# Monitoring Assistance, Resource Allocation and Entrepreneurship Development in Northeast, Nigeria

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#### Abstract

In Northeast Nigeria, from the recent infestation of insurgency in the region, the growth of entrepreneurship has been hindered by various challenges, including limited access to resources, infrastructure, and support systems. This study examined the effect of technology business incubation proxied by monitoring assistance and resource allocation on entrepreneurship development in Northeast Nigeria. Survey design was adopted and primary data was collected using 5-point Likert scale structured questionnaire from a census sampling of 103 technology incubation centre of Northeast. The study adopted the Partial Least Square Structural Equation Modelling (PLS-SEM) as the method of data analysis. The data collected found that monitoring assistance has positive and significant effect on entrepreneurship development while resource allocation has positive and significant effect on entrepreneurship development in Northeast. Based on the finding the study concluded that regular monitoring assistance helps entrepreneurs track their progress towards specific business milestones, allowing for adjustments as needed while resource allocation will assist the incubation centres to have necessary technology and equipment to streamline operations. On this basis the study recommended that governments should replace the existing monitoring blueprint with a more comprehensive one that will enhance entrepreneurs' capabilities in order to reduce level of unemployment and evaluate policies to promote effectiveness of entrepreneurship development in Northeast Nigeria.

**Keywords**: Entrepreneurship development, Monitoring/business assistance, Resource allocation.

# 1. Introduction

Entrepreneurship is widely recognized as a key driver of socio-economic advancement in the world, primarily through its roles in innovation and imitation; the development of incubators and innovation programs has become increasingly significant globally, contributing positively to entrepreneurship and economic growth (Akhter et. al., 2021). Technology business incubators (TBIs) operate under various models, including science parks, technology incubators, innovation centers, and accelerators, serving as vital policy tools that foster innovation and support technology-oriented entrepreneurial growth (Xiao et al., 2021), as they provide a comprehensive suite of facilities and services designed to assist new and aspiring

entrepreneurs in establishing and managing viable business ventures by offering essential resources such as office space, mentorship, networking opportunities, and access to funding, creating an environment conducive to innovation by linking entrepreneurs with academic institutions and research organizations to enhance knowledge transfer, contributing to job creation, technological advancement, and overall economic development through tailored support that meets the unique needs of various entrepreneurial ventures (Mahmood et. al., 2015).

In Nigeria, the government's effort towards the development of entrepreneurship can be said to have relied on an array of structures and mechanisms, with the establishment and operations of industrial estates, Entrepreneurship Development Centres (EDCs), and lately, Technology Incubation Centres (TICs). Technology incubation programs, as entrepreneurship development tools, generally have the economic development goals of creating jobs, building wealth by fostering the formation of new ventures, ensuring the fast track of research to industry linkages and facilitating creativity (Adelekan & Eze, 2020).

Monitoring assistance intensity provides reliable data on entrepreneurial performance, enabling stakeholders to assess the current state of entrepreneurship, identify strengths and weaknesses in the ecosystem, and programs aimed at fostering entrepreneurship (Cricelli et al., 2021) while comprehensive business assistance, including mentorship, training, and access to resources, equips entrepreneurs with the necessary tools and enhance their chances of success in establishing viable businesses (Gao et al., 2012). The resource allocation component of TBI is the ability of the incubator to improve the efficiency and effectiveness of all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. that are under its control (Akhter et al. 2023).

By addressing these key objectives and building upon existing literature, the research aims to provide insights into the strengths and weaknesses of technology business incubation programs in Northeast Nigeria, and their contribution to fostering entrepreneurship development in the region.

#### 2. Literature Review

#### 2.1 Technology Business Incubation (TBI)

An incubator is an enterprise that supports entrepreneurs in the early set-up to survive and carry out business activities by providing them with space and equipment (Appel-Meulenbroek et al., 2020; Bouncken & Kraus, 2021). According to Ahmad et al (2021) Technology incubators are economic development tools used for promoting the concept of growth through innovation and application of technology, support economic development strategies for small business development. It encourages growth from within local economies, while also providing a mechanism for technology transfer. Business incubators nurture early-stage entrepreneurs and startup activities in general independently of the specialization of incubatees and the sector where they operate (Theodoraki et al., 2020). Technology business incubation refers to the process of supporting the growth and development of early-stage technology-based companies through a structured program that provides resources, mentoring, and services (Hansen & Chesbrough, 2019). In this study the term business incubator will be taken to mean a controlled environment-physical or virtual that cares, and helps new ventures at an early stage until they are able to be self-sustained.

