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RESEARCH

Business Incubators and Start-up Ecosystems in Indonesia: The Role of Digital Social Innovation (DSI)

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ABSTRACT

PURPOSE: This study examines how business incubators foster Digital Social Innovation (DSI) in Indonesian start-ups by enhancing network services, capital support, and training programmes to promote entrepreneurship and growth.

DESIGN/METHODOLOGY/APPROACH: This study employed a quantitative survey to analyse data from 190 start-up respondents. The variables used in this study include network services, capital support, training programmes, and government regulations and innovation ecosystems.

FINDINGS: Business incubators significantly contribute to entrepreneurship development and DSI by offering mentorship, facilitating networks, providing essential resources, supporting innovation, and fostering collaboration, thereby enhancing start-up sustainability and societal impact.

ORIGINALITY/VALUE OF THE PAPER: This study links business incubation and DSI in Indonesia, providing insights for leveraging digital platforms for economic and social impact.

PRACTICAL IMPLICATIONS: The study highlights strategies such as mentorship, networking, and resource access to help start-ups tackle societal challenges and ensure long-term success.

KEYWORDS: *Business Incubator; Digital Social Innovation; Start-up Growth; Entrepreneurship; Business; Innovation Ecosystem.*

INTRODUCTION

Business incubators play a crucial role in driving start-up growth and innovation by offering structured support, including mentorship, funding access, and networking opportunities; these help start-ups build sustainable business models and compete effectively in the market (Elia *et al.*, 2021; Hackett and Dilts, 2004). Beyond generating economic value, incubators are increasingly engaging with societal challenges through Digital Social Innovation (DSI) that applies digital technologies to foster inclusivity, address social issues, and enhance quality of life (Suseno and Abbott, 2021). By aligning social objectives with entrepreneurial activities, DSI enables innovative responses to global issues such as sustainability, inequality, and community resilience, thereby advancing

inclusive development. While the global relevance of incubators in driving DSI is well recognised, their intersection remains underexplored in Indonesia. Here, a growing entrepreneurial ecosystem continues to face barriers, including regulatory constraints, limited resources, and fragmented strategies for integrating digital tools with social objectives (Marcon and Ribeiro, 2021). These challenges highlight the urgency of developing incubation models tailored to the specific conditions of emerging markets such as Indonesia.

Existing studies have shown that incubators are effective in reducing entrepreneurial uncertainties, fostering innovation, and supporting start-up success (Li *et al.*, 2020). However, research on how incubators specifically enable DSI remains limited. This fragmented understanding risks underestimating the broader potential of incubators to advance social progress alongside economic development. Addressing this gap offers a critical opportunity to examine the mechanisms through which incubators can drive DSI.

This study aims to examine the role of business incubators in fostering DSI within Indonesian start-ups. Specifically, it analyses how incubators provide mentorship, financial support, and access to digital tools, enabling start-ups to scale their operations while addressing societal challenges. By investigating the relationship between incubation services and DSI processes, this research seeks to contribute to a deeper understanding of how business incubators can support start-ups in generating both economic value and positive social impact. The findings are expected to provide valuable insights for policy-makers, incubator administrators, and entrepreneurs to optimise incubation programmes for long-term societal and economic benefits. By bridging the gap between theory and practice, the study aims to advance the discourse on DSI and its transformative potential in emerging economies such as Indonesia.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical Background

Business incubators are integral to the entrepreneurial ecosystem, offering start-ups structured support to foster innovation and business development. They provide crucial resources, including mentoring, networking opportunities, office spaces, and technological infrastructure, enabling start-ups to secure funding, refine their business models, and scale operations (Hackett and Dilts, 2004). Acting as intermediaries between start-ups and funding sources, incubators facilitate connections with investors and government programmes while reducing risks and increasing success probabilities (D'Angelo and Presutti, 2019). Through mentorship and collaborative environments, incubators support start-ups in achieving key milestones, such as product development and market expansion.

The development of a robust innovation ecosystem relies on the collaboration of diverse stakeholders, including start-ups, universities, funding providers, incubators, accelerators, co-working spaces, government entities, research centres, and skilled individuals (Wasnik and Jain,

2023). At the centre of this ecosystem is sustained entrepreneurial growth, driven by innovation that transforms ideas into marketable products or services while managing associated risks. Open innovation, as opposed to closed innovation, incorporates external knowledge to mitigate risks and accelerate technological advancement (Chesbrough, 2006; Spithoven *et al.*, 2013). This approach enables start-ups to develop customer-centric strategies, stimulate demand, and foster organisational growth, ultimately enhancing their competitiveness in dynamic markets.

