Article

Select Business Incubation Centres and Services to Boost Entrepreneurship Growth in Assam, India

Bishal Patowary*
Bhaskarjyoti Bora**

Abstract

An economy may experience expansion and development through mobilisation of a nation's resources, and entrepreneurship is the driving force behind this process. An incubation program helps entrepreneurs acquire these resources by providing the necessary assistance and guidance. In the study, the function of some select business incubation centres in encouraging entrepreneurship in Assam was investigated, and it was found that the select business incubation centres focus on a variety of entrepreneurship-enhancing strategies through the employment of 27 practices and 34 services to ensure the growth of incubatee entities. And therefore the outcome is reflected in the performance of graduated incubatees with the increasing number of startups and entrepreneurial firms subsequently. The disparity between perceived and actual services rendered by incubators was also investigated through Independent samples test and One-way ANOVA. Later, it was discovered that there was no significant gap between perceived and actual services rendered by the business incubation centres.

Keywords: *Entrepreneurship, Incubator, Incubatees, Tenant companies, Startups*

How to Cite: Patowary, B., & Bora, B. (2025). Select business incubation centres and services to boost entrepreneurship growth in Assam, India. *Journal of Management and Entrepreneurship*, 19(1), 25–37.

* Research Scholar, Department of Commerce, Gauhati University, bishalpatowary@gauhati.ac.in, 0000-0001-9795-0069

** Professor, Department of Commerce, Gauhati University, Gopinath Bordoloi Nagar, Jalukbari, Guwahati, Assam, Pin code – 781014

1. Introduction and Literature

Entrepreneurship is the process of establishing new businesses or reviving existing ones in response to perceived possibilities (Ssekiziyivu & Banyenzaki, 2021). An entrepreneur is a person who creates value through inventions (Thompson & Bolton, 2004), and these innovations boost a country's GDP per capita (Doran et al., 2018). Entrepreneurs who are innovative likely to be successful and innovation is a crucial element of economic progress worldwide (Toma et al., 2014). Entrepreneurship is a key engine of economic growth; hence, it is crucial to improve the quality of entrepreneurship through governmental initiatives (Hackett & Dilts, 2004). But for entrepreneurs to have a beneficial influence on a country's economy and GDP, they must overcome institutional hurdles which are only achievable if the advantages of starting ventures surpass the costs associated with such barriers (Cumming et al., 2014). Therefore, it is essential to integrate entrepreneurship with incubation for enterprises to obtain the necessary resources, skills, expertise, and social capital (Eveleens et al., 2017). Fernández et al. (2015) states that business incubation is an evolving, dynamic, and participatory method of developing the whole entrepreneurial ecosystem via the supply of value-added services. Business incubation fosters the creation of new and early-stage companies through a policy that connects individual enthusiasm with organisational objectives (Eshun, 2009). To graduate the incubatees, business incubation centres must adapt their services in support of the beneficiaries and have a continual beneficial influence on the business enterprises (Al-Mubaraki & Busler, 2017). Even if incubatees are tied to the incubation process if the incubation centres do not demonstrate constant performance, the incubatees' prospects of survival become grim (Schwartz, 2013).

Suk & Mooweon (2006) examined the factors that affect the performance of business incubators in Korea and found that the majority of the incubation centres in Korea don't provide a wide variety of services which determines the growth of firms. It becomes very essential for incubation centres to provide human capital and training to business ventures. Through the empirical study of 114 start-up firms Peña (2004), analysed the performance of business incubation centres in the Basque country and later concluded the centres have increased the growth of the ventures by providing them with human capital which includes training, assistance and managerial services. According to Sharma et al. (2015), there are 15 variables which create a positive impact of incubation on start-up performance and growth of India's economy. The higher the existence of incubators, the more are entrepreneurs found in developed countries and the stronger is the relationship that exists between incubators and economic development which was depicted in (Kihonge, 2016). Pettersen et al. (2016) made an enquiry about the impact of business incubators' critical network resources on entrepreneurial start-ups' performance and found that incubators' network resources, and start-up firm's own network resources proved very crucial in enhancing its performance. So, the business enterprises need to link their operations with the incubation process. A business firm's performance is greatly enhanced when it avails itself of an incubation setup which further facilitates an increase in revenue, growth and employment (Ayatse et al., 2017). Lala & Sinha (2019) analysed the key components and factors which are seed funding, R&D support and commercializing technologies that were influencing the incubation process. However there is a need to develop a theoretical framework so as to make a thorough analysis of the incubation process. This gap was filled in the research of Hausberg and Korreck (2020). And through the operational facilities and different kinds of vivid services of business incubation centres have led to the growth of new businesses (Thomas & K.I., 2020). But in order to develop entrepreneurs, it's highly significant for incubation centres to identify their weaknesses and reduce them to a greater extent. In order to better understand the role that business incubation centres play in the growth of entrepreneurship, Ramar et al. (2020) looked into the challenges that these centres faced. They came to the conclusion that these incubators faced serious issues that served as barriers to the growth of entrepreneurship. The current research focuses on the role of some select incubation centres of Assam in the development of new entrepreneurs in the state.