#### 2.2 Monitoring Assistance

Monitoring of incubates and providing assistance to the incubatees have been part of incubator services for quite some time. Monitoring service refers to the systematic process of evaluating the progress of entrepreneurial ventures against predefined goals and milestones. It involves collecting and analyzing data to assess performance and identify areas for improvement, ensuring that entrepreneurs stay on track toward their objectives (Bouncken & Reuschel, 2018).

According to Oswald and Zhao (2020) monitoring assistance encompasses the support provided to organizations or systems to ensure that they fulfill their monitoring obligations effectively. This can include technical support, training, and resources to help entities conduct regular assessments of their operations or projects. Haddad et al. (2022) highlighted the significance of monitoring, or coaching, which is referred to as training and educational workshops offered, seminars, programs, either for a fee or free of charge to the incubatees as factors associated with increasing incubatee graduation rates. The study adopted Haddad et al. (2022) definition on monitoring as the systematic process of collecting and analyzing information to track a program's progress toward its objective.

# **2.3 Resource Allocation**

Resource allocation is defined in economics as the distribution of finite resources to specified purposes selected from among several feasible possibilities, emphasizing the importance of making choices about which goods and services to produce in order to ensure efficiency (Obaji et al., 2014). Resource allocation is the process of assigning and managing assets in a manner that supports an organization's strategic planning goals, involving the balancing of competing needs and priorities to maximize the use of limited resources and achieve the best return on investment (Nwankwo, 2021). The study define resource allocation has the process of distributing available resources among various projects, departments, or initiatives in a manner that maximizes efficiency and achieves organizational goals.

# 2.4 Entrepreneurship Development

Entrepreneurship development is the process of enhancing entrepreneurial skills and knowledge through structured training and institution-building programs (Malecki, 2018). It aims at cultivating a group of individuals who can successfully initiate, sustain, and earn rewards from a successful business (Nwekeaku, 2023). Entrepreneurship development is the process of improving the skillsets, mindsets, and abilities required for starting and managing a new business venture.

Entrepreneurship development is the process of creating an entrepreneurial culture and grooming potential entrepreneurs with the required skills and knowledge to initiate and run a successful business (Gupta & Khanka, 2021). It can also be used to refer to all activities that encompass creating an environment that fosters the development of entrepreneurial skills, attitudes, and behaviors necessary for successful entrepreneurial ventures (Tang et al., 2021).

#### **2.5 Empirical Review**

In Uganda, Sekiziyivu et al. (2023) carried out a novel study on strengthening business incubation practices among startup firms in Ugandan communities. It set out to provide the initial evidence on the role of business incubation (BI) in supporting startups and BI practices from developing communities in Uganda. The study was cross-sectional and a triangulation of quantitative and qualitative data were used. Data were collected by means of a questionnaire and an interview guide from 28 incubators. Results indicate that business incubators play different roles in communities such as business assistance, networking, provision of necessary infrastructure and provision of an enabling environment. Furthermore, BI practices were identified such as networking, human resource, tenant management and assessment practices. Suggestions were that the results are important for business incubators in improving the sustainability of startups in Uganda. The study will enable business incubators to understand their role and incubator practices in as far as supporting small and medium-sized enterprises is concerned. This study was cross-sectional and thus monitoring changes in behaviour of incubatees overtime was not possible. The study was conducted in Uganda, and it is possible that the results of this study can be generalized to developing communities with environments similar only to that of Uganda.

Akpoviroro et al. (2021) investigated the role of business incubators on entrepreneurship and SMEs development in Nigeria. The population of the study comprised of 60 incubatees in Ovo and Lagos State National Board of Technological Incubation (NBTI) Beneficiaries. Yamane formula was employed to determine the sample size for the research which was 60 respondents (30 incubatees in Oyo State and 30 incubatees in Lagos State). The sampling validity was used to assess the validity of the data. The study used ANOVA and correlation coefficient in testing hypotheses where applicable. The response gotten from the questionnaire was sorted, coded and the Statistical Packages for Social Sciences (SPSS) was used for the analysis. The study found that business incubation coaching had a positive significance on human capital management towards entrepreneurship performance and also revealed that incubation business knowledge had a positive significance on the sales turnover level of entrepreneurship performance. The research showed that 70% of the all-startup ventures that survived the first three years of operations passed through an incubation program. The study recommended that the incubation centers should emphasize more on their coaching and technical knowledge, as the result of findings showed that coaching and technical knowledge acquisition (which are both elements of Monitoring and business assistance) contributed 61.3% and 73.6% respectively towards entrepreneurship performance in terms of human capital management and their productivity performance level. The research was restricted to incubatees from Oyo and Lagos States.

