104			

The calculated value of F value of expertise technical assistance and firm age (.073) is greater than the table value at 5 percent level of significance. Hence, the null hypothesis is accepted and there is no significant difference between firm age and the Expertise technical assistance of Incubators.

10.2 Type of Business formation and business performance metrics

The classification of respondents based on type of business formation and business performances opinion scores are given in the Table 4.

Table 4. Type of business formation and business performance metrics

Type of formation	Number of Respondents	Percentage of respondents	Mean	Std. Deviation	Std. Error
Sole proprietorship	54	51.9	3.7853	.29564	.05070
Partnership	16	15.3	3.1294	.27738	.02991
Franchise	27	25.9	3.2965	.24272	.03011
Private Limited	7	6.7	3.7356	.22621	.05655
Total	104	100	3.5715	.27059	.01909

About the Evaluation of business performance, the mean score of the Sole proprietorship is the maximum 3.7853, Private Limited is 3.7356, Franchise is 3.2965 and Partnership is 3.1294. The ANOVA is used to test the significance of difference between the means scores of four categories of respondents. To understand the significant differences between the type of formation and evaluation of business performance. The hypothesis is developed. The Table 5 is presented the ANNOVA result regarding type of formation and evaluation of business performance.

Table 5. Significance of difference opinion on type of formation and Evaluation of business performance

Type of formation and evaluation of business performance	Business performance	Sum of Squares	Df	Mean Square	F	Sig.
Type of formation and evaluation of business performance	Between Groups	.662	3	.227	3.206	.024
	Within Groups	13.462	101	.071		
	Total	14.124	104			

The calculated value of F value of business performance (.024) are lesser than the table value at 5 percent level. Hence, the null hypothesis is rejected in Type of formation and Evaluation of business performance. There is significant difference between Type of formation and Evaluation of business performance.

10.3 Business Turnover and opinion on Requirement of special technology

To identify the business turnover and technology have leveraging the incubates performance. The opinion scores of the respondents of business turnover and opinion on requirement of special technology is presented in Table 6.

Table 6. Business turnover and opinion on requirement of special technology

Business Turnover (in Rs.)	Number of Respondents	Percentage of respondents	Mean	Std. Deviation	Std. Error
Upto Rs 50 Lakhs	54	51.9	3.5897	.25869	.02392
50 Lakhs – 1Crore	39	37.5	3.5707	.28191	.01576
More than 1 Crore	11	10.5	3.5329	.22978	.03941
Total	104	100.0	3.5700	.27289	.01257

About the business turnover, the mean score of the Up to Rs 50 Lakhs category is the maximum (3.5897), 50 Lakhs – 1Crore category is (3.5707) and More than 1 Crore category is (3.5329). The ANOVA is used to test the significance of difference between the means scores of three categories of respondents. The null hypothesis is framed as follows

Hypothesis: There is no significant difference between a Business turnover and opinion on requirement of special technology**.**

The Table 7 is presented the business turnover and opinion on Requirement of special technology.

Table 7. Significance of difference in opinion between Business Turnover and opinion on Requirement of special technology

Business turnover and opinion on requirement of special technology	**Annual income**	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Business turnover and opinion on requirement of special technology	Between Groups	.104	2	.072	.968	.371
	Within Groups	34.896	102	.074		
	Total	35.000	104			

The calculated value of F value of business turnover and requirement of special technology (.371) are greater than the table value at 5 percent level of significance. Hence, the null hypothesis is accepted and there is no significant difference between Business Turnover and opinion on requirement of special technology.

10.4 To analyse the relationship between the Incubates' opinion and key internal factors

The following factors are considering internal factors viz., Idea, Creativity & Innovation of the incubate, Resources & Network support developed by the incubate, Incubates SWOT analysis, Number of people working in your company, marketing support services, Top management efficiency and Business goals of the startup company. On basis of factors, the following hypothesis is developed.

