The Influence of Business Support Services on the Performance of Digital Entrepreneurs: A Case of the University of Dar es Salaam ICT Innovation Hub, Tanzania

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ABSTRACT

This paper examined the influence of business support services provided by incubators on the performance of digital entrepreneurs in Tanzania, with a specific focus on the University of Dar es Salaam ICT Incubator (UDICTI). The Open Innovation theoretical framework guided this study. The descriptive survey design was deployed through mixed research approaches to collect both quantitative and qualitative data. A sample of 42 active incubatees was selected from a population of 53 incubatees at University of Da es Salaam Innovation Hub through simple random probability technique. The five Likert scale questionnaire was designed for the collection of quantitative data while the semi-structured interview was utilized for the collection of qualitative data for triangulation purpose. Furthermore, data were analyzed using multiple regression method and content analysis method. Findings indicate that business services including business development assistance, marketing assistance, mentoring and funding positively and significantly contribute to the performance of digital entrepreneurs. The findings of the study highlight the critical role of business support services in enhancing the performance of digital entrepreneurs, particularly within the context of the University of Dar es Salaam ICT Innovation Hub. These insights are significant for fostering innovation and economic growth, not only within Tanzania but also in similar developing regions. The research concluded that constructive role of business support services namely business development assistance, marketing assistance, mentoring and funding positively influence growth of digital incubates. The implications of this research can guide policymakers and stakeholders in creating supportive ecosystems that empower digital entrepreneurs. It is recommended that the hub should allocate sufficient and continuous funding to support digital incubators and strengthen its monitoring efforts for existing incubates.

Keywords: Business Support Services, Digital Entrepreneurs, Incubators, Innovation Hub, Performance

I. INTRODUCTION

Digital entrepreneurs comprise of micro, small and medium enterprises engaged in developing and commercializing digital products, services, or technologies that catalyse national economic development (Gabrielsson et al., 2022). In developed nations, small digital innovative enterprises are highly contributing to knowledge leading global economies hence becoming drivers of economic growth (Mian et al., 2021). Contrary, in developing countries, micro, small and medium digital entrepreneurs serve as a source of new businesses and employment (Kaggwa et al., 2024; Ajeigbe & Kibukamusoke, 2024; Karitu & Muathe, 2023). The experience from Tanzania indicates that, SMEs including digital startup firms have multiple-effects in contributing to jobs creation, generation of individual and nation revenue, as well as stimulate social-economic growth (Malipula, 2023).

However, the journey of digital startups is often fraught with challenges such as limited access to capital, managerial expertise, and market opportunities (Ajeigbe & Kibukamusoke, 2024; Hu et al., 2023). To address these challenges and foster the growth of digital entrepreneurship, the establishment of business incubators has gained prominence. Business incubators are recognized for their role in providing critical support services, including professional, technological, and managerial assistance, to nurture technology-based ventures (Leitão et al., 2022). As a result, countries worldwide are increasingly investing in incubation programs to stimulate entrepreneurial activities, promote technological innovation, and drive industrial regeneration (Kaggwa et al., 2024; Momanyi et al., 2023).

In the context of higher learning institutions, incubation programs have become essential resources for fostering entrepreneurial skills and innovation among students (Tutuba &. These programs serve as platforms for translating theoretical knowledge into practical solutions, equipping students with the necessary skills and competencies to thrive in the digital entrepreneurship landscape (Mele et al., 2024). Moreover, academic institutions with incubation hubs facilitate collaboration between academia and industry, enabling the transfer of innovative

practices and fostering the development of future human capital (Hakizimana & Muathe, 2023). In Tanzania, the University of Dar es Salaam ICT Innovation Hub is a key player in supporting digital entrepreneurship by offering business support services such as training, mentorship, and financial resources that helps digital entrepreneurs overcome challenges and improve their performance, contributing to the growth of the digital economy (Msangawale et al., 2023).