Digital-based social innovation (DSI) represents a critical intersection of technology, societal impact, and entrepreneurship, with business incubators playing a pivotal role in nurturing this relationship (Chen *et al.*, 2023). DSI leverages digital technologies to address societal challenges while driving economic growth, and incubators provide essential resources such as funding, mentorship, and networking to support start-ups in this domain (Awonuga *et al.*, 2024). By fostering collaboration among start-ups, academia, established firms, and government bodies, incubators create ecosystems conducive to innovation and sustainable development. They promote community engagement and co-creation while enabling the adoption of emerging technologies, such as AI and blockchain, to develop innovative business models aligned with broader social and economic goals (Nicolopoulou *et al.*, 2017). As catalysts for societal progress and digital transformation, incubators empower start-ups to achieve both economic success and social impact.

Business Incubator Supports and Entrepreneurship Development

The presence of network services, financial backing, and training initiatives plays a critical role in fostering the growth and development of entrepreneurial ecosystems. Network services, such as Internet connectivity and cloud solutions, enable start-ups to access information, reach markets, and foster collaborative connections, driving innovation and expansion. Financial support, including venture capital and grants, fuels entrepreneurial growth by facilitating investments in research, talent acquisition, and market outreach programmes (Tony, 2023). The synergy between financial backing and entrepreneurial services within crowd innovation ecosystems positively impacts small and micro start-ups, enhancing their scalability and development (Jin *et al.*, 2022). Additionally, training initiatives empower entrepreneurs with the expertise needed to navigate business challenges, improve management skills, and foster a culture of innovation, significantly contributing to start-up success in competitive markets. The following hypotheses are therefore proposed:

Hypothesis H1: Network services positively influence entrepreneurship development.
Hypothesis H2: Capital support positively influences entrepreneurship development.
Hypothesis H3: Training programmes positively influence entrepreneurship development.

Government Regulation and Digital Social Innovation Mechanism

Government regulations significantly influence the advancement of social innovation practices and mechanisms by fostering an environment conducive to innovation or, conversely, creating barriers to entrepreneurial efforts. Positive government interventions, such as tax incentives for research and development, grants to stimulate innovation, and simplified business registration processes, enable start-ups to address economic challenges more effectively (Moore *et al.*, 2012). Additionally, regulations that prioritise infrastructure development, data security, and fair competition establish frameworks that support digital social innovation projects, allowing start-ups to leverage platforms and technologies in their strategies (Arcuri *et al.*, 2025). By encouraging solutions in critical sectors such as healthcare, education, and environmental preservation, government regulations inspire enterprises to integrate advancements into their operations (Sutherland, 2018). The following hypothesis is proposed:

> Hypothesis H4: Government regulations positively influence the digital social innovation mechanism.

Innovation Ecosystem and Digital Social Innovation Mechanism

An innovative ecosystem fosters experimentation and the adoption of fresh ideas, enabling start-ups to embrace DSI through exposure to advanced technologies and collaborative environments (Bandera and Thomas, 2018). Such ecosystems provide start-ups with access to shared workspaces, cutting-edge technology, and a community of professionals that support the integration of digital platforms for social innovation (Arcuri *et al.*, 2025). Collaboration among stakeholders, including universities, government entities, and private sector participants, further enhances the ecosystem's capacity to nurture start-ups in developing DSI tools for addressing societal challenges such as poverty, education, and healthcare. This collaborative environment naturally promotes the use of technological solutions for social advancement. Accordingly, the following hypothesis is presented:

> Hypothesis H5: An innovative ecosystem positively influences the digital social innovation mechanism.

Entrepreneurship Development and Digital Social Innovation

When an ecosystem grows and evolves, it creates a foundation for the development of social innovation strategies, supported by infrastructure, funding options, and networks for mentoring and collaboration (Marcon and Ribeiro, 2021). These elements enable start-ups to adopt digital advancements, tackle social issues, and contribute to societal well-being. A thriving ecosystem fosters creativity and collaboration, encouraging start-ups to experiment with technologies and engage in partnerships that drive digital social transformation (Monir and Geberemeskel, 2023). Additionally, entrepreneurship growth strengthens ties between start-ups and key stakeholders,

such as universities and government agencies, promoting the sharing of ideas and resources to enhance social innovation (Cheah and Ho, 2019). This supportive environment provides start-ups with tools, networks, and opportunities that facilitate their participation in technology-driven social innovation. Accordingly, the following hypothesis is presented.

