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## Article

# Substantive incubation for growth and its ICT impact on MSME's

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## **SUBSTANTIVE INCUBATION FOR GROWTH AND ITS ICT IMPACT ON MSME'S**

*SUFIA KAMAL LASKAR, KHALID WAHEED*

### **Abstract:**

A business incubator gives assistance to the startups for decreasing the high failure rate. It provides clustering opportunities, business support services, networking opportunities and incubator space to accelerate and systemize the creation process of successful enterprises. It generates new business steady flow with above wealth creation potential and average job. The main objective of this paper is to permit substantive incubation for the development and its impingements on Micro Small and Medium Enterprises (MSME). An ICT incubator provides training to 100 MSME. It gives technical help, consultation and guidance to entrepreneurs. Training is carried out in two stages for MSME; Pre-Incubation and Post Incubation. The functioning of 100MSME in pre- incubation stage is compared with the post-incubation stage. The comparison shows that training, connectivity, finance, infrastructure and business service in post-incubation stage is efficient than pre-incubation stage.

### **Keywords:**

– Business Incubator, Business Service, Connectivity, Finance, ICT incubator, Infrastructure, MSME and Training.

**JEL Classification:** L26

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## INTRODUCTION

A business incubator is a famous tool that accelerates to create successful entrepreneurial companies. In the European Union and US, there are about 900 and 1400 business incubators. It supports the new venture because it is in hope that it will develop into thriving and self-sustaining company. It provides business report, shared resources, access to networks and office spaces (e.g. Barrow, 2001) [1]. While serving the clients, a good incubator recognizes belonging and a sense of community along with the best business practices instruction, supplies and facilities they offer. For an effective incubation program, developers should invest money and time to lay the foundation. In the success of an incubator, an effective study will be useful in determining whether the proposed project has strong community support and a sound financial base. In local and regional economies, government subsidies for an incubation program of well managed business incubation characterize a strong investment. In 2010, a set of industry guidelines for helping an incubator manager to serve their clients better is developed by NBIA's. Substantial employment is provided by the Micro Small and Medium Enterprises and across the society, it distributes the economic wealth uniformly.

The MSME constitutes over 90% of total enterprises in many developing countries like India, Sri Lanka, Brazil and Pakistan. It accounts for a major share in industrial exports and products and credited with the highest rate of employment rate generation. The strength of 26 million MSMEs plays an important role in India in the countries overall industrial economy. The SME sector is calculated to contribute over 70 percent in employment and 30 to 40 percent of GDP in Egypt, Kenya, Africa and South Africa. In India, MSME calculates for about 45% of the manufacturing yield and over 40% of the country's total export. The sector has shown important adaptability and innovativeness for surviving the recent recession and economic downturn with its potential and great flexibility all over the world. Constituting a micro or small enterprise acquires various months to years for gathering information, resources and skills and gain knowledge. A peer survey is applied to achieve this within the same industry to acquire practical advice by talking to other business men. In decision making, taking the independent research is applied to find out demand assessment, availability of raw material, marketing intelligence, identification of supply chain, appropriate technology, demand assessment and forecasting. Comprehensive and the integrated range of support is necessary for a starting entrepreneur through which they acquire finance, technology and marketing assistance, clustering and networking opportunities, spaces and business support. Business incubators provide incubates the required hand holding services and resources such as mentoring, networking with angel investors, assistance in business plan training. It assists in receiving finance. Incubators also offer shared basic office services, access to equipment and common facilities and company's rental space with flexible leases.

Understanding the entrepreneurship challenges, Research Institutions have accomplished many Business/ Technology Incubators with the purpose to foster the start-up small enterprises. Several Governments have also started various schemes and organized incentives to help the entrepreneurs. In any country, enterprise growth leads to local economic growth. Entrepreneurs aim to initiate their business with minimum investment and risks. An incubator renders short and long-term assistances and helps to establish new enterprises. It offers business development services and provides technical assistance, guidance and consultation to entrepreneurs. In ICT incubator, clients access to shared basic services, equipment and appropriate rental space. Some incubators assist only in arranging venture capital funding and developing new ideas.

