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**The Analysis of Training Program on Entrepreneurship
Development: The Moderating Role of Business Startup and
Entrepreneurial Ecosystem**

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Abstract: This study analyze the impact of training programs on entrepreneurship development, with the role of startup businesses and entrepreneurial ecosystems examined as moderating variables. A quantitative approach was employed using Structural Equation Modelling (SEM) with SmartPLS 3. Data were collected from 30 student entrepreneurs in Indonesia who were in the early stages of building a business. The result show that training program have a direct and significant effect on both development of entrepreneurship and on the formation of startup business. Additionally, startup businesses significantly moderate the relationship between training programs and entrepreneurial development. However, the entrepreneurial ecosystem does not demonstrate a significant impact, either as moderating variable. These findings suggest that, while theoretically relevant, the entrepreneurial ecosystem may not function effectively as a moderating variable in this context. Future research is advised to consider the entrepreneurial ecosystem as either an independent or control variable to better capture its contextual influence on entrepreneurship. This study contributes empirically and methodologically to the on going discourse on entrepreneurship development and highlights the strategic importance of training programs and startup business support initiatives.

Keywords: Business Startup; Entrepreneurship Development; Entrepreneurial Ecosystem; Training Program.

A. Introduction

Entrepreneurial development adds long-term value to the organization by growing the business, market, and customer connections. Long-term value is determined by a business's revenue and image. Entrepreneurial development can take the form of identifying

new prospects for corporations to establish new businesses that can be marketed (Prima, 2022).

Entrepreneurship development in Indonesia must continue to satisfy economic growth goals. Based to the Commissioner for Entrepreneurship at Indonesia's Department of Coops and MSMEs, just 3.47% of the population

is participating in entrepreneurial activities. This work is critical to generating employment, fostering innovation, and increasing economic output. Startups under one year old in the United States are crucial to producing new employment, but launch rates have fallen, resulting in a decrease in job creation. Startup employment generation per capita has declined from 7.52 in 1998 to 5.27. This figure is significantly lower than in industrialized nations, which require a national entrepreneurship index score of at least 12% of the population. Therefore, entrepreneurship has to be a national program that encourages expanded involvement to maximize its potential contribution to economic growth in both third-world and industrialized nations (Sari, 2022).

The purpose of this study is to explicitly analyze and explain how the role of startup business moderation and entrepreneurial ecosystems is influential in the relationship between training programs and entrepreneurship development. This research fills this gap by exploring how startup businesses and the entrepreneurial ecosystem interact with training programs to influence an entrepreneurial development.

Tabel 1. National Entrepreneurship Index

Number	Nationality	Score
1	UEA	7.2
2	Saudi Arabia	6.3
3	Taiwan	6.2
4	India	6.1
5	Netherlands	5.9
6	Lithuania	5.8
7	Indonesia	5.8

Source: (F Santika, 2022)

According to the researchers, the development of entrepreneurship is prosperous and enjoys sustainable economic growth, creativity and innovation for a country both in basic concept and skills or abilities and mentality, with the hope of creating independence in carrying out business activities (Juliana et al., 2021). Entrepreneurial growth is the process of creating long-term value for a company by developing business, market, and customer relationships. Long-term value is defined as the company's revenue and image. These three

components must interact with each other to create opportunities for the company to grow. Entrepreneurial development can be in the form of finding new opportunities for companies to develop new marketable businesses. When creating a new business, an entrepreneurial developer will generally assess the benefits and potential of the business. In general, assessments are related to marketing, finance, management knowledge, and customer service. An entrepreneurial developer must be able to analyze and research business patterns. This can be done by looking at monthly sales growth data, investor data, client data, and data from competitors. A business that is growing rapidly means that it has a very high income from the sale of its products. Because if the product does not sell, the business will stop its development and may even go bankrupt (Prima, 2022). Understanding entrepreneurial development is essential for any business, both as a whole and for individual success. Promoting entrepreneurship is also widely recognized as essential for economic growth, as it creates new products, services, jobs, and markets. Policymakers around the world are actively promoting entrepreneurial development as a way to support economic development at both the regional and national levels (Musageliev & Jusupova, 2024). Training prepares a person to perform or perform a role. Individuals try to reduce the gap between the knowledge they currently have and the abilities they expect (Sadigov, 2022). Due to researchers, entrepreneurial growth is an effort created by developing an enterprises to be of higher quality, both in terms of basic concept and skills or abilities and mentality, in the hope of creating independence in carrying out business activities. Previous research states that entrepreneurial development can be formed through startup businesses (Hasan Emon & Nisa Nipa, 2024). The following is a hypothesis proposed in the H4 study: *Entrepreneurial ecosystem influences entrepreneurship development*. This study measures the entrepreneurship development based on five indicators: professional environment, business ideas, professional objectives, entrepreneurs quality, and survive (Nugraha et al., 2024). H5: *Training program influences entrepreneurship development*. And this study has two hypotheses that measure