2. Objectives and Hypothesis of the study

The research is conducted with two objectives

1. To examine the role that select business incubation centres play in developing entrepreneurs in the state of Assam.
2. To investigate the gap that may exist between perceived and actual services rendered by the incubators

A hypothesis is framed to achieve the second objective of the study.

H_0: There is no significant gap between perceived and actual services rendered by Incubation centres

H_1: There is a significant gap between perceived and actual services rendered by Incubation centres

3. Parameters

To achieve the first objective the researcher has tried to focus upon the services provided by the business incubation centres and the practices followed by them. There are five parameters that have been adopted to focus on the practices followed by the incubators. The five parameters are Management, Promotion, Tenant support, Human resource management and Assessment. These parameters refer to 27 practices in total. The services provided by the incubators are based on five parameters (namely Infrastructure, Management Consultancy, Business facilitation, Operational and Marketing & support) having 34 services in total. All the parameters have been taken from (Kamdar, 2013; Patowary, 2021). Hereafter the responses of the incubation centres and incubatee entities will be recorded and assessed on a five-point Likert scale and mean scores will be calculated which will further depict the effectiveness of the services rendered by the incubation centres to the incubatee entities. The mean values of responses across the different services signify the variance in the perceived level of efficiency in providing these services.

Following are the parameters which involve different practices followed by the business incubators

➢ Management

i. Fund availability – M1
ii. Formal business plan – M2
iii. Feasibility study before establishing incubation centre – M3
iv. Managed by an advisory board – M4
v. Decision-making process with suitable decision points – M5

➢ Promotion

i. Well-maintained website – P1
ii. Conducting entrepreneurship promotion programmes – P2
iii. Increasing the awareness of incubator – P3

➢ Tenant Support

i. Formal admission policy – TS1
ii. Tenant selection through selection committee – TS2
iii. Availability of sufficient space for tenant businesses – TS3
iv. Formal exit policy – TS4
v. Assistance after leaving incubation centre – TS5

➢ Human Resource Management

i. Clearly defined criteria for staff selection – HRM1
ii. Recruiting consultants – HRM2
iii. Training personnel – HRM3
iv. Periodic evaluation of staff training requirements – HRM4
v. Periodic appraisal of employee performance – HRM5
vi. Equity stake in incubated companies for incubation centre – HRM6
vii. Sufficient pay for the head of the incubator – HRM7
viii. Staff's openness to change and taking risks – HRM8
ix. Attracting and retaining employees for incubation centre – HRM9

➢ **Assessment**

i. Periodic assessment of the entrepreneurial market – A1
ii. Well-defined criteria for measuring success – A2
iii. Regenerate public confidence in entrepreneurship – A3
iv. Creation of job opportunities in the centre – A4
v. Self-sustainability of incubation centre – A5

(Source: (Kamdar, 2013; Patowary, 2021)

The services offered by incubation centres belonging to certain parameters are given below

❖ Infrastructure

i. Providing co-working space at below-market rent – I1
ii. Access to library facilities – I2
iii. Access to laboratory facilities – I3
iv. Access to communication – I4

❖ Management Consultancy

i. Information on product ideas and business – MC1
ii. Performing a feasibility study - MC2
iii. Access to business counselling – MC3
iv. Development of business plans – MC4
v. Exposure to knowledge sharing – MC5