As incubators accelerate start-ups by providing support, resources and quick knowledge it is sometimes called as Business Accelerator. In developing their business, incubators helps in rising ventures by giving assistance and services. Business incubators are mapped into Corporate Private Incubators (CPIs), Business Innovation Centres (BICs), Independent Private Incubators (IPIs) and University Business Incubators (UBIs) (Rosa Grimald, 2005) [2]. Depending up on common facility equipment and leasing out infrastructure to entrepreneurs, incubation program was modeled before some years. New incubators have been set up in the food processing, ICT, Health care technologies, product design, knowledge management, arts and crafts, ceramics technologies and light engineering areas. It provides a chance to first generation entrepreneurs for acquiring skills to build enterprise and incubates them to become a successful small business owner. It gives exposure in all business operation areas like identification of appropriate technology, project / product selection, opportunity guidance including commercial aspects of business, hands on experience on working projects and business skills development.

In this paper, the Substantive Incubation for the development of MSME by the training of ICT incubators is proposed. ICT incubator training includes.

1. Finance, Connectivity, Infrastructure, Training and Business services are provided by ICT incubators to 100 MSME in pre and post incubation stages.
2. The comparison of the above factors shows that Post-incubation stage of MSME is efficient than Pre-Incubation stage.

The chapters are organized as follows. Chapter II gives the overview of review of literature on Business Incubators, ICT Incubators and MSME. Chapter III deals brief description about the ICT incubator stages that provides training to the MSME. In Chapter IV, the monitoring and the evaluation of the trained MSME are presented. In Chapter V, paired sample test is described. Chapter VI presents the analysis of the performance of the MSME in pre and post- incubation stages.

## II. RELATED WORKS

Nicola Dee et.al, (2011) presented an overview of current knowledge on the role and effectiveness of business incubation. It supports new firms development and reviewed the quantitative and qualitative literature which was published by the practitioner and academic communities and it concludes that in relation to business incubators, there is a widespread definitional and conceptual ambiguity in the academic and the practitioner publications and gives a variety of stakeholders, business models and incubator strategies. The comparability, generalizability and the validity of published findings of the performance of the incubator should be considered carefully [3]. Rwanda et.al, (2011) analyzed that in Rwanda, Technology and Business Incubation considered as a potential to promote technology innovation and entrepreneurship. In this paper, the empirical analysis of technology business incubation is advanced to create sustainable business in Rwanda and concluded that the whole community business incubation gives more benefits and helps in reducing poverty [4].

Kinoti Meru et.al, (2011) reviewed that for a new and the entrant Small and Medium Enterprises, the essential service network was provided by the business incubators in Kenya. They took 124 entrepreneurs to get the comparison to confirm the process of the business incubation and the ways the receiver comprehend the services [5]. Lubica Lesakova et.al, (2012) described that local phenomenon affects entrepreneurs and gets best support by the initiatives and implemented locally. Business incubators foster entrepreneurship. It speeds up the entrepreneurial company's development. In this paper, the role of the incubators to support the small and the medium entrepreneurs was described. It has three parts, the first part represents the incubator types, core of the incubators and goals, the second part represents the business incubator role in fostering entrepreneurship local dimensions and the third part describes the business incubator building in Slovakia and helps them to start entrepreneurship [6].

Pralay Dey et.al, (2012) presented that Micro and Small Enterprises (MSEs) are essential to all developing economies in the world. It have challenges, major employment and import dependency. In the first year of inception, majority of start-up fails. An institution with special incubation programmes that gives a handholding support can decrease these failures. Incubators have the potential to strengthen local and national economies, commercialize new technologies and import substitution. The major challenges for the establishment and any enterprise survival are organization sales, distribution channels, technology, Marketplaces, infrastructure, finance and sourcing of raw material [7]. Jose L. Barbero et.al, (2012) reviewed the comparison of functioning of incubator and the non incubator firm. The individual assessment is not carried out. There are various types of incubators. The features and the execution of the incubators are compared to know the growth received by the incubators [8].