the indirect relationship between variables, *H6: Business startup has a relationship between training program and entrepreneurship development; H7: Entrepreneurial ecosystem has a relationship between training program and entrepreneurship development.* Incubators of business help growthing a business capacity building and product development skills as well as improve skills of management, and skills of marketing.

Training programs that focus on startup business development, including mentoring, evaluation, and investor seminars, are essential for entrepreneurial development (Lin, 2023). Training programs also encourage young entrepreneurs to further develop and have a leadership spirit in the future, which is good for a company (Åstebro & Hoos, 2021). Incubator of business help growthing a business capacity building and product development skills and improve business management and marketing skills (Sarkar, 2022). The following is the hypothesis proposed in the *H1 study: Training program influences business startup.* The study measures training programs due to some dimension: development skills, business management skills, marketing skills, and training skills (Nugraha et al., 2024)

Startup businesses are essential for creating new employ and bringing competitive dynamics into the business environment. Startup businesses generally use a scalable business model. This means that startup businesses invest in improving the technology on which a project is based, and when technology has been improved, products or services will be created (Weber et al., 2022). A startup business is a small company that starts with innovative ideas and eventually becomes successful and sustainable. Identifying the key factors that make a startup successful and determining the technologies that will shape the future are essential. Previous research has shown that startups have a high decision-making speed and a strong potential to take advantage of business opportunities. Training programs that focus on startup business development, including mentoring, evaluation, and investor seminars, are essential for entrepreneurial development. Researchers believe that startup businesses are essential for creating new jobs and bringing competitive

dynamics into the business environment. Current market conditions are critical to managing the development of corporate entities to promote innovation and development (Gupta et al., 2024). Incubator the business includes coaching sessions for incubation participants and enterprises to assist them get started fast and correctly. A firm Incubator is a great venue for launching a new firm, becoming an entrepreneur, or promoting an existing one. Business incubators help startups grow by offering advisory services and administrative assistance. Business incubators offer networking services that boost business startup chances. Startup companies are the ideal mediators between business incubation and development (Sinarasri et al., 2023). Products or services are introduced when they are ready, and many entrepreneurs generate successful products and services for digitally savvy consumers. WhatsApp, Facebook, Instagram, and technological behemoth Alphabet are examples of startup services and businesses. This model applies primarily to digital entrepreneurship and is based on the fundamental difference between startups that are still working to validate their business models and scaling up that demonstrate meaningful traction metrics in customers (Ghezzi et al., 2022) Starting a business is not just a matter of building it from scratch. Previous research has shown that training programs can have a significant impact on the success of startup businesses (Weber et al., 2022). The following is the hypothesis proposed in the *H3 study: Business startup influences entrepreneurship development.* This study measures business startups based on five indicators: mentoring sessions and coaching, platform, consuting services, networking services, and mediation (Nugraha et al., 2024).

The fundamental ideas underpinning the idea of an entrepreneurial ecosystem rest on a long history of research. The entrepreneurial ecosystem approach enables the synthesis often disparate literature, bringing up new research topics and lines of study into policy-related concerns of how to foster economic development and prosperity, as well as simpler social science questions like the link underlying structure and agency under society (Wurth et al., 2022). The idea of an entrepreneurial

ecosystem varies in that it takes into account a larger set of regional variables while also focusing on entrepreneurial activity. When it relates to growing down, one of the most noticeable cultural tendencies in the entrepreneurial ecosystem is the culture hole. Historically, structural gaps have been used to conceive material opportunity areas for entrepreneurial operations (Hannigan et al., 2022). The focus on the ecosystem of enterprises is the extent to which it produces productive output. An entrepreneurial ecosystem is a set of interdependent actors and factors that are coordinated in such a way as to enable productive entrepreneurship within a given region (Audretsch & Belitski, 2021). The entrepreneurial ecosystem can be observed as a consequence of developments in a variety of relevant ideas. The term entrepreneurial ecosystem is the most well-known concept that is accepted and used in most of the research that investigates ecosystems in the field of entrepreneurship. It is defined in several ways (Thai et al., 2023). The following is the hypothesis proposed in the *H2 study: Training program influences entrepreneurial ecosystem*. This study measures the entrepreneurial ecosystem based on eight indicators: the culture that supports entrepreneurship, the knowledge history of successful entrepreneurs around, collaboration with additional parties, motivation and encouragement of entrepreneurship around, the use of knowledge to get started bisnis, the provision of formal education and training, the availability of knowledge of incubators and places to start businesses, and knowledge about capital from the government (Ambarita et al., 2024). Despite the wealth of literature on entrepreneurial development, several studies have explicitly examined the role of the moderator of the entrepreneurial ecosystem in this relationship. The study fills that gap by exploring how startup businesses and the entrepreneurial ecosystem interact with training programs to influence entrepreneurial outcomes (Cho et al., 2022).