> Hypothesis H6: Entrepreneurship development positively influences the digital social innovation mechanism.

Digital Social Innovation Mechanisms and Sustainable Start-ups

Harnessing social innovation methods is vital for nurturing start-ups, as it enables these businesses to align their strategies with societal needs and sustainability objectives, fostering long-term profitability and positive community impact (Harsanto *et al.*, 2022). Utilising resources to address social challenges proactively allows start-ups to create offerings that are both financially viable and socially beneficial, empowering them to stand out in competitive markets, attract socially conscious consumers, and gain the attention of purpose-driven investors. Moreover, digital innovation platforms enhance operational efficiency, reduce costs, and expand market reach, positioning start-ups to meet the growing demand for businesses that balance profit with social and environmental responsibility. By integrating these methods, start-ups can mitigate their environmental impact, promote social equity, and contribute to a more inclusive economy. Accordingly, the following hypothesis is presented.

> Hypothesis H7: Digital social innovation mechanisms positively influence the sustainability of start-ups

RESEARCH METHODOLOGY

Measurement Instruments

Using five-point Likert scales (1 = strongly disagree and 5 = strongly agree), eight latent constructs, Networking Service, Capital Support, Training Programme, Government Regulation, Innovative Ecosystem, Entrepreneurship Development, Digital Social Innovation Mechanism, and Sustainable Start-up, were measured in this study. Scales for Networking Service, Capital Support, Training Programme, Entrepreneurship Development, and Government Regulation were adapted from Li *et al.* (2020), emphasising incubator support, funding accessibility, skill enhancement, entrepreneurial growth, and policy frameworks. Innovative Ecosystem was measured using a scale adapted from Silva *et al.* (2018), focussing on knowledge acquisition and intellectual property development. Digital Social Innovation Mechanism, including collaboration, funding, and diversity, was assessed using items from Milwood and Roehl (2019). Sustainable Start-up was evaluated based on environmental and social sustainability practices, adapted from Lee and Kim (2019). All items were modified to fit the Indonesian start-up context, and a pre-test with 20 participants led to minor revisions for clarity, with no major issues identified. The research model is shown in Figure 1.

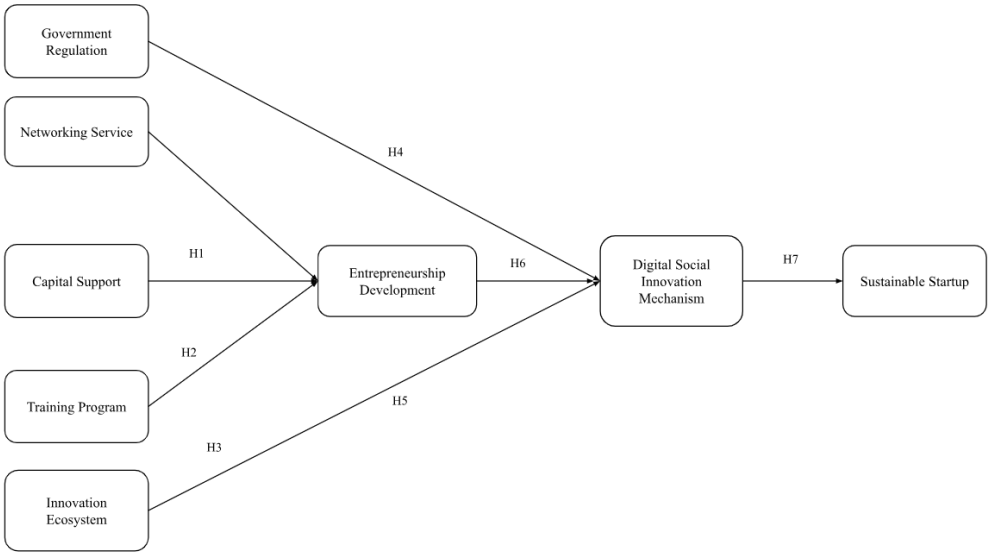

Figure 1: Research Model

Source: Constructed by authors

Data Collection

The study utilised Google Forms to collect data from 190 participants affiliated with the Business Incubator Association, focussing on individuals currently or previously involved in business incubation activities within incubators and start-ups. A snowball sampling method was employed to recruit participants based on predetermined criteria, complemented by convenience sampling to ensure accessibility and representation from diverse regions, including Java, Bali, Sumatra, and Sulawesi. The primary objective was to investigate factors influencing the effectiveness of business incubators in fostering entrepreneurship and innovation.