Vincent and Zakkariya (2021) looked at the Role of business incubation on the financial and non-financial performance of technology startups using a multivariate multiple regression analysis. The research was conducted in Cochin, India using survey data from incubator firms, it was found that business incubation dimensions have a statistically significant positive effect in generating start-up performance. This finding was important for managers of incubated firms and managers of incubators alike as they have matching goals and objectives. The major recommendation of the study was that managers of incubators should try to improvise and augment the business incubation services with more tailored monitoring and business assistance according to the needs of incubated firms in a customized manner. The research was conducted in India.

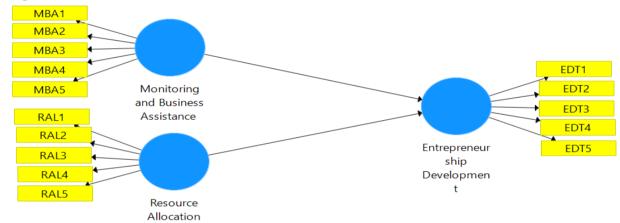
Kakabadse et al (2020) examined Business incubator managers' perceptions of their role and performance success. Drawing on 40 qualitative interviews in different UK regions, the findings demonstrate the ways in which business incubator managers see their role as pivotal in supporting the incubatee entrepreneurs and how they endeavour to address competing role demands against constraints. Notably, while funding is commonly viewed as an enabler, the findings suggest that the funding structure could act as a constraint on the incubator managers, due to the weight of perceived bureaucracy preventing the latter from operating effectively within the full remit of their role. Recommendations were made to help incubator managers, entrepreneurs, and policy makers reflect upon and understand the challenges they currently face. The research was qualitative and more of policy oriented.

#### 2.6 Theoretical Framework

The Stakeholder theory was propounded by Freeman (1984). However, the roots of stakeholder thinking can be traced back to earlier works, including those of Igor Ansoff and Robert Stewart in the 1960s (Parmar et al., 2010). The Stakeholder Theory suggests that organizations should consider the interests and needs of all stakeholders, not just shareholders, in their decision-making processes. Stakeholders are defined as any group or individual who can affect or is affected by the achievement of the organization's objectives (Freeman, 1984). This theory challenges the traditional shareholder-centric view of the firm and proposes a more inclusive approach to business management and strategy. The Stakeholder theory has significant relevance to technology business incubation, as incubators operate within a complex network of stakeholders, each with their own interests and expectations.

# 3. Methodology

The study adopted a cross-sectional survey research design. The study population comprised of all incubate centers (103) that are active in six (6) technology incubation centers in the six states of the Northeast geopolitical zone, i.e. Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states. The study adopted the use of census sampling which is employment of the entire research population as the sample size are not much (Parker, 2011. The study relied on primary source of data collection using structured five-point likert scale questionnaire to collect data from respondents. The study employed the Partial Least Square Structural Equation Modeling (PLS-SEM) to model the regression analysis. The PLS path modeling method was developed by Wold (1982). The PLS algorithm is a sequence of regressions in terms of weight vectors. The weight vectors obtained at convergence satisfy fixed point equations. PLS-SEM is a nonparametric method that does not require that the data meet certain distributional assumptions. However, the parametric significance tests (e.g., as used in regression analyses) cannot be applied to test whether coefficients such as outer weights, outer loadings and path coefficients are significant. Instead, PLS-SEM relies on a nonparametric bootstrap procedure to test the significance of various results such as path coefficients, Cronbach's alpha, HTMT, and R<sup>2</sup> values. (Efron & Tibshirani, 1986; Davison & Hinkley, 1997). The model for the path analysis is specified thus:



Theoretical model on effect of of technology business incubation on entrepreneurship development in Northeast Nigeria.

#### **Results and Discussion**

Out of the one hundred and three (103) distributed questionnaires, 100 were properly filled and returned giving a response rate of 98%. Subsequently, all further analyses were done using 100 responses data.