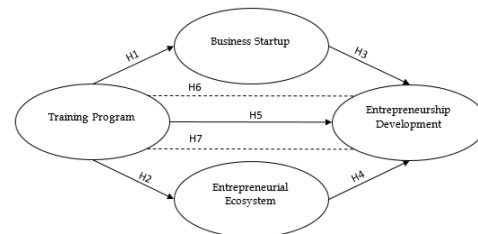
B. Materials and Methods

The research design utilized is intended to tackle research challenges. Indonesia ranks last

among other nations in the national entrepreneurship index category. The study's design is causal. It is intended to collect data and construct a framework that will assist researchers to identify cause-and-effect linkages in research variables (Naval Bajpai, 2017). The goals of causal research are to: 1) understand independent and dependent variables influencing entrepreneurial events, 2) determine the link between cause-effect variables, and 3) test the causative variable association hypothesis.

By to the description in the theory, this research is carried out based on the grand theory of entrepreneurship, entrepreneurship development, training programs, business startups, and entrepreneurial ecosystems as shown in Figure 1.

Figure 1. Conceptual Framework



Sumber: (Researcher, 2025)

The population of this study is the Indonesian people. The researchers provided population limits in units of analysis where students who are starting a business are individuals. The survey was sent by hybrid method. The study had a response rate of 21% with 30 respondents as primary data from 141 populations. This study applies a representative sampling technique with the quota sampling method, this method is used so that the research results can be generalized to a wider population, then to save time as well because previously the researcher had limited time (Sugiyono, 2020). In this quantitative study, data is analyzed using a statistical approach. The data analysis technique is as follows. 1) Confirmation factor analysis is performed on a scale to check the construction structure, followed by 2) hypothesis testing using structural equation modelling (SEM). SmartPLS 3 is the program used to do route analysis. The interval measure scale enables researchers to conduct mathematical

calculations on the data gathered from respondents (Naval Bajpai, 2017).

C. Result and Discussion

Convergent Validity

The validity test is used to measure the validity of a statement on a questionnaire. To measure the level of validity of a statement on the questionnaire, it is done by comparing the calculated value with the rtables. The validity testing criteria can be declared if r is calculated $> r$ table, then the research attribute can be declared valid (IBM SPSS 23, 2025).

The number of samples in this study is 30 samples. To assess the above values are valid and reliable, it is necessary to make a comparison between the R values of the table at $DF = N-2$. $DF = 30 - 2 = 28$ with the significance level of 5% R table at DF 30 is 0.3061. If the calculated value $>$ the table, it can be declared valid. while if the rcalculated value is $<$ rtable, the statement on the questionnaire can be said to be invalid (IBM SPSS 23, 2025).

If the outer loading value is more than 0.7, the indicator is considered to have convergent validity. According to Table 2, the majority of the indicators of the research variables had an external loading value greater than 0.7, and there were several variable indicators with an external loading value of less than 0.7, including platform, professional environment, culture that supports entrepreneurship, knowledge history of successful entrepreneurs, availability of incubator knowledge and places to start a business, and development skills. This implies that variable indicators whose values are less than 0.7 are not practicable or invalid for research use and cannot be used for additional studies. The following are the outer loading values of each indicator on the research variable:

Tabel 2. Outer Loading Value

	BS	EE	ED	TP
BS1	0.796			
BS2	0.658			
BS3	0.774			
BS4	0.834			
BS5	0.713			
ED1			0.675	
ED2			0.816	

ED3			0.702	
ED4			0.711	
ED5			0.842	
EE1		0.666		
EE2		0.629		
EE3		0.911		
EE4		0.742		
EE5		0.946		
EE6		0.567		
EE7		0.968		
EE8		0.727		
TP1				0.622
TP2				0.749
TP3				0.789
TP4				0.800
TP5				0.755

Source: (SmartPLS, 2025)

Outer Model Analysis

The following is a schematic of the PLS program model tested



Figure 2. Outer Model

Discriminant Validity

In order to evaluate discriminant validity, look for an AVE value > 0.5 . According to Table 3, each variable in this investigation had an AVE value > 0.5 . This study's variables had values of 0.556 for training programs, 0.574 for startup businesses, 0.613 for entrepreneurial ecosystems, and 0.566 for entrepreneurship development. This demonstrates that each variable in this study may be recognized legitimate for the validity of the discriminator.