Data Analysis

The Partial Least Square-Structural Equation Modeling (PLS-SEM) model was chosen for its effectiveness in predicting and evaluating constructs, particularly in reflective second-order models. Adhering to recommended guidelines, the sample size exceeded the minimum threshold of ten times the highest number of variable connections in the outer and inner models, with G*Power 3.0 confirming the adequacy of 190 observations for statistical power in a two-tailed t-test. Multicollinearity testing, through Variance Inflation Factor (VIF) analysis, indicated that values ranged from 1.215 to 5.077, generally mitigating concerns about multicollinearity or common method bias (CMB), although constructs with VIF values above 4 were noted. Hypothesis testing

and bootstrapping were conducted to evaluate relationships and path significance, highlighting the model's predictive capacity while confirming that potential CMB was not significant enough to require corrective measures.

RESULTS

Sample and Respondents' Selection

Data were collected from 190 respondents, with the sample size determined through power analysis (Sarstedt *et al.*, 2017). Using purposive non-probability sampling, participants were selected based on their relevance to the research objectives, specifically as start-up owners with incubator experience. Table 2 summarises respondent characteristics, reflecting diversity in age, education, location, and start-up attributes. The largest age group (30%) is between 19-25 years, while 61% manage start-ups that have been operating for 1-3 years. In terms of education, 56% hold a bachelor's degree and 15% a master's degree. A majority (73%) reported capital growth below 250 million IDR (US$15185). Regionally, Central Java accounts for 29% of start-ups, followed by Yogyakarta (20%) and West Java (15%). These distributions highlight the varied demographic profiles, business stages, and geographic representation of the respondents.

Table 2: Characteristic of Respondents

Respondent Characteristics	*Description*	*Frequency*	*Respondent Characteristics*	*Description*	*Frequency*
Age	19-25 Years	66	**Start-up Location**	Central Java	42
	26-30 Years	34		West Java	21
	31-35 Years	29		East Java	15
	36-40 Years	14		Bali	9
	>40 Years	47		DKI Jakarta	15
Start-up Age	<1 year	40		Banten	4
	1-3 years	90		Yogyakarta (DIY)	30
Education	>3 years	60		NTB	1
	High School	38		NTT	1
Capital Growth	Diploma	17		Aceh	1
	Bachelor's (S1)	101		North Sumatra	9
	Master's (S2)	28		West Kalimantan	7
	Doctorate (S3)	6		South Kalimantan	16
	0	36		Jambi	1
	< 250 million	126		Riau	1
	250-500 million	14		South Sulawesi	9
	> 500 million	13		Riau Islands	1

Source: Constructed by authors

Measurement Model

The researchers utilised PLS-SEM to evaluate the accuracy and credibility of the proposed measurement model. Reliability was assessed using Cronbach's alpha and composite reliability (CR), while convergent validity was assessed using average variance extracted (AVE) and factor loadings. The Fornell-Larcker criterion and Heterotrait-Monotrait (HTMT) ratios were employed for validity assessment. All items were retained for analysis. Factor loadings exceeding 0.70 were deemed significant, while values between 0.50 and 0.70 were considered acceptable. Factor loadings for constructs such as Capital Support (CS), Digital Social Innovation Mechanism (DSI), Entrepreneurship Development (ED), Government Regulation (GR), Innovative Ecosystem (IE), Network Service (NS), Training Programme (TP), and Sustainable Start-up (SS) ranged from 0.515 to 0.936.As both Cronbach's alpha and composite reliability scores surpassed 0.70, the reliability of all constructs was confirmed. Convergent validity was established, with AVE values exceeding 0.50. Furthermore, the square root of AVE for each construct exceeded its correlation with other constructs, ensuring discriminant validity. The HTMT ratios remained below 0.85, indicating distinct constructs. These results demonstrate the data's validity and reliability. Collinearity was evaluated using VIF, with values ranging from 1.215 to 5.077, indicating no collinearity issues. The model's overall fit was deemed acceptable based on VIF values and structure.