Hypothesis: There is no significant relationship between the Incubates' opinion and key internal factors.
The Table 8 is presented the relationship of internal factors among the incubates.

The final regression equation results showed that Incubates' opinion and Key Internal factors are significantly related for the following variables. Idea, Creativity & Innovation of the incubate ($\beta = 0.180$, $t = 3.181$, $p < 0.05$), Resources & Network support developed by the incubate ($\beta = 0.217$, $t = 4.820$, $p < 0.05$), Incubates SWOT analysis ($\beta = 0.226$, $t = 3.383$, $p < 0.05$), Number of people working in your company ($\beta = 0.234$, $t = 5.595$, $p < 0.05$). The 't' value and the significance level indicates that factors are significantly contributing to the Incubates' opinion and Key Internal factors.

Table 8. Summary of Regression Analysis – Incubates' opinion and key internal factors

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	F - ratio	
Incubates' opinion and key internal factors	0.515[a]	0.278	0.264	0.24434	24.873	
Coefficients						
Incubates' opinion and Key Internal factors	Un standardized Coefficients		Standardized Coefficients	T	Sig.	
	B	**Std. Error**	**Beta**			
(Constant)	2.433	0.063		33.932	.000	
Product development	-0.003	0.009	-0.011	-0.262	0.766	
Policies & Procedures of the company	-0.004	0.016	-0.012	-0.295	0.723	
Idea, Creativity & Innovation of the incubate	0.068	0.012	0.180	3.181	0.000	
Area of operation	-0.013	0.019	-0.061	-0.840	0.329	
Resources & Network support developed by the incubate	0.066	0.011	0.217	4.820	0.000	
Incubates SWOT analysis	0.045	0.004	0.226	3.383	0.000	
Number of people working in your company	0.069	0.012	0.234	5.595	0.000	
Marketing support services	-0.016	0.016	-0.044	-0.984	0.326	
Top management efficiency	0.003	0.005	0.019	0.498	0.618	
Business goals of the startup company	0.012	0.015	0.032	0.793	0.428	

From the above it is obvious that by improving the factors relating to internal factors viz., Idea, Creativity & Innovation of the incubate, Resources & Network support developed by the incubate, Incubates SWOT analysis, Number of people working in your company. It is possible to create a favourable opinion regarding Incubates' opinion and strengthening Key Internal factors..

11. RESULT AND DISCUSSION OF THE STUDY

There is no significant difference between firm age and Expertise technical assistance of Incubators. But, contrast with the study Colin C Williams (2016) of the endogenous choice of registration status, enterprises spending longer unregistered display significantly higher annual levels of sales, employment and productivity growth rates.

There is significant difference between Type of formation and Evaluation of business performance. Colin C Williams (2016) evaluated the influence of registration at startup on future firm performance with two indicators started unregistered and years unregistered — a continuous variable counting the number of years the firm operated without formal registration. The basic descriptive results of firm performance are that formal enterprises unregistered at the commencement of operations subsequently had 38 percent higher annual sales growth than those registered from the outset. It supporting to our study found that majority of the incubate belongs to sole proprietorship in Coimbatore.

There is no significant difference between Business Turnover and opinion on Requirement of special technology. But, Qadri Alzaghal (2017) found that positive relationship between the mentoring services, ICT tools and incubator success.

It is possible to create a favourable opinion regarding Incubates' opinion and strengthening Key Internal factors..The factors are Idea, Creativity & Innovation of the incubate, Resources & Network support developed by the incubate, Incubates SWOT analysis, Number of people working in your company. This objective result also supported by Khadijah Mohamad Radzi1, Mohammad Nazri (2017). In that research Technology usage influence the Business success of the firm. While the use of technology in conducting business transactions is common among the small scale businesses under the FELDA scheme they do not possess systems in place like data warehouse and decision support system that make full use of the technology infrastructure Susanne Durst & Stefan Wilhelm (2012) to facilitate knowledge sharing practice.