Nkem Okpa Obaji et.al, (2012) reviewed that implementation of the incubation model of SME has not been especially successful by the Nigerian government. The disputes in Nigeria give the ways of the models obtained from anywhere have to be adjusted to local contexts for good success opportunities [9]. Simon Stephens et.al, (2012) described the business incubation impact on incubates. The abstract outline of the evaluation calculates that the incubation of the business is increased by this research. Thus the performance of the business incubation is enhanced [10]. Hung Chia et.al, (2013) described the investigation whether the timing of the venture capital (VCs) is affected by the technological changes in the industry. The incubation period was affected by the venture capital [11]. Prof M. Chandraiah et.al, (2014) described that India's Industrial sector includes the Micro, Small and Medium Enterprises. It has the MSMEs of rural/village enterprises and khadi [12]. Wen-Hsiang reviewed that the incubators of business acquire assistance for decreasing the high negative rate. It provides the exact help for getting over the difficulties in the post-entrepreneurial stage [13].

### **III Methodology**

An ICT setup that develops current theme and organize is employed. Innovation is incubated and meted out by a method that provides resources, recommendation and support in every stage of the event of the rising business. To assure the proper growth of a revolutionary business plan, we tend to acquire our methodology in 2 completely different stages; Pre-Incubation, and post incubation. The performance of the MSME is monitored and evaluated to grasp the progress in each pre- incubation and post-incubation stage.

#### **3.1. Pre-Incubation Stage**

At the pre-incubation stage, Associate in Nursing brooder establishes the bases for changing Associate in Nursing innovative plan into productive entrepreneurship. during this stage, the project property is analyzed and the market investigation is developed to see the thanks to follow. Then, it develops the business strategy set up and interested to take a position in original concepts. The steering and therefore the business tutor support area unit provided for Medium tiny small Enterprises within the Pre- Incubation stages, backed by special consultant's network, for the expansion of technologically-innovative business concepts. It provides aspiring entrepreneurs with skills and has the information on remodeling their business concepts into business plans, and next into collaborating business with high-growth potential by supporting them with coaching. within the recent situation of Medium tiny small Entrepreneurs, there area unit cluster of entrepreneurs United Nations agency aren't well provided to travel to the incubation method straightly. The performance of the incubation stages is increased by providing

pre-incubation services.