Table 3: Factor Loading, Cronbach's Alpha, CR, and AVE

	Cronbach's Alpha	*Composite Reliability (rho_a)*	*Composite Reliability (rho_c)*	*Average Variance Extracted (AVE)*
Capital Support	0.713	0.714	0.811	0.463
Digital Social Innovation	0.886	0.9	0.917	0.688
Entrepreneurship Development	0.930	0.931	0.947	0.782
Government Regulation	0.739	0.751	0.829	0.497
Innovative Ecosystem	0.842	0.842	0.894	0.678
Network Service	0.912	0.916	0.932	0.697
Training Programme	0.941	0.942	0.955	0.810
Sustainable Start-up	0.889	0.894	0.919	0.696

Source: Constructed by authors

Table 4: HTMT for Discriminant Validity

	Capital Support	*Digital Social Innovation*	*Entrepreneurship Development*	*Government Regulation*	*Innovative Ecosystem*	*Network Service*	*Training Programme*	*Sustainable start-up*
Capital Support								
Digital Social Innovation	0.519							
Entrepreneurship Development	0.754	0.471						
Government Regulation	0.591	0.789	0.527					
Innovative Ecosystem	0.328	0.741	0.381	0.796				
Network Service	0.714	0.427	0.86	0.442	0.423			
Training Programme	0.690	0.476	0.964	0.521	0.384	0.826		
Sustainable start-up	0.400	0.771	0.398	0.599	0.775	0.359	0.367	

Source: Constructed by authors

Structural Model Analysis

A non-parametric bootstrapping technique, utilising 5,000 resampled samples, was employed to assess the model (Figure 1). Analysis of the structural model revealed support for all seven hypotheses (Table 5). The initial hypothesis (H1), proposing an impact of capital support on entrepreneurship development, was substantiated with a statistically significant outcome ($p = 0.000$, t-statistic = 3.631). The second hypothesis (H2), suggesting an impact of TP on ED, was strongly supported with high significance ($p = 0.006$, t-statistic = 2.726). The results indicated a relationship between TP and ED, with a co-efficient of 0.34 and a t-statistic of 11.484. In addition, H4 and H5, stating that GR and IE positively influence DSI ($p = 0.000$), demonstrated a relationship with t-statistics of 4.309 and 4.856, respectively. Additionally, ED exhibited a positive impact on DSI, with p-values of 0.047 and a t-statistic of 1.983. Finally, the relationship between DSI and SS was found to be significant, with p-values of 0.000 and a t-statistic of 16.593 (H7).

Table 5: Research Hypotheses and Results

	Original sample (O)	*Sample mean (M)*	*Standard deviation (STDEV)*	*T statistics (|O/STDEV|)*	*P values*	*Result*
Network Service -> Entrepreneurship Development (H1)	0.213	0.216	0.059	3.631	0.000	Supported
Capital Support -> Entrepreneurship Development (H2)	0.111	0.111	0.041	2.726	0.006	Supported
Training Programme -> Entrepreneurship Development (H3)	0.674	0.669	0.059	11.484	0.000	Supported
Government Regulation -> Digital Social Innovation (H4)	0.356	0.370	0.083	4.309	0.000	Supported
Innovative Ecosystem -> Digital Social Innovation (H5)	0.380	0.378	0.078	4.856	0.000	Supported
Entrepreneurship Development -> Digital Social Innovation (H6)	0.149	0.142	0.075	1.983	0.047	Supported
Digital Social Innovation -> Sustainable Startup (H7)	0.691	0.694	0.042	16.593	0.000	Supported

Source: Constructed by authors

DISCUSSION AND IMPLICATIONS

Discussion

The study highlights the significant role of business incubators in fostering DSI within Indonesia's start-up ecosystem. The findings confirm that incubators provide start-ups with essential resources, such as mentorship, networking opportunities, and financial assistance, enabling them to address societal challenges effectively (Setiawan and Fahmi, 2020). These resources not only enhance the sustainability of start-ups but also support them in achieving both economic and social impact,

emphasising the dual benefits incubators offer to entrepreneurial ecosystems (Annas and Meilinda, 2023). For example, several business incubators in Indonesia have successfully developed start-ups that create digital platforms to assist fishermen in optimising feed distribution, help farmers measure soil mineral content, and support them in marketing their products while empowering local communities through the platforms created by the start-ups.

A key insight from the research is the importance of tailored support services for start-ups engaged in DSI. Start-ups that receive assistance from incubators are more successful in refining their innovations and launching them into the market (Breivik-Meyer *et al.*, 2020). Incubators help lower barriers for new businesses by providing affordable access to crucial resources, such as infrastructure and expert guidance that are vital for navigating market challenges and developing sustainable business strategies (Li *et al.*, 2020). These findings underline the value of personalised support in overcoming obstacles and promoting innovation. In Indonesia, many business incubators or science technoparks are owned by higher education institutions, while the rest are owned by the government or private sector. They provide services to their incubated start-ups through various funding sources, including funding from their parent institutions, government grants or programme funding, and financial support from their business activities.