1.1 Statement of the Problem

The establishment of technology business incubators as an academic package asserts to contribute to shaping and capacitating today's students for better digital entrepreneurial practices in offering analytical-practical solutions that support and solve future social-economic problems (Leitão et al., 2022; Verma et al., 2022). Besides, such contributions, little is known regarding the extent to which incubation services influence the performance of digital entrepreneurs startups (Awonuga et al., 2024). Moreover, there is a high start-up mortality rate of digital entrepreneurs in Tanzania. According to Mtengela and Mrindoko (2023) in Tanzania, 80 percent of new ventures including digital entrepreneurs failed the operations within three years of commencement. The informality of incubation services, limited access to capital, inadequate managerial capabilities, market accessibility opportunities and restrictions to foster the scientific innovations for uptake and survival as firms or enterprises are attributes that hindered take-off (Ajeigbe & Kibukamusoke, 2024; Ngoc et al., 2022). Consequently, academic incubators offered the paradigm shift to the teaching and learning context from theoretical to sustainable practical and problem-solving perspectives contributed to the individual, community and national development (Ahmed et al., 2022).

Despite the proliferation of incubation programs, there remains a gap in understanding the extent to which these business services provided by incubators influence the performance of digital entrepreneurs, particularly in regions like Tanzania. The high startup mortality rate among digital entrepreneurs in Tanzania underscores the need to examine the efficacy of incubation services in enhancing entrepreneurial performance (Bandoma & Zahoro, 2021). Thus, this research aims to address these gaps by examining the influence of business services provided by incubators on the performance of digital entrepreneurs in Tanzania, with a focus on the University of Dar es Salaam ICT Incubator (UDICTI).

1.2 Research Objective

To examine the influence of business services provided by incubators on the performance of digital entrepreneurs in University of Dar es Salaam ICT Incubator

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Open Innovation Theory (OI)

The Open Innovation Theory (OI), developed by Chesbrough (2003), provides a theoretical lens through which to examine the relationship between incubator services such as business support services and digital entrepreneurs' performance. OI emphasizes the importance of leveraging both internal and external sources of knowledge and resources to drive innovation and competitiveness (Chesbrough, 2003). It advocates for collaboration, knowledge-sharing, and openness in the innovation process, aligning well with the collaborative nature of incubator support for startups.

Al-Sharif et al. (2022) insisted on the levels of OI adoption including knowledge production, focusing on research and development, funding, educational advancement, professional development policies, and talent acquisition; knowledge distribution, focusing on preserving intellectual property rights and enabling knowledge reallocation with the acceleration of flows at the low cost; knowledge consumption and endurance of transparency. According to Cirule et al. (2022) applicability of OI theory and model in the provision of basic services accessibilities in facilitating digital innovative incubation processes. According to Sandoval Hamón et al. (2024), business support services and networking activities through incubates provide OI model elements that foster the designing of reflective solutions reflective to the social market problem. Thus, the Open Innovation (OI) theory provided a framework for this study to examine the influence of incubation services such as business development assistance, marketing assistance, mentoring and funding on the performance of digital entrepreneurs, as it emphasizes the importance of resource sharing, external partnerships, and market integration in driving entrepreneurial success.

2.2 Empirical Review

2.2.1 Incubator's Business Support Services on Performance of Digital Entrepreneurs

Technology and business incubators provide a range of business support services to digital entrepreneurs that are critical to the success of their ventures. Technology and business incubators provide most important services such

as fund provision, marketing and advertising assistance, entrepreneurial training, and business development guidance to support the growth of early start-up digital enterprises (Noor & Jimainal, 2022). In this regard business support includes providing the mentorship, business development assistance or training programs to digital entrepreneurs.