❖ Business Facilitation

i. Providing capital and funding assistance – BF1
ii. Access to technology – BF2
iii. Access to Research & Development – BF3
iv. Aided business in building credibility – BF4
v. Providing assistance in product development activities – BF5
vi. Providing legal assistance – BF6
vii. Acceleration of new firm development – BF7
viii. Creation of profitable firms by exploiting opportunities – BF8
ix. Providing assistance in obtaining statutory approvals – BF9
x. Reduced likelihood of new business failure – BF10

❖ Operational

i. Access to secretarial services – O1
ii. Create viable products and services through innovation – O2
iii. Reduced time required in launching a product – O3
iv. Reduced early-stage operational expenditures – O4
v. Access to network-related services – O5
vi. Periodic assessment of Incubatee performance – O6
vii. Obtain regular feedback on services – O7
viii. Formal procedure for handling grievances and complaint settlement – O8
ix. Providing a self-learning environment – O9

❖ Marketing & Support

i. Exchanges ideas with incubatees regarding marketing of products/services – MS1
ii. Increase sales through marketing – MS2
iii. Support to incubatees with problem solving – MS3
iv. Periodically evaluate incubatee entities satisfaction with marketing approaches – MS4
v. Regular assessment of incubatee entity requirements and adherence to them – MS5
vi. Evaluation of incubatee growth after graduation – MS6

(Source: (Kamdar, 2013; Patowary, 2021)

To achieve the second objective i.e. to analyse the gap between perceived and actual services rendered by business incubation centres, an independent samples test will be conducted and a One-way ANOVA test will be performed eventually (to compare the two sample means) as the data is assumed to be normally distributed by increasing the samples size.

1. Research Methodology

In the present study, five business incubation centres were considered for the study namely North East Agriculture Technology Entrepreneurs Hub NEATEHUB**,** *Indian Institute of Technology Guwahati (IITG) Technology Incubation Centre, Guwahati Biotech Park Incubation Centre, Atal Incubation*

Centre – National Institute of Pharmaceutical Education and Research (NIPER) Guwahati Foundation and Assam Startup – The Nest. The personal interview method was adopted to gather responses from the incubation centres using a structured questionnaire. The list of incubatee entities was obtained from the respective incubation centres. Survey method was adopted to collect information from the incubatees. The researcher tried to reach out to each incubatee entity registered under the incubation support but only 67% of the incubatees agreed to be a part of the study, out of which about 65% of the incubatee entities (i.e. 170 incubatees) were fit for the study. After examining a number of previous research and survey tools pertaining to business incubation, questionnaires were created (Acharya, 2019; Kamdar, 2013; Kant, 2017; Mirza, 2017). The responses of the incubator heads/managers and owners of the incubatee entities were collected on a five-point Likert scale and respective mean scores were obtained to compare their responses, and an independent samples t-test and One-way ANOVA test were performed to analyse the deviations using SPSS software.

LIKERT SCALE

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

Table 4.1 shows the mean interval and its output

Mean Interval	Output
1 – 1.80	Strongly Disagree
1.81 – 2.60	Disagree
2.61 – 3.40	Neutral
3.41 – 4.20	Agree
4.21 – 5.00	Strongly Agree

- Any mean value that lies between the range of 1 to 1.80 will be interpreted as Strongly disagree.
- Values that lie in the range of 1.81 to 2.60 will considered as Disagree.
- Values that lie in the mean interval of 2.61 – 3.40 will be considered Neutral.
- Any mean value that lies in the mean interval of 3.41 – 4.20 will be considered as Agree.
- Any mean values that lies in the interval 4.21 to 5.0 will be considered as Strongly agree.

Table 4.2: List of Business Incubation Centres and Incubatee Entities

Sl. No.	Incubation Centres	Incubatees		
		Current incubatees	Graduated incubatees	Selected incubatees
	North East Agriculture Technology Entrepreneurs Hub	25	38	53
	IITG Technology Incubation Centre	22	11	27
	Guwahati Biotech Park Incubation centre	11	40	22
	Atal Incubation Centre – NIPER Guwahati foundation	23	19	10
	Assam Startup – The Nest	52	76	95
		133	184	
Total	5	317		170

(Source: Field survey, Incubators' websites)

The above table 4.2 shows the record of business incubation centres and their incubatee entities. From the table, 170 samples of Incubatee entities and 5 business incubators are considered for the analysis of the study.