The study also underscores the significance of incubator networks in fostering collaboration and knowledge exchange among start-ups. Participation in incubator programmes allows start-ups to engage with industry professionals, investors, and fellow entrepreneurs, creating opportunities for partnerships and innovation (Karambakuwa and Bayat, 2023). Such networks not only provide support but also enable the exchange of market insights and strategies for incorporating digital solutions into business practices, fostering a collaborative environment that drives creativity and innovation (Galvão *et al.*, 2019). Several programmes have been developed by individual business incubators, such as Sebelas Maret Startup Academy (UNS SEMESTA), UI Incubate, and UII Business and Innovation Challenge (UBIC). Likewise, the government, through ministries and agencies, has introduced various programmes to foster the entrepreneurship and innovation ecosystem, including the 1000 Digital Startups programme, RIIM-Startup, BEKUP, and Startup4Industry.

While the findings demonstrate the contributions of incubators to start-up growth, the study also identifies areas for improvement. Some incubators face challenges in meeting the increasing demands of DSI, such as navigating regulatory frameworks or scaling impact while maintaining financial viability (Li *et al.*, 2020). Additionally, the role of government support is crucial in enhancing the effectiveness of incubators. Policies that reduce barriers, facilitate funding, and incentivise innovation can significantly bolster the impact of incubators in promoting DSI (Wasnik and Jain, 2023; Qureshi *et al.*, 2021). These insights highlight the need for collaborative efforts between the private sector and government to create an enabling environment for start-ups to thrive and deliver positive societal and economic outcomes.

Theoretical Implications

This research contributes to the understanding of business incubation and social innovation by integrating these two concepts rather than treating them as separate areas of study as done previously. It presents a framework that illustrates the connection between them and how incubators can support businesses in making a positive social impact through digital advancements. The results provide empirical evidence that reinforces the concept that incubators serve a purpose, fostering stability and promoting societal transformation. This theoretical advancement enhances our comprehension of how innovation ecosystem's function when business and social objectives are interconnected, and emphasises the importance of research into the convergence of technology with social entrepreneurship and support services for start-ups.

Managerial Implications

The study emphasises the critical role of tailored support services for start-ups engaged in social innovation projects. It advises incubator managers to enhance service offerings by providing guidance on specialised funding options and facilitating connections with investors and community groups. Additionally, fostering collaborative environments for DSI-focussed start-ups to exchange knowledge and form partnerships is highly recommended. By adopting these strategies, incubators can significantly contribute to the growth and sustainability of socially impactful ventures, ultimately driving broader positive societal outcomes.

Limitations and Future Research

This research provides insights into the role of incubators in fostering social innovation growth, but it is important to acknowledge certain limitations. The study's focus on start-up environments may limit the generalisability of its findings to other regions or countries with different innovation ecosystems. Future research could investigate country-specific variations to examine how incubators support DSI within different cultural and economic contexts. Additionally, while this study primarily relied on data analysis, future research could employ a mixed-methods approach to gain a more nuanced understanding of the specific challenges faced by start-ups within DSI-focussed incubators. Notably, the confirmed hypothesis suggests potential shortcomings in how incubators address the needs of digital social innovators across all dimensions. This highlights the necessity for further exploration into how these incubators can adapt to better support this emerging field.

STATEMENTS AND DECLARATIONS

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Conflicts of Interest/Competing Interests

The authors of this work declare that there are no conflicts of interest regarding the publication of this paper.

Availability of Data and Material

The datasets analysed during the current study are available from the corresponding author upon reasonable request.

Authors' Contribution

DAP Retrieved the literature, conceived and designed the analysis, collected data, and drafted the manuscript. **CS** Conducted data analysis, verified the analytical methods, and performed the analyses. **IRASP** Verified the analytical methods and contributed to data analysis. **BDP** Assisted with data collection and manuscript preparation. **AS** Contributed to data interpretation and manuscript review. **H** Reviewed and provided final approval of the manuscript. All authors have read and agreed to the published version of the manuscript.

Ethical Approval

Ethical clearance for the research was granted by The National Research and Innovation Agency (BRIN) of The Republic of Indonesia Ethical Review Board with reference number 256/ KE.01/ SK/03/2024.

Consent to Participate

Informed consent was obtained from all individual participants included in the study.