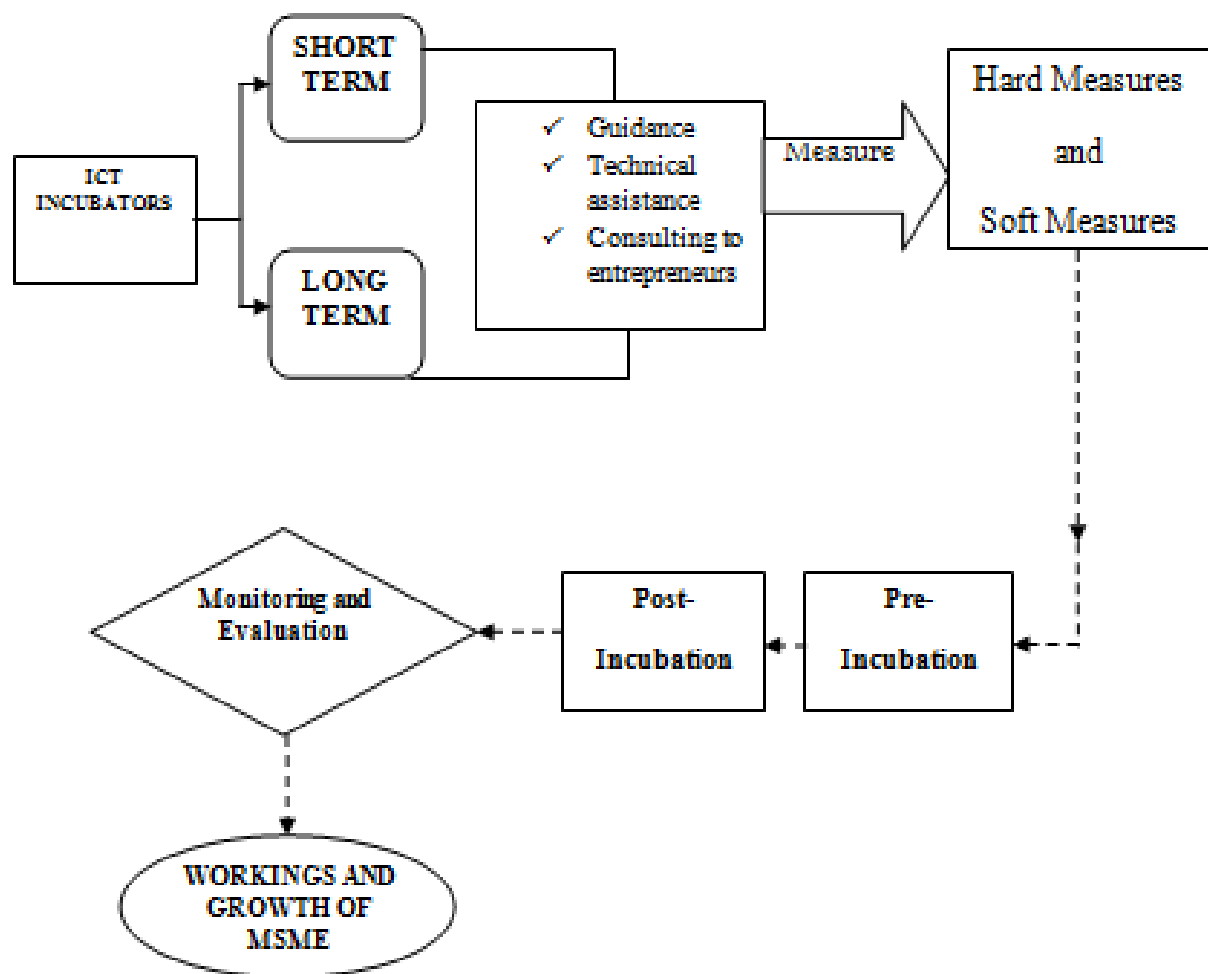


Figure 1: The framework of ICT incubator.

Figure 1 shows that ICT incubators provide short and long term assistance to provide guidance, offer business development services, consulting to entrepreneurs and technical assistance. A pre-incubation stage includes Appointment, Training, Orientation, Innovation assessments and Business plan. In appointment, the formulation of ideas, assessment of ideas and the marketing validation of ideas is done. Training is carried on the managerial skills, presentation skills and on more specialized topics (Legal and Administration). The business idea and the business model are defined in the orientation. Innovation assessment is carried out through internal and external competencies. The competition of the business plan with the financial forecasts occurs in the business model.

### **3.2. Post-Incubation Stage**

In post incubation stage, enterprises area unit allowable to use their criteria concerning the expansion of latest business objectives and methods that strengthen their opportunities areas and strengthen them within the long haul. Either as a supplier or technological partner, recommendation and support can continuously target accomplishing established objectives for every one in every of them. Coaching is enclosed on the company and debt restructuring, acquisition and managers.

It supports linkages to native and international methods partners and permits access to loans and investments. It provides the enterprises with smart infrastructure and facilities. Growth coaching is applied to deal with growth, leadership and international growth. It includes analysis and development, skilled support in feasibility studies, preparation of business set up and preparation for acceleration and internationalization.

### **IV. Monitoring and Evaluation**

The Ministry of MSME monitors and guides the project. stress has to be afforded to assure the continuation of theme by documentation. AN informatory and observation committee moves within the direction by Development Commissioner (MSME) consisting of NMCC representatives and extra Secretary, Representatives of Assessment Council (TIFAC) and therefore the prediction of the technological info and banking company of the State representatives wherever the apparatus is established. It consists of Industries Association representatives below the MSMED Act, 2006. Representatives would be established to guide and review the programme implementation. The essential mid-term correction came by the Committee are going to be enforced to form AN economical program.

### **V. Results and Discussions**

An analysis is carried out for Micro Small and Medium Enterprises. An ICT incubator provides guidance to 100 MSME and it is conducted in two stages; Pre-Incubation and Post Incubation.