According Lei (2023) and Kabelele et al. (2023) college and university incubators, are apprehended in playing the vital roles in promoting technology commercialization, innovation and creativity, job creation, and wealth generation reflective in the overall economic growth. Santoso et al. (2023) in the analysis of factors influencing the success of business incubation programmes found that the selected incubators' performance, monitoring and business assistance intensity provided by the incubator, and incubator resource munificence had a positive effect on start-up performance. The business incubation services help start-up enterprises to overcome business viability challenges including legislation relating to legality and enforceability (Karambakuwa & Bayat, 2022). Moreover, Zhou and Zondo (2023) revealed that incubated companies in their early years tend to perform better than non-incubated ones in their early years, although this advantage diminishes as companies mature. Meanwhile, Zhou and Zondo (2023) found that incubation support has a strong positive impact on the performance of SMEs in South Africa, with incubated SMEs achieving significantly higher sales performance

The revelation made by Qi and Ning (2023) posited that subsidies and incentives possess different effects on incubation services. According to Noor and Jimainal (2022) the business support services provided by incubators such as the provision of funds, marketing, advertising assistance, entrepreneurial training, and business development guidance, had a significant effect in supporting the growth and performance of early start-up entrepreneurs. Also, Rukmana et al. (2023) indicated that university's business incubators offer various business support services, including training, consulting services, and administrative and office services hence fostering creativity and innovation.

Furthermore, it was mentioned by Awonuga et al. (2024) that business support including business management assistance services is considered crucial for catalysing success in technology business incubation programs. Further, it was also highlighted by Muathe and Otieno (2022) that incubators are obliged to the provision of business services such as space, guidance, mentorship, investor connections, and internet access. According to Muathe and Otieno (2023), incubators serve as the link and referee to financiers' networks, provision of crucial capital for early-stage production inputs mostly being perceived as risk stages. Tutuba and Tundui (2022) in examining the relationship between entrepreneurship, industrialization, and rural development using the business incubation approach; indicated that incubators offer business support services, including linking entrepreneurs with potential customers and partners, providing managerial advice, accessible finance, facilities, and business guidance. On the contrary, Momanyi et al. (2023) confirmed the significant influence of business incubation on startup performance, being on the mentorship and absorption capacity that are directly affecting financial performance and networking with non-significant inverse for influencing Start-up's financial performance. These studies generally highlight the role of incubation services including business support provided by innovations hub to the incubates for the performance of digital entrepreneurs.

III. METHODOLOGY

3.1 Research Design

The descriptive survey design was adopted through a mixed research approach to assess the influence of business support services provided by incubators on the performance of digital entrepreneurs (Freire et al., 2022) Moreover, the selected design allowed the researcher to employ questionnaires for quantitative data collection and interviews for qualitative methods. The study was conducted at the University of Dar es Salaam ICT (UDICT) innovation hub involving a population of 53 active incubates. Simple random sampling was employed to select the sample of 42 active students incubates currently engaged in different ICT-related projects (UDICTI, 2023)

3.2 Population of the study

The population of this study comprised 53 incubates under UDICT engaged in various ICT and digital-related programs and projects (UDICTI, 2023). The rationale for including 53 incubates was attributed to their activeness and endurance in ICT-related services as being in work up to date. Furthermore, the included incubates were still engaged with UDICT in which a close monitoring of their business undertaking was in contact and thus regarded as active incubates hence being essential for this study.

3.2.1 Sample size

The study engaged a sample of 47 incubates calculated using Yamane's formula, with a 95% confidence level and a 5% margin of error from a population of 53 incubates from the UDICT incubation hub that benefited from incubation programmes.

3.3 Sampling Technique

The simple random probability sampling technique was deployed for selecting 53 active incubates who benefited from the offered incubator services and thus, every member of the population (in this case, the 53 incubates) had an equal and independent chance of being selected to make the sample. Moreover, all incubators possessed the same characteristics. The simple random probability method ensured fairness and impartiality in the selection process; also, the technique provides an equal chance in the selection of every incubate to participate in the study (Noor et al., 2022).

3.4 Data and Data Collection Methods

The cross-sectional approach was utilized in administering and collecting the mixed data. The five Likert scale questionnaire was designed for the collection of quantitative data for research question. Besides, the semi-structured interview was utilized for the collection of qualitative data for triangulation purposes.