5. Data Analysis and Results

Table 5.1:

Reliability test

Reliability Statistics		
Cronbach's Alpha	N of Items	Status
0.877	61	Reliable

To check the consistency of the adopted questionnaire, a reliability test was conducted where Cronbach's alpha coefficient value was calculated. The obtained value of Cronbach's alpha (0.877) is greater than the standard value of Cronbach's (0.70) indicating that the questionnaire is reliable.

The researchers have tried to assess the role of business incubation centres by assessing the effectiveness of the practices followed by business incubation centres and the services offered by them.

Table 5.2:

Descriptive statistics indicating the practices followed by Business Incubation centres

	N	Minimum	Maximum	Mean	Std. Deviation
INCUBATOR PRACTICES	**5**	**3.800**	**4.307**	**4.093**	**0.1944**
Management	**5**	**4.000**	**4.600**	**4.280**	**0.3033**
M1	5	4.000	5.000	4.800	0.4472
M2	5	3.000	5.000	4.400	0.8944
M3	5	4.000	5.000	4.600	0.5477
M4	5	3.000	5.000	4.200	0.8366
M5	5	1.000	5.000	3.400	1.5166
Promotion	**5**	**3.667**	**4.333**	**4.133**	**0.2981**
P1	5	3.000	5.000	4.400	0.8944
P2	5	3.000	5.000	4.200	0.8367
P3	5	2.000	5.000	3.800	1.3038
Tenant Support	**5**	**3.000**	**4.400**	**3.880**	**0.5404**
TS1	5	2.000	5.000	3.200	1.3038
TS2	5	3.000	5.000	4.400	0.8944
TS3	5	3.000	5.000	4.200	0.8367
TS4	5	1.000	5.000	3.000	1.5811
TS5	5	3.000	5.000	4.600	0.8944
Human Resource Management	**5**	**3.333**	**4.333**	**3.933**	**0.4346**
HRM1	5	2.000	5.000	4.000	1.4142

HRM2		5	4.000	5.000	4.600	0.5477
HRM3		5	4.000	5.000	4.800	0.4472
HRM4		5	2.000	5.000	3.600	1.1402
HRM5		5	3.000	5.000	4.200	0.8367
HRM6		5	2.000	5.000	3.000	1.2247
HRM7		5	1.000	5.000	3.200	1.6432
HRM8		5	3.000	5.000	3.600	0.8944
HRM9		5	4.000	5.000	4.400	0.5477
	Assessment	**5**	**3.800**	**4.800**	**4.240**	**0.4561**
A1		5	2.000	5.000	4.000	1.225
A2		5	2.000	5.000	4.000	1.4142
A3		5	4.000	5.000	4.400	0.5477
A4		5	4.000	5.000	4.800	0.4472
A5		5	1.000	5.000	4.000	1.7321

(Source: Field survey)

On a fictitious 5-point Likert-type answer scale, the incubators were asked to rate their level of agreement with the provision of various business incubation practices. Table 5.2 depicts that the highest ratings were received on the Management parameter ($\bar{x}$ = 4.280) followed by Assessment ($\bar{x}$ = 4.240), Promotion ($\bar{x}$ = 4.133) Human resource management ($\bar{x}$ = 3.933). The least mean was score was of Tenant support ($\bar{x}$ = 3.880). The highest mean score was provided to fund availability, training personnel and creation of job opportunities receiving equal mean scores of 4.80. The lowest mean score was of formal exit policy and equity stake in incubated companies for incubator staff receiving equal mean score of 3.0.

According to the managers of the incubation centres they tend to follow a wide range of practices to foster the growth of incubation centres in Assam. According to the incubators they were most efficacious in following the Management practices which included ensuring fund availability for executing their operations and projects ($\bar{x}$ = 4.80), conducting feasibility study before establishing incubation centre ($\bar{x}$ = 4.60), having a formal business plan for the future course of action ($\bar{x}$ = 4.40), management of the incubation centre by an advisory board ($\bar{x}$= 4.20) and decision-making process with suitable decision points ($\bar{x}$ = 3.40).

With regard to promotional practices, incubators highly agree about having a well-maintained website ($\bar{x}$ = 4.40) which helps in sharing information and updates with incubatees. The incubation centres conceive themselves of conducting entrepreneurship programmes ($\bar{x}$ = 4.20) which further helps them increase the awareness of their incubation centres ($\bar{x}$= 3.80) among people at large.