REFERENCES

Annas, M. and Meilinda, V. (2023): A Review of Indonesian Business Start-Up Incubator Models. *Startupreneur Business Digital (SABDA Journal)*, Vol. 2, No. 1, pp.86-97. Available at: https://doi.org/10.33050/sabda.v2i1.260

Arcuri, M.C., Russo, I. and Gandolfi, G. (2025): Productivity of innovation: The effect of innovativeness on start-up survival. *The Journal of Technology Transfer*, Vol. 50, No. 3, pp.1111-1169. Available at: https://doi.org/10.1007/s10961-024-10069-7

Awonuga, K.F., Mhlongo, N.Z., Olatoye, F.O., Ibeh, C.V., Elufioye, O.A. and Asuzu, O.F. (2024): Business incubators and their impact on startup success: A review in the USA. *International Journal of Science and Research Archive*, Vol. 11, No. 1, pp.1418-1432. Available at: https://doi.org/10.30574/ijsra.2024.11.1.0234

Bandera, C. and Thomas, E. (2018): The Role of Innovation Ecosystems and Social Capital in Startup Survival. *IEEE Transactions on Engineering Management*, Vol. 66, No. 4, pp.542-551. Available at: https://doi.org/10.1109/TEM.2018.2859162

Breivik-Meyer, M., Arntzen-Nordqvist, M. and Alsos, G.A. (2020): The role of incubator support in new firms accumulation of resources and capabilities. *Innovation*, Vol. 22, No. 3, pp.228-249. Available at: https://doi.org/10.1080/14479338.2019.1684204

Cheah, S. and Ho, Y.-P. (2019): Building the Ecosystem for Social Entrepreneurship: University Social Enterprise Cases in Singapore. *Science, Technology and Society*, Vol. 24, No. 3, pp.507-526. Available at: https://doi.org/10.1177/0971721819873190

Chen, P., Yan, Z. and Wang, P. (2023): How can the Digital Economy Boost the Performance of Entrepreneurs? A Large Sample of Evidence from China's Business Incubators. *Sustainability*, Vol. 15, No. 7, p.5789. Available at: https://doi.org/10.3390/su15075789

Chesbrough, H. (2006): Open Innovation: A New Paradigm for Understanding Industrial Innovation. In Chesbrough, H., Vanhaverbeke W. and West, J. (Eds): *Open Innovation: Researching a New Paradigm* (pp.0-19). Oxford University Press. Available at: https://doi.org/10.1093/oso/9780199290727.003.0001

D'Angelo, A. and Presutti, M. (2019): SMEs international growth: The moderating role of experience on entrepreneurial and learning orientations. *International Business Review*, Vol. 28, No. 3, pp.613-624. Available at: https://doi.org/10.1016/j.ibusrev.2018.12.006

Elia, G., Margherita, A., Ciavolino, E. and Moustaghfir, K. (2021): Digital Society Incubator: Combining Exponential Technology and Human Potential to Build Resilient Entrepreneurial Ecosystems. *Administrative Sciences*, Vol. 11, No. 3, p.96. Available at: https://doi.org/10.3390/admsci11030096

Galvão, A., Marques, C., Franco, M. and Mascarenhas, C. (2019): The role of start-up incubators in cooperation networks from the perspective of resource dependence and interlocking directorates. *Management Decision*, Vol. 57, No. 10, pp.2816-2836. Available at: https://doi.org/10.1108/MD-10-2017-0936

Hackett, S.M. and Dilts, D.M. (2004): A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, Vol. 29, No. 1, pp.55-82. Available at: https://doi.org/10.1023/B:JOTT.0000011181.11952.0f

Harsanto, B., Mulyana, A., Faisal, Y.A., Shandy, V.M. and Alam, M. (2022): A Systematic Review on Sustainability-Oriented Innovation in the Social Enterprises. *Sustainability*, Vol. 14, No. 22, p.14771. Available at: https://doi.org/10.3390/su142214771

Jin, X., Chen, C. and Zhang, M. (2022): Research on Synergy between Entrepreneurial Service and Financial Support in Crowd Innovation Space Ecosystem. *Sustainability*, Vol. 14, No. 10, p.5966. Available at: https://doi.org/10.3390/su14105966

Karambakuwa, J.K. and Bayat, M.S. (2023): Influence of Networking on Starts-Up Development in Incubation Hubs. *Indonesian Journal of Innovation and Applied Sciences (IJIAS)*, Vol. 3, No. 1, pp.22-30. Available at: https://doi.org/10.47540/ijias.v3i1.682

Lee, W. and Kim, B. (2019): Business Sustainability of Start-Ups Based on Government Support: An Empirical Study of Korean Start-Ups. *Sustainability*, Vol. 11, No. 18, p.4851. Available at: https://doi.org/10.3390/su11184851