3.5 Validity and Reliability of Data

Validity was ensured by piloting of the tools to the selective population but not involved in the sample, further, amendments were made correspondingly to remove redundant items and errors. Further, different experts in the field of incubation were engaged in assessing the items in the data collection instruments and adjustments were made accordingly. Moreover, the researcher engaged in designing the comprehensive data collection tool items reflecting the requirements of each research question. Additionally, the researcher considered replaying the audio recordings of voices to overcome chances for wrong interpretations. Furthermore, the reliability of the data was ensured by undertaking the data gathering in a naturalistic conducive environment. Likewise, enough time was set by the researcher to administer the qualitative and quantitative tools. At the same time, proper handling of the qualitative data was considered by recording the voices to overcome distortion of information provided by respondents. In addition, the recorded audio was immediately transcribed and returned to the respondents to check for accuracy. Also, the findings were triangulated to complement each other as the weaknesses brought by one tool were filled with the strengths of another one (Saunders et al., 2023).

3.6 Data Analysis

Mixed descriptive analysis approaches were engaged in processing, manipulating, and presenting findings based on the data nature. Moreover, the quantitative data collected through Likert scale questionnaires was coded, tabulated, edited, and analyzed with the aid of Statistical Package for Social Science (SPSS version 28.0). Further, the qualitative data collected through semi-structured interviews were analyzed using content analysis to get insight responses for triangulation purposes. Data were analyzed using multiple linear regression method. Finally, the findings were presented through Tables, quotes and narration.

Descriptively, the study employed the following model;

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y = Performance of digital entrepreneurs

X_1 = Business Development Assistance

X_2 = Marketing Assistance

X_3 = Mentoring

X_4= Funding

ε = error

β_1, β_2, β_3 and β_4 = Coefficients

IV. FINDINGS & DISCUSSIONS

4.1 Response Rate

As defined by Holtom et al. (2022) response rate refers to the percentage of total respondents of the study who completely provided the data needed to complete the study. A total of 37 questionnaires were administered to active incubates at the University of Dar es Salaam ICT (UDICT), out of which 34 questionnaires were filled and returned, representing an 89 per cent response rate as portrayed in Table 1. Additionally, 8 active incubates participated in semi-structured interviews.

Table 1

Response Rate

Targeted Sample	Participated Sample	Response Rate
47	42	89%

The study findings as indicated in Table 1 showed that, through an online/web-based distributed questionnaire survey, a response rate of 89% was found and used as study participants that provided meaningful information for the success of the study. The study's response rate is consistent with Lavidas et al. (2022) studied paper-based or web-based survey invitations and found that a response rate of 70% and above is crucial for obtaining relevant and accurate information for reporting. The obtained response rate signifies that the study had a highly acceptable response rate for the analysis as far as online/web-based survey means of collecting data are concerned.

4.1.1 Demographic Profile

Categories of demographic characteristics examined in this study include gender, age, education, nature of the firm and years of experience a participated firm has been in business. The examined information was vital for understanding the characteristics of study participant. The study findings showed that male gender, age category of 21-30 years, bachelor degree level of education, software development firms and 2-3 years of experience were the dominant findings as shown in Table 2.

Table 2

Demographic Profile of Respondents

Category	Descriptions	Frequency	%
Gender	Male	27	79.4
	Female	07	20.6
	Total	**34**	**100**
Age	Below 21 years	-	-
	21-30 years	26	76.5
	31-40 years	08	23.5
	41-50 years	-	-
	Over 50 years	-	-
	Total	**34**	**100**
Level of Education	Certificate	-	-
	Diploma/Advanced Diploma	02	5.9
	Bachelor Degree	32	94.1
	Master Degree and Above	-	-
	Total	**34**	**100**
Nature of the Firm	Software Development	23	67.6
	Artificial Intelligence & Machine Learning	-	-
	Internet of Things	02	5.9
	General ICT services and products	09	26.5
	Total	**34**	**100**
Firms' Experience	0-1 year	12	35.3
	2-3 years	17	50
	4-5 years	3	8.8
	Over 5 years	2	5.9
	Total	**34**	**100**

Study findings portrayed in Table 2 revealed that the number of male incubatees was thrice the number of female incubatees and thus established gender gap. Regarding age, study findings showed that most incubatees were in the age category of between 21-30 years. Most of the incubatees had bachelor degree whereas software development-based firms dominated. Lastly but not least, study findings revealed that most of the respondents had 2-3 years of experience in digital incubator business.