12. CONCLUSION

Technology Business Incubators (TBI) are one among the key elements incubation centre development, entrepreneurship and economic development policies of the country. It provides the support for the creation of new start-up firms and SMEs. Start-up firms playing a huge role in building market competitive market structure, continuous innovation, creativity on new product development and supporting for balancing economic development all part of the country. It also contributes for job creation and reduce the unemployment rate in many countries. The study shows that technology impacts on incubates perspective are measured to be the most important to know the relationship between the incubator support and assistance in internal, external, Technology & Relationship building with incubation centre and Expected results & Performance evaluation. This study found that types of formation of a concern have significant impact on technical role of the incubates' centre. Also, the relationship between the internal factors and incubates have significantly affect in the following factors viz., Idea, Creativity & Innovation of the incubate, Resources & Network support developed by the incubate, Incubates SWOT analysis, Number of people working in your company. From this article conclude that an incubation centre, incubate and incubator are major part of success and business growth of start-up companies in Coimbatore.

References:

Akanbi, S.-U. O. (2015). Creativity, Innovation and Entrepreneurship: Contemporary Entrepreneurship (pp. 66-89). University of Ilorin.

Allen, D. N., & Rahman, S. (1985). Small business incubators: A positive environment for entrepreneurship. *Journal of Small Business Management*, *23*(3), 12-16.

Almakenzi, S., Bramantoro, A., & Rashideh, W. (2015). A survivability model for Saudi ICT start-ups. *International Journal of Computer Science & Information Technology*, *7*(3), 145.

Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, *28*(1-2), 20-28. doi:10.1016/j.technovation.2007.07.006

Bruneel, J., Ratinho, T., Clarysse, B., & Groen, A. (2012). The evolution of business incubators: Comparing demand and supply of business incubation services across different incubator generations. *Technovation*, *32*(2), 110-121. doi:10.1016/j.technovation.2011.09.002

Campbell, R. M., Campbell, P. N., & Weiler, R. (1985). The small business incubator industry: Micro-level economic development. *Entrepreneurship & Regional Development*, *1*(2), 83-90. doi:10.1177/089124248700100209

Cohen, S., & Hochberg, Y. (2014). Accelerating startups: The seed accelerator phenomenon. *Journal of Developmental Entrepreneurship*, *19*(2), 253-274. doi:10.1080/10849467.2014.895460

Durst, S., & Wilhelm, S. (2012). Knowledge management and succession planning in SMEs. Journal of Knowledge Management, 16(4), 637-649. https://doi.org/10.1108/13673271211246194

Eshun Jr, J. P. (2009). Business incubation as strategy. *Business Strategy Series*, *10*, 156-166.

Francisco, Tomás, M., & Zapata-Guerrero, G. (2019). Incubator efficiency vs survival of start-ups. *Emerald Insight*. Retrieved from https://www.emerald.com/insight/2531-0488.htm

Gredel, D. (2012). Patent-based investment funds as innovation intermediaries for SMEs: In-depth analysis of reciprocal interactions, motives and fallacies. *Research Policy*, *41*(1), 129-144. doi:10.1016/j.respol.2011.06.006

Hackett, S. M., & Dilts, D. M. (2004). A systematic review of business incubation research. *Journal of Business Venturing*, *19*(4), 567-589. doi:10.1016/S1048-3097(03)00095-0

Hoffman, K. (1985). Microelectronics, international competition and development strategies: The unavoidable issues. *World Development*, *13*(3), 263-272. doi:10.1016/0303-550X(85)90021-7

Kiridena, S. B. S. (2001). The concept and future of technology incubation. Retrieved from https://ro.uow.edu.au/engpapers/647/

Klofsten, M., Hustedt, M., & Obschonka, M. (2020). Managing intrapreneurial capabilities: An overview. *Research Policy*, *49*(3), 104056. doi:10.1016/j.respol.2020.104056