The responses of incubators with regard to tenant practices were as such assistance after leaving incubation centre ($\bar{x}$= 4.60), proper tenant selection through selection committee ($\bar{x}$ = 4.40), availability of sufficient space for tenant businesses ($\bar{x}$ = 4.20). Having a formal admission ($\bar{x}$ = 3.20) and exit policy ($\bar{x}$ = 3.0) received neutral responses with regard to strict selection criteria for tenant companies and their exit. Incubators do not allow the tenant companies to vacate the office space unless they are satisfied with their growth.

For the human resource management practices, incubators highly agree about providing training to their employees ($\bar{x}$ = 4.80), recruiting consultants ($\bar{x}$ = 4.60), attracting and retaining employees for the centre ($\bar{x}$ = 4.40). Incubators agree about periodic appraisal of employee performance ($\bar{x}$ = 4.20), having a clearly defined criteria for staff selection ($\bar{x}$ = 4.0) periodically evaluating the training needs of the staff ($\bar{x}$ = 3.60) and staff's openness to change and taking risks ($\bar{x}$ = 3.60). Incubators are neutral about having an equity stake in incubated companies for the centre growth ($\bar{x}$ = 3.0) and having sufficient pay for the head of the incubator which also results in demotivation for them ($\bar{x}$ = 3.20).

Incubators claim to be most efficient in following the assessment practices including sub-practices such as the creation of job opportunities in the centre ($\bar{x}$ = 4.80), regenerate public confidence in entrepreneurship ($\bar{x}$ = 4.40) which are considered to be highly effective. Periodic assessment of entrepreneurial market, well defined criteria for measuring success and self-sustainability of incubation centre received equal mean scores of 4.0 which are effective in nature.

Incubators claim to be following all the practices obtaining the aggregate mean score of **4.093** indicating the practices to be efficacious. However it is important to compare the responses of incubators with regard to the provision of services.

Table 5.3:

Mean score analysis of the services rendered by Business Incubation centres

	Incubation Centre			Incubatee Entity			Total		
	Mean	N	Std. Deviation	Mean	N	Std. Deviation	Mean	N	Std. Deviation
Incubator Services	**4.181**	**5**	**0.3123**	**3.996**	**170**	**0.2433**	**4.001**	**175**	**0.2464**
Infrastructure	**4.250**	**5**	**0.3062**	**4.234**	**170**	**0.4735**	**4.234**	**175**	**0.4690**
I1	4.400	5	0.8944	4.347	170	1.0162	4.349	175	1.0107
I2	4.200	5	1.0954	4.276	170	0.8141	4.274	175	0.8194
I3	4.200	5	0.8367	4.141	170	0.8163	4.143	175	0.8145
I4	4.200	5	0.4472	4.171	170	1.3101	4.171	175	1.2929
Management Consultancy	**4.360**	**5**	**0.5727**	**3.778**	**170**	**0.6998**	**3.794**	**175**	**0.7019**
MC1	4.800	5	0.4472	4.194	170	1.4238	4.211	175	1.4085
MC2	4.200	5	1.3038	3.406	170	1.4205	3.429	175	1.4200
MC3	4.400	5	0.5477	4.247	170	0.6326	4.251	175	0.6294
MC4	4.000	5	1.2247	3.706	170	1.3219	3.714	175	1.3168
MC5	4.400	5	0.8944	3.335	170	1.2208	3.366	175	1.2238
Business Facilitation	**3.940**	**5**	**0.4980**	**4.098**	**170**	**0.4263**	**4.093**	**175**	**0.4277**
BF1	4.400	5	0.5477	4.424	170	0.7358	4.423	175	0.7299
BF2	3.800	5	1.3038	3.853	170	1.4170	3.851	175	1.4104
BF3	3.600	5	1.1402	4.118	170	1.3580	4.103	175	1.3522
BF4	4.200	5	0.4472	3.900	170	1.1339	3.909	175	1.1207
BF5	4.200	5	0.4472	4.176	170	1.5088	4.177	175	1.4885
BF6	3.600	5	0.8944	4.306	170	1.1308	4.286	175	1.1288
BF7	3.600	5	0.5477	4.324	170	1.1996	4.303	175	1.1913
BF8	4.600	5	0.5477	4.600	170	0.5998	4.600	175	0.5969
BF9	4.000	5	0.0000	3.665	170	0.8834	3.674	175	0.8724
BF10	3.400	5	1.6733	3.612	170	1.3682	3.606	175	1.3725