Demographically, male incubatees dominated in this study. The study findings coincided with Le Loarne – Lemaire et al. (2024) who also observed that male gender being dominant and presenting a gender gap between male and female entrepreneurs. For the level of education, the study findings revealed that, most of the incubatees housed by the University of Dar es Salaam ICT innovation hub had attained bachelor degree level of education. The study

findings were similar to Vaz et al. (2022) who also had most (72%) participated incubatees who had attained bachelor degrees. Regarding age categories, the study found that, most incubatees were in the age category of between 21-30 years a category that was supported by Vaz et al. (2022) most incubatees based on Universities were in younger ages as they mostly being fresh from secondary school students who are eager to gain financial freedom through knowledge and skills gained in their respective profession. As obtained by Rwechungura (2022), this study also found that software development has been the most engaged incubator service in Tanzania.

4.2 Descriptive Statistics

Descriptive statistics was carried out to measure the variability of study scores around the mean on variables of business development assistance, marketing assistance, mentoring, funding and performance of digital entrepreneurs were employed in interrogations. For business development assistance, the study findings indicated a mean score of 4.15 with a standard deviation of 0.50. Additionally, the mean score for marketing assistance was 3.60 with a standard deviation of 0.52. Furthermore, Mentoring yielded a mean score of 4.32 with a standard deviation of 0.77. Moreover, the mean score for funding was 3.84 with standard deviation 0.52 relative to the performance of digital entrepreneurs, as presented in Table 3, where the mean was 4.02 with a standard deviation of 0.57.

Table 3

Results of Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Business Development Assistance	34	3.00	5.00	4.15	.50
Marketing Assistance	34	2.50	4.50	3.60	.52
Mentoring	34	2.00	5.00	4.32	.77
Funding	34	2.50	5.00	3.84	.52
Performance of Digital Entrepreneurs	34	3.00	5.00	4.02	.57

The study findings presented in Table 3 revealed that mentoring and business development assistance had a high mean level (4.32) and (4.15) of business support services respectively, suggesting potential enhancement of digital entrepreneurs' performance. A moderate mean observed in marketing assistance and funding support. Certainly, support findings indicated somewhat more support provided compared to mentoring and business development assistance while the performance of digital entrepreneurs had significant performance to the underlying variables. Collectively, supported by Kaggwa et al. (2024), the study suggests that there are varying levels of business development assistance, marketing assistance, mentoring and funding support provided to incubates based at the University of Dar es Salaam innovation hub, which significantly influence the performance of digital entrepreneurs.

4.3 Influence of Business Support Services on Performance of Digital Entrepreneurs

The growth of sales could be attained by the input from business services namely business development assistance, marketing assistance, mentoring and funding. Awonuga et al. (2024) disclosed that business support services are considered crucial for catalyzing success in technology business incubation programs. Similarly, the performance of digital entrepreneurs is evaluated based on the goal's accomplishments in terms of tenant company survival based on several factors including employment growth and number of products innovated through provision of various related business services namely business development assistance, marketing assistance, mentoring and funding. Based on multiple regression computation, the study findings in Table 2 presents a significant value of 0.000 for business development assistant, 0.045 for marketing assistance, 0.005 for mentoring and 0.020 for funding. All the given P values were significant and thus implying that business services had positive and significant influence on performance of digital entrepreneurs at less than significant value 0.05.

Table 4

Influence of Business Support Services on Performance of Digital Entrepreneurs

	Coefficients[a]				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig
(Constant)	2.288	1.062		2.153	.040
Business Development Assistance	.179	.166	.234	1.077	.000
Marketing Assistance	.145	.267	.111	.545	.045
Mentoring	.222	.356	.180	.622	.005
Funding	.114	.202	.155	.565	.020

a. Dependent Variable: Performance of Digital Entrepreneurs

The study findings on influence of business support services on performance of digital entrepreneurs in Table 4 depicts that business support services including business development assistance, marketing assistance, mentoring and funding had positive and significant influence on performance of digital entrepreneurs. A similar observation was made by Qi and Ning (2023) that business services have a significant influence towards performance of incubates. Similarly, Tutuba and Tundui (2022) in examining the relationship between entrepreneurship, industrialization, and rural development using the business incubation approach attributed that digital incubates require business support services such as mentoring and funding to enhance employment growth of the respective business and thus contributing towards performance of respective incubates.