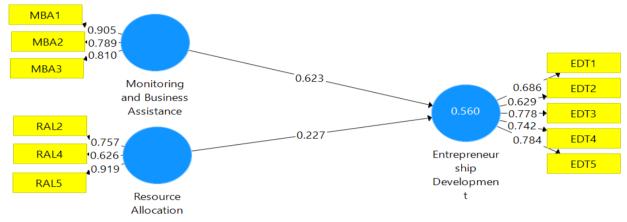
<b>Table 1.1</b> :	Descrip	otive Stati	stics				
Variable	Mean	Median	Min	Max	SDV	Kurtosis	Skewness
MBA	2.8	2.60	1.00	5.00	1.27	-1.05	0.19
RAL	2.5	2.00	1.00	5.00	1.15	-0.72	0.49
EDT	3.14	3.00	1.00	5.00	1.20	-0.95	-0.16

#### Source: SMART, PLS Output, 2024.

Data on the study variables were described in Table 4.1 above in terms of the mean, minimum, maximum, standard deviation, skewness and kurtosis values. Monitoring and Business Assistance (MBA) revealed an average value of 2.8 with a standard deviation value of 1.27. However, the minimum and maximum values stood at 1 and 5 respectively. Resource Allocation (RAL) had minimum and maximum values of 1 and 5 respectively however, it showed an average of 2.50 along with a standard deviation of 1.15. Furthermore, Entrepreneurship Development (EDT) showed a minimum value of 1 and a maximum value of 5 with an average value of 3.14 accompanied with a standard deviation value of 1.20. All the skewness and kurtosis values were less than 1 which shows that there is a normal distribution of data.

## 3.1 Assessment of Measurement Model

In assessing the measurement model, we begin by assessing the item outer loadings. As a rule, loadings above 0.708 are recommended, as they indicate that the construct explains more than 50 percent of the indicator's variance, thus providing acceptable item reliability (Hair, et al., 2019). However, Hair, et al., (2019) posited that low but significant indicator loading of 0.50 can be included hence justifying why indicators with loadings less than 0.708 and above 0.50 were not deleted from the model as seen in figure 2 below:



S/N	Variables		Factor Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)	No of Items
1	Monitoring and Business Assistance (MBA)	MBA1 MBA2 MBA3	0.905 0.789 0.810	0.783	0.816	0.699	5
2	Resource Allocation (RAL)	RAL1 RAL2 RAL3	0.757 0.626 0.919	0.658	0.816	0.603	5
3	Entrepreneurship Development (EDT)	EDT1 EDT2 EDT3 EDT4 EDT5	0.686 0.629 0.778 0.742 0.784	0.774	0.847	0.527	5

#### Source: SmartPLS Output, 2024

Composite reliability of Jöreskog's (1971) was applied to test for internal consistency of the study. All the values fall within the Hair, et al., (2019) rating of good consistency. The Cronbach alpha value were above 0.60 which is the minimum threshold as recommended by Sekaran (2010). To test for the convergent validity, the average variance extracted (AVE) was used. All the latent variables showed values greater than 0.50 which indicates that the constructs explain at least 50 percent of the variance of its items. According to Henseler et al.,

(2015) the Fornell-Larcker criterion does not perform well when explaining discriminant validity, particularly when the indicator loadings on a construct differ only slightly. As a replacement, they proposed the Heterotrait-Monotrait (HTMT) ratio of the correlations which is the mean value of the item correlations across constructs relative to the (geometric) mean of the average correlations for the items measuring the same construct (Voorhees et al., 2016). Discriminant validity problems are present when HTMT values are high than 0.90 for structural models (Henseler, et al., 2015).

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	RAL	MBA	EDT	
RAL	1.000			
MBA	0.720	1.000		
EDT	0.492	0.462	1.000	
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# Heterotrait-Monotrait Ratio (HTMT)

#### Source: SmartPLS Output, 2024

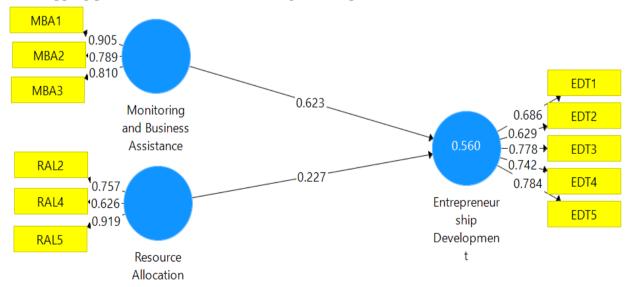
The variance inflation factor (VIF) was used to evaluate collinearity of the formative indicators. All the VIF values were less than 5 indicate the absence of critical collinearity issues among the indicators of formatively measured constructs (Hair, et al., 2019).