Operational	**3.956**	**5**	**0.3388**	**3.529**	**170**	**0.5574**	**3.541**	**175**	**0.5563**
O1	4.400	5	0.5477	2.771	170	1.8685	2.817	175	1.8634
O2	4.200	5	0.8367	4.553	170	0.7995	4.543	175	0.8002
O3	4.000	5	0.7071	3.035	170	1.7938	3.063	175	1.7784
O4	3.400	5	1.5166	3.024	170	1.6604	3.034	175	1.6536
O5	4.200	5	0.4472	3.476	170	1.5431	3.497	175	1.5271
O6	4.200	5	1.0954	4.718	170	0.4892	4.703	175	0.5172
O7	3.400	5	0.5477	3.288	170	1.2983	3.291	175	1.2824
O8	3.400	5	0.8944	3.671	170	1.5221	3.663	175	1.5069
O9	4.400	5	0.5477	3.224	170	1.8293	3.257	175	1.8154
Marketing & Support	**4.400**	**5**	**0.2789**	**4.342**	**170**	**0.4602**	**4.344**	**175**	**0.4556**
MS1	4.200	5	0.4472	4.618	170	0.7698	4.606	175	0.7649
MS2	4.200	5	0.8367	4.153	170	1.2826	4.154	175	1.2704
MS3	4.600	5	0.5477	4.341	170	0.8221	4.349	175	0.8156
MS4	4.800	5	0.4472	4.035	170	1.2398	4.057	175	1.2304
MS5	4.400	5	0.8944	4.229	170	1.0605	4.234	175	1.0543
MS6	4.200	5	1.3038	4.676	170	0.6018	4.663	175	0.6302

(Source: Field survey)

Table 5.3 explains that incubation centres are most adept in rendering the services pertaining to Marketing & Support obtaining the highest mean score of 4.344. The lowest comparative mean score was of the Operational services ($\bar{x}$ = 3.541). The business incubators provide all five broad categories (parameters) of services to the incubatees, as evidenced by the mean values of 3.41 or above 3.41 on a 5.0 point scale.

The comparative mean score of incubator-incubatee responses with regard to Infrastructure services ($\bar{x}$ = 4.234) indicating that incubation centres are efficaciously providing the infrastructure services. The services include providing co-working space for tenant companies at below market rent ($\bar{x}$ = 4.349) and some incubatee responses further describe that office spaces are also provided absolutely free of cost; access to library facilities for enhanced knowledge about concepts ($\bar{x}$ = 4.274); access to laboratory facilities ($\bar{x}$ = 4.143); and access to communication facilities like telephone fax ($\bar{x}$ = 4.171).

As per incubator-incubatee data, the select incubation centres are efficient in rendering the management consultancy services ($\bar{x}$ = 3.794). Incubatees gain access to business counselling services ($\bar{x}$ = 4.251) which removes the business chaos and further helps in obtaining product ideas and business related information ($\bar{x}$ = 4.211). This leads to incubatees developing business plans ($\bar{x}$ = 3.714) and further conducts feasibility study of their products or business operations ($\bar{x}$ = 3.429). However, incubatees are neutral about the efficiency of Incubators in creating an exposure for knowledge sharing ($\bar{x}$ = 3.366). Even though, Incubatees perceive that the provision of Management consultancy services have enabled start-ups to become experts and industry leaders.

The Business facilitation services obtained the combined mean score of 4.093 and included services such as creation of profitable startup firms by exploiting opportunities at the most ($\bar{x}$ = 4.60); providing capital and funding assistance to incubatees through venture capitalists, angel investors and bank loans ($\bar{x}$ = 4.423); acceleration of new firm development in the form of new startups or unique businesses ($\bar{x}$ = 4.303); providing legal assistance ($\bar{x}$ = 4.286); providing assistance in product development activities through ease in production stages ($\bar{x}$ = 4.177); access to research & development through prototype testing of products and other business related research ($\bar{x}$ = 4.103);

aided business in building credibility ($\bar{x}$ = 3.909); access to technology services such as computer with high speed internet facility, tech-smart rooms for conferences and meeting for startup firms ($\bar{x}$ = 3.851); providing assistance in obtaining statutory approvals like government permissions ($\bar{x}$ = 3.674); and reduced likelihood of new business failure with proper scrutiny ($\bar{x}$ = 3.606).