Interview evidence supports these findings. For instance, one incubatee noted the support of the positive influence of business development assistance by saying;

> "*The business development sessions really helped me structure my tech startup better. I now understand how to create a solid business plan and the legal procedures to register my firm and adapt it as my firm grows. Without this, I would have struggled to make strategic decisions."* (Respondent 7, Interview Session, 2024).

Regarding the positive influence of marketing assistance, one participant noted;

> *"Since digital incubates requires a huge promotion, UDICTI made it viable by ensuring that incubatees are informed of marketing tips including but not limited to price, place, product and promotion channels. Knowledge of these tips has assisted in effectively executing firms' operation by being relevant to the target group and attain substantial market capital and thus performance attained"* (Respondent 6, Interview Session, 2024).

In terms of mentoring, incubatees expressed its importance. One interviewee shared;

> *"Business support that I cannot forget that the UDICTI offered to us as incubates was giving each incubatee a mentor to guide towards achieving target goals fostering the initiation of respective firms. These business mentors, we were able to learn step by step hands on skills and application knowledge enhanced competencies among ourselves and thus we can deliver on our own at required quality and pace"* (Respondent 5, Interview Session, 2024).

Regarding the role of funding, one respondent explained;

> *"Incubate without business support cannot attain expected performance and for that, I really thank UDICT for offering most valuable but rarely recognized business support which was linking incubatees with potential financiers through provision of official contacts. These contacts helped in reaching responsible officials thus we were able to gain financial support which boosted the range of service provision"* (Respondent 4, Interview Session, 2024).

The findings, supported by these incubatee experiences, suggest that business services such as business development assistance, marketing assistance, mentoring, and funding are integral to the growth and performance of digital entrepreneurs. As Otieno and Muathe (2023) also highlighted, these services are essential for digital incubates to achieve their growth and development goals.

Additionally, Freire et al. (2022) emphasized the importance of incubator network building in enhancing entrepreneurial performance, partially mediated through resource utilization like financial resources from other stakeholders. Similarly, Muathe and Victor (2023) also observed that, digital entrepreneurs when provided with business support services including development assistance, funding, mentoring and marketing assistance could positively impact employment growth as expressed through design and development performance attained and thus contribute towards performance of respective firms.

V. CONCLUSIONS & RECOMENDATIONS

5.1 Conclusions

This study generally established a constructive role of business support services namely business development assistance, marketing assistance, mentoring and funding was established by the study findings to positively influence growth of digital incubates. In support of the positive influence of business services on the growth of business incubates, attribution of incubatee mentor guide which have been giving incubatees a mentor to guide towards achieving target goals fostering the initiation of respective firms. It further shows that with the mentors, incubatees have been able to learn step by step hands on skills and application knowledge which enhanced competencies among ourselves and thus we can deliver on our own at required quality and pace. It is therefore relevant for digital incubatees to embrace the underlying business support services to ensure that incubates' performance becomes viable and competitive in this changing digital era.

5.2 Recommendations

Based on the study findings, the following recommendations can be made;

The University of Dar es Salaam ICT Innovation Hub should allocate sufficient and continuous funding to support digital incubators. This would create more opportunities for graduate students to pursue self-employment, shifting the focus from traditional employment to entrepreneurship. By providing financial resources, the hub can empower digital startups, fostering innovation and reducing dependency on external employment opportunities.

Additionally, the University of Dar es Salaam ICT Innovation Hub should strengthen its monitoring efforts for existing incubates. Increased oversight would ensure that digital businesses are not only maintained but thrive with improved performance. Regular assessments and support mechanisms would help entrepreneurs overcome challenges and sustain their ventures, contributing to long-term success and economic growth in the digital sector.

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