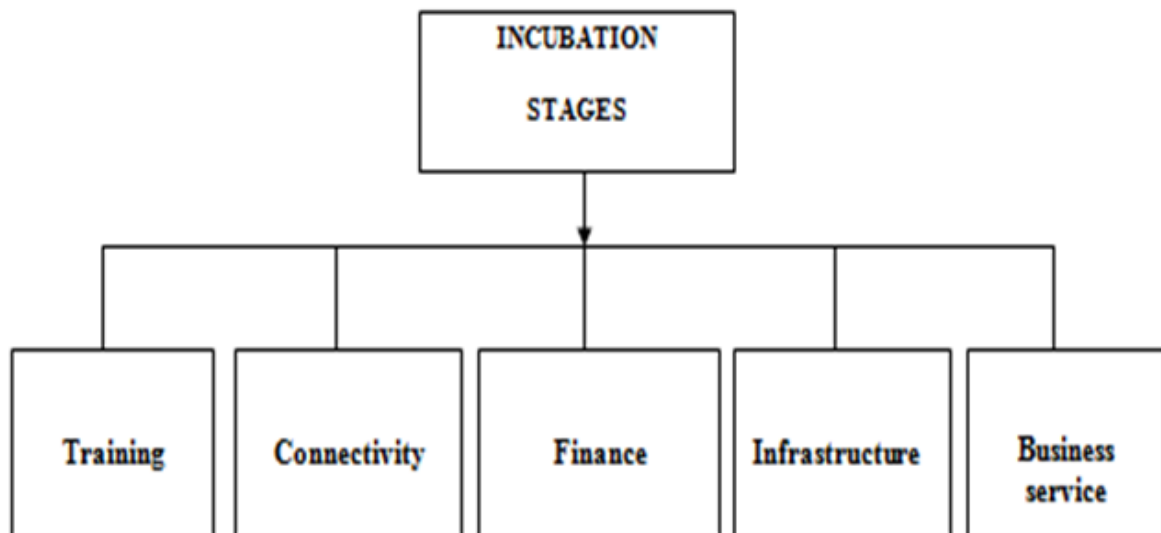


Figure 2: Incubation Stages.

Figure 2 shows that an incubation stage includes training, connectivity, finance, infrastructure and business service in pre- incubation and post-incubation stage. The functioning of 100 MSME in pre and post-incubation stage is equated to know the progress which would assist in the growth of the enterprises.

### 5.1 Paired Sample test

The test is carried out for business management skills, linkage to local and international strategic patterns, access to finance, infrastructure and business services in both post incubation and pre incubation stages for 100 MSME. Mean value, standard deviation and standard error mean, 95% confidence interval of the difference (lower and upper), t, p and dr is acquired.

### 5.1 Analysis of MSME in Pre-Incubation and Post-Incubation Stage.

Particulars	Pre-Incubation	Post Incubation
Business management Skills.		
<b>Extremely Good</b>	<b>19</b>	<b>20</b>
<b>Good</b>	<b>11</b>	<b>12</b>
<b>Average</b>	<b>29</b>	<b>30</b>
<b>Poor</b>	<b>20</b>	<b>21</b>

<b>Extremely poor</b>	<b>21</b>	<b>17</b>
<b>Total</b>	<b>100</b>	<b>100</b>

**Table 1 Analysis of MSME for Business management Skills in Pre-Incubation and Post-Incubation stage.**

Table 1 shows the performance of MSME in pre and post-Incubation stage. Training is very efficient in the post-incubation stage than the pre-incubation stage.

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Business management skills-trained. (Post and Pre Incubation)	.100	.302	.030	.040	.160	3.317	99	.001

**Table 2 Paired Sample Test for Business Skills**

In table 2, this option shows the summary data of the sample. The statistics is given by t. The t value is 3.317 and  $p=0.004$ . This means that a very few probability of this output occurring by chance, under the null hypothesis of no difference. Here  $p < 0.05$  ( $p=0.004$ ), thus the null hypothesis is neglected. There is a strong evidence ( $p=0.004$  and  $t=3.317$ ). It shows that the post incubation increases the training; it improved training on average. If other training samples was considered, mean paired difference obtained in training differ from .100. It is important to see at the 95% confidence interval (95% CI). If the experiment is repeated 100 times, 95 times the true value for the difference would lie in the 95% confidence interval. From 0.40 to .160 the 95% CI is available.

Particulars	Pre-Incubation	Post Incubation
Linkages to local and international strategic partners through maintaining events & Conferences		
Extremely Good	21	22
Good	13	14
Average	31	32
Poor	22	23
Extremely poor	13	9
Total	100	100

**Table 3 Analysis of MSME for Connectivity in Pre-Incubation and Post-Incubation stage**

Table 3 show the performance of MSME in pre and post-Incubation stage. Post-Incubation provides high connectivity compared to the Pre-Incubation stage.