Lalkaka, R., & Bishop, J. (1996). Business incubators in economic development: An initial assessment in industrializing countries. *Journal of International Development*, *8*(4), 69-81. doi:10.1002/(SICI)1099-1138(199604)8:4<69::AID-JID487>3.0.CO;2-8

Mason, C., Jones, L., & Wells, S. (2010). The City's role in providing for the public equity financing needs of UK SMEs. Retrieved from https://strathprints.strath.ac.uk/28058/

Ngah, I., & Jusoff, K. (2009). Tacit Knowledge Sharing and SMEs' Organizational Performance. International Journal of Economics and Finance, 1(1), 216-220.

Patton, D., McDougall, P. P., & Wright, M. (2009). Knowledge acquisition processes during the incubation of new high technology firms. *International Entrepreneurship and Management Journal*, *5*(4), 481-497. doi:10.1007/s11365-009-0139-0

Qadri, A., & Mukhtar, M. (2017). Factors affecting the success of incubators and the moderating role of information and communication technologies. *International Journal on Advanced Science, Engineering and Information Technology*, *7*(2), 839-845.

Radzi, K. M., & Nazri, M. (2017). The impact of internal factors on small business success: A case of small enterprises under the Felda Scheme. *Asian Academy of Management Journal*, *22*(1), 27-55. doi:10.21315/aamj2017.22.1.2

Rouwmaat, V., Reid, A., Kurik, S., & ((2003). Business incubation: review of current situation and guidelines for government intervention in Estonia. Retrieved from https://www.researchgate.net/publication/312612502

Sherman, H. D., & Chappell, D. S. (1998). Methodological Challenges in Evaluating Business Incubator Outcomes. *Journal of Technology Transfer*, *12*(4). https://doi.org/10.1177/089124249801200403

Smilor, R. W. (1987). Managing the incubator system: critical success factors to accelerate new company development. IEEE Transactions on Engineering Management, pp. 146-155.

Smilor, R. W., & Gill, M. D. (1986). *The new business incubator: Linking talent, technology, capital and know-how*. Lexington, MA: Heath and Company.

Spigel (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice*, *41*(1). https://doi.org/10.1111/etap.12167

Sun, H., Kemajou Pofoura, A., Mensah, I. A., Li, L., & Mohsin, M. (2020). The role of environmental entrepreneurship for sustainable development: Evidence from 35 countries in Sub-Saharan Africa. *Science of the Total Environment*, *741*(January), 140132. doi:10.1016/j.scitotenv.2020.140132

Sundarajan (2004). The Role of Incubators in the Entrepreneurial Process. *Journal of Technology Transfer, 29*, 83-91.

Valacich, J. S., & Schneider, C. (2014). Investigating the effect of insurance fraud on mouse usage in human-computer interactions. Retrieved from https://www.scopus.com/record/display.uri?eid=2-s2.0-84923401698&origin=recordpage

Verma, S. (2004). Success factors for business incubators: an empirical study of Canadian business incubators (Master's thesis, Carleton University, Ottawa, Ontario, Canada).

Wiggins, R., & Gibson, D. (2003). Overview of US incubators and the case of the Austin Technology Incubator, pp. 56-66. https://doi.org/10.1504/IJEIM.2003.002218

Williams, C. C. (2016). Business registration and firm performance: Some lessons from India. *Journal of Developmental Entrepreneurship*, *21*(3), 291-313. doi:10.1142/S1084946716500163

WIPO. (n.d.). Global innovation index 2022, 15th edition. https://doi.org/10.34667/tind.46596

K. Karthikeyan
Associate Professor
Department of Management Sciences
PSG College of Arts & Science
Coimbatore
India
kkarthierp@gmail.com
ORCID 0009-0004-8275-3889

K. Ramya
Associate Professor
Department of Management Sciences
PSG College of Arts & Science
Coimbatore
India
ramya@psgcas.ac.in
ORCID 0009-0000-6597-236X