Li, C., Ahmed, N., Qalati, S.A., Khan, A. and Naz, S. (2020): Role of Business Incubators as a Tool for Entrepreneurship Development: The Mediating and Moderating Role of Business Start-Up and Government Regulations. *Sustainability*, Vol. 12, No. 5, p.1822. Available at: https://doi.org/10.3390/su12051822

Marcon, A. and Ribeiro, J.L.D. (2021): How do startups manage external resources in innovation ecosystems? A resource perspective of startups' lifecycle. *Technological Forecasting and Social Change*, Vol. 171, p.120965. Available at: https://doi.org/10.1016/j.techfore.2021.120965

Milwood, P.A. and Roehl, W.S. (2018): Towards a Measurement Scale for Digital Social Innovation: A Responsibility-Sustainability Framework. In Pesonen, J. and Neidhardt, J. (Eds): *Information and Communication Technologies in Tourism 2019* (pp.371-382). Springer International Publishing. Available at: https://doi.org/10.1007/978-3-030-05940-8_29

Monir, M.M.S. and Geberemeskel, A.N. (2023): Sciendo. *Proceedings of the International Conference on Business Excellence*, Vol. 17, No. 1, pp.822-838. Available at: https://doi.org/10.2478/picbe-2023-0076

Moore, M.L., Westley, F.R., Tjornbo, O. and Holroyd, C. (2012): The Loop, the Lens, and the Lesson: Using Resilience Theory to Examine Public Policy and Social Innovation. In Nicholls, A. and Murdock, A. (Eds): *Social Innovation: Blurring boundaries to reconfigure markets* (pp.89-113). Palgrave Macmillan UK. Available at: https://doi.org/10.1057/9780230367098_4

Nicolopoulou, K., Karataş-Özkan, M., Vas, C. and Nouman, M. (2017): An incubation perspective on social innovation: The London Hub – a social incubator. *R&D Management*, Vol. 47, No. 3, pp.368-384. Available at: https://doi.org/10.1111/radm.12179

Qureshi, I., Pan, S.L. and Zheng, Y. (2021): Digital social innovation: An overview and research framework. *Information Systems Journal*, Vol. 31, No. 5, pp.647-671. Available at: https://doi.org/10.1111/isj.12362

Sarstedt, M., Ringle, C.M. and Hair, J.F. (2017): Partial Least Squares Structural Equation Modeling. In Homburg, C., Klarmann, M. and Vomberg, A. (Eds): *Handbook of Market Research* (pp.1-40). Cham: Springer International Publishing. Available at: https://doi.org/10.1007/978-3-319-05542-8_15-1

Setiawan, W.L. and Fahmi, I. (2020): Business Incubator Supporting Diffusion of Innovation, Entrepreneurship Development and Job Creation. In *23rd Asian Forum of Business Education (AFBE 2019)* (pp.242-247). Atlantis Press. Available at: https://doi.org/10.2991/aebmr.k.200606.041

Silva, M.C., Anholon, R., Rampasso, I.S., Quelhas, O.L.G., Filho, W.L. and Silva, D.D. (2018): Analysis of the Brazilian entrepreneurial ecosystem in the perception of business incubator professionals. *International Journal of Business Innovation and Research*, Vol. 16, No. 4, pp.507-530. Available at: https://doi.org/10.1504/IJBIR.2018.093524

Spithoven, A., Vanhaverbeke, W. and Roijakkers, N. (2013): Open innovation practices in SMEs and large enterprises. *Small Business Economics*, Vol. 41, No. 3, pp.537-562. Available at: https://doi.org/10.1007/s11187-012-9453-9

Suseno, Y. and Abbott, L. (2021): Women entrepreneurs' digital social innovation: Linking gender, entrepreneurship, social innovation and information systems. *Information Systems Journal*, Vol. 31, No. 5, pp.717-744. Available at: https://doi.org/10.1111/isj.12327

Sutherland, E. (2018): *Trends in Regulating the Global Digital Economy* (SSRN Scholarly Paper 3216772). Social Science Research Network. Available at: https://doi.org/10.2139/ssrn.3216772

Tony, M. (2023): The role of Financial Institutions in Promoting Entrepreneurship and Economic Growth. *Journal of Business Leadership and Management*, Vol. 1, No. 1, pp.17-25. Available at: https://doi.org/10.59762/jblm84592046112023100910024 2

Wasnik, A.P. and Jain, A. (2023): Government Support for Startups: A Comprehensive Analysis of Funding Initiatives and the Role of the Indian Government in Nurturing the Startup Ecosystem. *Journal of Economics and Business*, Vol. 6, No. 3, pp.98-107. Available at: https://doi.org/10.31014/aior.1992.06.03.523

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