	Observation	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Linkage to local and international strategic patterns – Trained. (Post and Pre Incubation)	100	.100	.302	.030	.040	.160	3.317	99	.001

**Table 4 Paired Sample Test for Connectivity.**

In table 4, this option shows the summary data of the sample. The statistics is given by t. The t value is 3.317 and  $p=0.004$ . This means that a very few probability of this output occurring by chance, under the null hypothesis of no difference. Here  $p < 0.05$  ( $p=0.004$ ), thus the null hypothesis is neglected. There is a strong evidence ( $p=0.004$  and  $t=3.317$ ). It shows that the post incubation increases the training; it improved training on average. If other training samples was considered, mean paired difference obtained in training differ from .100. It is important to see at the 95% confidence interval (95% CI). If the experiment is repeated 100 times, 95 times the true value for the difference would lie in the 95% confidence interval. From 0.40 to .160 the 95% CI is available.

Particulars	Pre-Incubation	Post Incubation
Access to financing including grants, commercial loans and equity.		
Extremely Good	22	23
Good	14	15
Average	32	33
Poor	23	24
Extremely poor	9	5
Total	100	100

**Table 5 Analysis of MSME for Finance in Pre-Incubation and Post-Incubation stage**

Table 5 show the performance of MSME in pre and post-Incubation stage. Finance is very efficient in the post-incubation stage than the pre-incubation stage.

	Observation	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2- tailed)
					Lower	Upper			
Access to finance – Trained.  (Post and Pre Incubation)	100	.100	.302	.030	.040	.160	3.317	99	.001

**Table 6 Paired Sample Test for Finance**

In table 6, this option shows the summary data of the sample. The paired t-test output is in bold. The statistics is given by t. The t value is 3.317 and  $p=0.004$ . This means that a very few probability of this output occurring by chance, under the null hypothesis of no difference. Here  $p < 0.05$  ( $p=0.004$ ), thus the null hypothesis is neglected. There is a strong evidence ( $p=0.004$  and  $t=3.317$ ). It shows that the post incubation increases the training; it improved training on average. If other training samples was considered, mean paired difference obtained in training differ from .100. It is important to see at the 95% confidence interval (95% CI). If an experiment is repeated 100 times, 95 times the true value for the difference would lie in the 95% confidence interval. From 0.40 to .160 the 95% CI is available.

Particulars	Pre-Incubation	Post Incubation
Business Development plan assistance.		
<b>Extremely Good</b>	<b>23</b>	<b>24</b>
<b>Good</b>	<b>13</b>	<b>15</b>
<b>Average</b>	<b>31</b>	<b>34</b>
<b>Poor</b>	<b>22</b>	<b>24</b>
<b>Extremely poor</b>	<b>11</b>	<b>3</b>

<b>Total</b>	<b>100</b>	<b>100</b>
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**Table 7 Analysis on Pre-Incubation and Post-Incubation stage of MSME  
In Business Service**

Table 7 show the performance of MSME in pre and post-Incubation stage. Post incubation stage provides effective Business service than a pre-incubation stage.

	observations	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2- tailed)
					Lower	Upper			
Business services – Trained.  (Post and Pre Incubation)	100	.180	.386	.039	.103	.257	4.662	99	.000

**Table 8 Paired Sample Test for Business Service.**

In table 8, this option shows the summary data of the sample. The statistics is given by t. The t value is 4.662 and  $p=0.004$ . This means that a very few probability of this output occurring by chance, under the null hypothesis of no difference. Here  $p < 0.05$  ( $p=0.004$ ), thus the null hypothesis is neglected. There is a strong evidence ( $p=0.004$  and  $t=4.662$ ). It shows that the post incubation increases the training; it improved training on average. If other training samples was considered, mean paired difference obtained in training differ from .100. It is important to see at the 95% confidence interval (95% CI). If the experiment is repeated 100 times, 95 times the true value for the difference would lie in the 95% confidence interval. From .103 to .257 the 95% CI is available.