Incubator-Incubatee data reveal that Incubators are adept in facilitating the Operational services. However it secured the lowest mean score of 3.541. The operational services included services such as periodic assessment of incubatee performance ($\bar{x}$ = 4.703) which helped in evaluating the current status of incubatees; create viable products and services through innovation ($\bar{x}$ = 4.543); formal procedure for handling grievances and complaint settlement ($\bar{x}$ = 3.663); access to network related services like alliances with mergers and intermediaries and other supporting industries ($\bar{x}$ = 3.497). Eventually five operational services received neutral responses such as obtain regular feedback on services ($\bar{x}$ = 3.291) which meant that incubators are not that regular in feedback support; providing a self-learning environment related to their operations ($\bar{x}$ = 3.257); reduced time required in launching a product, where incubatees are neutral about its efficiency ($\bar{x}$ = 3.063); reduced early stage operational expenditures such as office expenses, insurance charges, bank expenses and expenses in production ($\bar{x}$ = 3.034); and access to secretarial services such as making and receiving phone calls on behalf of startups, arranging office meetings, preparing minutes, keeping corporate documents etc ($\bar{x}$ = 2.817).

Marketing & Support services include evaluation of incubatee growth after graduation in terms of capital, sales, profit and employment generation ($\bar{x}$ = 4.663); exchanging ideas with incubatees regarding marketing of products and services ($\bar{x}$ = 4.606); support to incubatees with problem solving that arose over the period ($\bar{x}$ = 4.349); periodic assessment of incubatee requirements and adherence to them ($\bar{x}$ = 4.234); increase sales through marketing and promotion ($\bar{x}$ = 4.154); and periodically evaluate entities satisfaction with marketing approaches like direct marketing, digital marketing, guerrilla marketing etc ($\bar{x}$ = 4.057).

Overall, incubators were efficient in rendering 28 out of 34 services, however they are not that adept in providing 6 services (i.e. exposure to knowledge sharing, obtain regular feedback on services, providing a self-learning environment, reduced time required in launching a product, reduced early stage operational expenditures, and access to secretarial services) to the startup firms.

Analysis of gap between perceived and actual services rendered by incubators

Table 5.4: Independent samples t-test

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
INCUBATOR SERVICES	**1.664**	**173**	**0.098**	**0.1851**	**0.1112**	**-0.0344**	**0.4047**
Infrastructure	0.076	173	0.940	0.0162	0.2134	-0.4050	0.4374
Management Consultancy	1.841	173	0.067	0.5824	0.3163	-0.0420	1.2067
Business Facilitation	-0.812	173	0.418	-0.1576	0.1943	-0.5411	0.2258
Operational	1.700	173	0.091	0.4268	0.2511	-0.0688	0.9223
Marketing & Support	0.279	173	0.781	0.0578	0.2073	-0.3513	0.4670

(Source: Field survey)

To analyse the gap between perceived and actual services rendered by incubators, Independent samples t-test was conducted which is being shown in the above Table 5.4. The test reveals that all the five services of business incubation centres have Sig. (2-tailed) p values more than *0.05* and t values less (more) than *±1.9738* i.e. Infrastructure (*t* (173) = *0.076*, *p = 0.940*), Management Consultancy (*t* (173) = *1.841*, *p = 0.067*), Business Facilitation (*t* (173) = *-0.812*, *p = 0.418*), Operational (*t* (*173*) = *1.700*, *p = 0.091*) and Marketing (*t* (173) = *0.279, p = 0.781*). There were no significant differences in incubator-incubatee responses for Incubator services (*t* (173) = *1.664*, *p = 0.098*) as in the scores with mean scores of Incubation centres (*Mean = 4.181*, *Std. Deviation = 0.312*) and Incubatee entities (*Mean = 3.996*, *Std. Deviation = 0.243*). The magnitude of the differences in the means (mean difference = *0.1851*, *95% Confidence Interval*: *-0.0344* to *0.4047*) was not significant. Hence, H_0 was supported.