#### 3.2 Model Goodness of Fit (GoF)

Sequel to the need to validate the PLS model, there is a need to assess the goodness of fit of the model as Hair, et al. (2017) suggested. This study used the standardised root mean square residual's (SRMR). The choice of this index was based on the fact that the SRMR provides the absolute fit measure where a value of zero indicates a perfect fit. The study adopted Hu & Bentler (1998) suggestion that a value of less than 0.08 represents a good fit while applying SRMR for model goodness of fit. The study result indicates an SRMR value of 0.030. This indicates the model is fit.

#### **3.3 Assessing the Structural Model**

Having satisfied the measurement model assessment, the next step in evaluating PLS-SEM results is to assess the structural model. Standard assessment criteria, which was considered include the path coefficient, t-values, p-values and coefficient of determination ( $R^2$ ). The bootstrapping procedure was conducted using a resample of 5000.



#### Fig. 3: Path Coefficients of the Regression Model.

The R-square value stood at 56% indicating that technology business incubation proxied by monitoring/business assistance and resource allocation are responsible for 56% variation in entrepreneurship development in Northeast, Nigeria. The remaining 34% variation could be

explained by other factors not included in the study. Based on Hair, et al., (2019), the r-square is considered moderate but doesn't negate the findings of the study. The result of the path analysis is presented in the table below:

Hypothesis	Variable	Path Coefficient ***(Beta)	t-value	p-value	Finding
Ho <sub>1</sub>	Monitoring and business Assistance	0.623	15.269	0.000	Rejected
H02	Resource Allocation	0.227	4.570	0.000	Rejected

#### **Table 1.3: Path Coefficients**

#### Source: SmartPLS Output, 2024

#### **3.4 Test of Hypotheses**

The result from the analysis indicates that monitoring assistance has strong positive and significant effect on entrepreneurship development in Northeast, Nigeria. The decision was reached based on the t-value of 15.269 which is greater than 1.964 and a beta value of 0.623 with a p-value of 0.000. Thus, implying that the null hypothesis lacks sufficient ground to be accepted and as such the alternate hypothesis which states that monitoring and business assistance has significant effect on entrepreneurship development is accepted.

The result from the analysis indicates that resource allocation has positive and significant effect on entrepreneurship development in Northeast, Nigeria. The decision was reached based on the t-value of 4.570 which is greater than 1.964 and a beta value of 0.227 with a p-value of 0.000. Thus, implying that the null hypothesis lacks sufficient ground to be accepted and as such the alternative hypothesis which states that resource allocation has significant effect on entrepreneurship development in Northeast, Nigeria is accepted.

#### 4. Discussion of Findings

Monitoring and business assistance contributed 61.3% and 73.6% respectively towards entrepreneurship performance in terms of human capital management and their productivity performance level, also this connects entrepreneurs with potential customers or distribution channels, these programs can significantly increase their market reach and revenue potential. This finding is in agreement with that of Akpan et al. (2022) who both found business assistance to be positive and significant effect on entrepreneurship development.

Access to incubation resources had the strongest effect on intention by increasing perceived norms which in turn increases positive attitudes and perceived control. This finding agrees with that of (Bello et al., 2021). Who made similar findings about resource allocation and entrepreneurship development.

#### 5. Conclusion and Recommendations

The study examined the effect of technology business incubation proxied by monitoring and business assistance and resource allocation on entrepreneurship development in Northeast, Nigeria. From our argument up to this point, it is very clear that understanding the best way to manage technology business incubation is a key element in shaping the competitiveness and entrepreneurship growth in the emerging knowledge-economy and that the ability of incubatees to participate in and benefit from the knowledge. The study recommends; The Technology Incubation Centre, entrepreneurs should be encouraged to continue to attend seminar and workshops that can impact positively on their entrepreneurial opportunities and knowledge; and Government should make provision for adequate funding of the Technology Business Incubation Centres and post-graduation settlement of participants in technology training to serve as entrepreneurial opportunities for entrepreneurship development in Northeast, Nigeria.

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