Particulars	Pre-Incubation	Post Incubation
Access to training, conference room, library and hot desks		
Extremely Good	20	21
Good	12	13
Average	30	31
Poor	21	22
Extremely poor	17	13
Total	100	100

**Table 9: Analysis on Pre-Incubation and Post-Incubation stage of MSME for Infrastructure**

Table 9 show the performance of MSME in pre and post-Incubation stage. Infrastructure is efficient in the post-incubation stage than the pre-incubation stage.

	observation	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Infrastructure –Trained. (Post and Pre Incubation)	100	.100	.302	.030	.040	.160	3.317	99	.001

**Table 10 Paired Sample Test for Infrastructure**

In table 10, this option shows the summary data of the sample. The statistics is given by t. The t value is 3.317 and  $p=0.004$ . This means that a very few probability of this output occurring by chance, under the null hypothesis of no difference. Here  $p < 0.05$  ( $p=0.004$ ), thus the null hypothesis is neglected. There is a strong evidence ( $p=0.004$  and  $t=3.317$ ). It shows that the post incubation increases the training; it improved

training on average. If other training samples was considered, mean paired difference obtained in training differ from .100. It is important to see at the 95% confidence interval (95% CI). If the experiment is repeated 100 times, 95 times the true value for the difference would lie in the 95% confidence interval. From 0.40 to .160 the 95% CI is available.

	N	Correlation	Sig.
Pair 1 Business management skill – Trained. (Post Incubation) & Business management skill – Trained. (Pre Incubation)	100	.976	.000
Pair 2 Linkage to local and international strategic patterns –Trained. (Post Incubation) & Linkage to local and international strategic patterns – Trained. ( Pre Incubation)	100	.973	.000
Pair 3 Access to finance – Trained. (Post Incubation) & Access to finance –Trained. ( Pre Incubation)	100	.971	.000
Pair 4 Infrastructure –Trained. (Post Incubation) & Infrastructure – Trained. (Pre Incubation)	100	.975	.000
Pair 5 Business services –Trained. (Post Incubation) & Business services –Trained. (Pre Incubation)	100	.957	.000

**Table 11 Paired Sample Correlations**

Table 11 shows that the correlation for the paired samples of Business management skill, Linkage to local and international strategic patterns, Access to finance, Infrastructure and Business services in post incubation stage and pre incubation stage. The correlation of the business management skills, an infrastructure and business



service is high compared to the finance and the linkages to local and international strategic patterns.

			Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Business management skill. (Trained)	Post Incubation	2.97	100	1.352	.135
		Pre Incubation	2.87	100	1.383	.138
Pair 2	Linkage to local and international strategic patterns. (Trained)	Post Incubation	3.17	100	1.264	.126
		Pre Incubation	3.07	100	1.312	.131
Pair 3	Access to finance.	Post Incubation	3.27	100	1.205	.120
		Pre Incubation	3.17	100	1.264	.126

Pair 4 Infrastructure	Post Incubation	3.07	100	1.312	.131
	Pre Incubation	2.97	100	1.352	.135
Pair 5 Business Service	Post Incubation	3.33	100	1.173	.117
	Pre Incubation	3.15	100	1.306	.131

**Table 12 Paired Samples Statistics.**

Table 12 depicts that paired sample statistics of business management skills, linkages to local and international strategic patterns, infrastructure, business services and finance and infrastructure in both post and pre incubation stage. In post incubation stage, high Mean value, N value, standard deviation and standard error mean is obtained than pre incubation stage.

## VI Conclusions

A business incubator is a company which assists new and start-up companies to grow by supplying services such as office space or management training. Business Incubator varies from technology parks and research in their commitment to start up and early stage companies. An ICT incubator provides training to the Micro Small and Medium Entrepreneurs (MSME). It includes Pre-Incubation and Post-Incubation stages. It assists MSME by providing guidance, technical assistance and consultation to entrepreneurs. The performance of 100 trained Micro Small and Medium Enterprises (MSME) in pre-incubation and post-incubation stage is compared. The comparison depicts that the execution of MSME in training, connectivity, finance, business service and infrastructure is effective in the post-incubation stage than the pre-incubation stage. Paired sample test for all the incubation stages in post and pre incubation period is conducted and the results show that the post incubation increases the training; it improved training on average. If other training samples was considered, mean paired difference obtained in

training differ from .100. If the experiment is repeated 100 times, 95 times the true value for the difference would lie in the 95% confidence interval. From 0.40 to .160 the 95% CI is available. The correlation of, an infrastructure, the business management skills and business service is high compared to the finance and the linkages to local and international strategic patterns. In the paired sample statistics, high Mean value, N value, standard deviation and standard error mean is acquired in post incubation stage than pre incubation stage.

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