Since the since significant *p* value of Incubator services (*0.098*) is greater than *0.05* and *t* (*173*) = *1.664* < *1.9738* (critical value of t for two-tailed test at 173 degrees of freedom) therefore we fail to reject the null hypothesis and conclude that there is no significant gap between perceived and actual services rendered by incubation centres of Assam.

Table 5.5: One-way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
INCUBATOR SERVICES	Between Groups	**0.166**	**1**	**0.166**	**2.769**	**0.098**
	Within Groups	10.397	173	0.060		
	Total	10.563	174			
Infrastructure	Between Groups	0.001	1	0.001	0.006	0.940
	Within Groups	38.268	173	0.221		
	Total	38.269	174			
Management Consultancy	Between Groups	1.647	1	1.647	3.390	0.067
	Within Groups	84.067	173	0.486		
	Total	85.714	174			
Business Facilitation	Between Groups	0.121	1	0.121	0.659	0.418
	Within Groups	31.711	173	0.183		
	Total	31.832	174			
Operational	Between Groups	0.885	1	0.885	2.890	0.091
	Within Groups	52.967	173	0.306		
	Total	53.852	174			
Marketing & Support	Between Groups	0.016	1	0.016	0.078	0.781
	Within Groups	36.103	173	0.209		
	Total	36.120	174			

(Source: Field survey)

One-way ANOVA test was performed with services of incubators as the dependent variable and the groups of business incubation centres and incubatees as independent variables as shown in Table 5.5. Results of ANOVA indicate that there are no significant differences of incubator-incubatee responses pertaining to Infrastructure (*F* (1, 173) = *0.006* < *5.1125*, *p = 0.940* > *0.05*)*;* Management consultancy (*F* (1, 173) = *3.390* < *5.1125*, *p = 0.067* > *0.05*); Business Facilitation (*F* (1, 173) = *0.659* < *5.1125*, *p = 0.418* > *0.05*)*;* Operational (*F* (1, 173) = *2.890* < *5.1125*, *p = 0.091* > *0.05*) and Marketing & Support services (*F* (1, 173) = *0.078* < *5.1125*, *p = 0.781* > *0.05*).

The statistical result reveal Incubator Services *F* (1, 173) = *2.769* < *5.1125*, *p = 0.098* > *0.05*, therefore there is no significant gap between perceived and actual services rendered by incubation centres of Assam.

6. Conclusion

The select business incubation centres are contributing towards entrepreneurship in Assam by following 27 Practices and providing 34 Services. Out of 34 services, business incubation centres are adept in providing 28 services and 6 services had neutral effectiveness. Business incubators were not that efficient in providing the six services such as exposure to knowledge sharing, obtain regular feedback on services, providing a self-learning environment, reduced time required in launching a product, reduced early stage operational expenditures, and access to secretarial services. However, not all of them are equally important to the incubatees, and their view of the individual benefits of incubation services for their firm is a critical factor in determining their effectiveness. There is no significant gap between perceived and actual services rendered by select business incubation centres of Assam. The quality of services offered to beneficiaries, as evidenced by the expansion of new business units, defines the true success of incubation process. The success of incubation programs depends on the growth of graduate firms, client companies with high survival rates, and client companies with high added value for new goods/services (Al-Mubaraki & Busler, 2017; Zapata-Guerrero et al., 2020). The procedures used by incubation centres and the actual services obtained by incubatee organisations do not differ significantly, and the outcomes are comparable to the study of (Kamdar, 2013). However, there have been situations where the startup firms fail to optimise the utilisation of services which has caused some firms to close down their operations. Incubators should evaluate their strengths and weaknesses and make necessary improvements to their processes (Gerlach & Brem, 2015). The incubation period is of 2-3 years and the incubatee entities are graduating consistently over the years leading to growth of entrepreneurs in Assam. In order to increase more efficiency, it is advised that Indian technology business incubators implement the cost-cutting measures to enhance the competitive advantage of entrepreneurs which was also mentioned in (Tang et al., 2013). In order to help and promote successful entrepreneurs, incubators should maximize the utilization of their resources. And it is highly important for incubators to get financial support from governmental agencies and other well-known organizations on a regular basis in order to provide critical assistance to incubatees and nurture the growth of new start-up enterprises in Assam.

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