Tabel 3. Average Variance Extrcted Value

Variable	AVE
TP	0.556
BS	0.574
EE	0.613
ED	0.566

Source: (SmartPLS, 2025)

Reliability Test

Calculation value is greater than the value of the table, therefore all items of the questionnaire statement can be said to be valid. Reliability tests are used to determine the reliability or strength of the data generated. This reliability test is to assesses the reliability of the variables evaluated based on the questions or statements asked. The reliability test was performed out by comparing *Cronbach's alpha* value with the significant level used. The reliability testing criteria can be stated if *Cronbach's alpha* > 0.7, then the research instrument can be declared reliable and if *Cronbach's alpha* < 0.7, then the research instrument can be declared unreliable (IBM SPSS 23, 2025).

If the composite reliability value of a variable exceeds 0.7, it can be claimed to meet the composite reliability requirements. Table 4 shows that the composite reliability value for all study variables exceeds 0.7. Training programs 0.861, startup business 0.870, entrepreneurial ecosystem 0.924, and entrepreneurship development 0.866. This means that each variable satisfied the composite reliability standard, meaning that the entire variable is very reliable.

Tabel 4. Composite Reliability

Variable	Composite Reliability
TP	0.861
BS	0.870
EE	0.924
ED	0.866

Source: (SmartPLS, 2025)

Cronbach Alpha

Cronbach's Alpha value was 0.835 and *Cronbach's Alpha* based on standardized items was 0.846 for the 23 items tested. *This value of*

Cronbach's Alpha indicates that each statement is at a good level of reliability. Thus, the data obtained from the instruments used are feasible to know and test the problem being studied (IBM SPSS 23, 2025).

Table 5 shows that the Cronbach Alpha value of all the variables in this research is more than 0.6, indicating that the alpha value meets the standard for all constructs to be trustworthy. Training programs 0.808, startup businesses 0.813, entrepreneurial ecosystem 0.948, and entrepreneurship development 0.809.

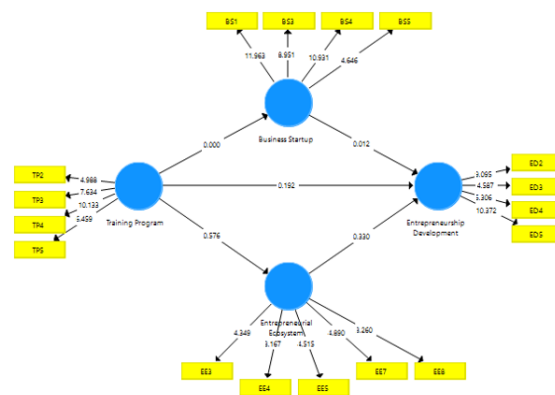
Tabel 5. Cronbach Alpha

Variable	Cronbach's Alpha
TP	0.808
BS	0.813
EE	0.948
ED	0.809

Source: (SmartPLS, 2025)

Inner Model Analysis

In the inner model analysis, the researcher will exist the model goodness test, direct and indirect hypotheses result.

**Figure 3.** Inner Model

Model Goodness Test

The goodness test model combines a pair of tests: R2 and Q2. The R2 value shows whether exogenous variables modify endogenous variables. Due to table 6, the R-Square value indicates the magnitude of the influence of the observed variable. The training program affects

startup businesses by 42% (weak category), entrepreneurial ecosystems by <1% (weak category), and entrepreneurial development by 50% (medium category) (Ghozali & Latan, 2021).

Tabel 6 R-Square Value

Variable	R-Square	R Square Adjusted
BS	0.440	0.420
EE	0.025	-0.010
ED	0.547	0.500

Source: (*SmartPLS*, 2025)

The Q2 value in the structural model test is executed by looking at the Q2 value (Predictive relevance). The results of the calculation show that this model has low predictive relevance.

Tabel 7. Q-Square Value

	SSO	SSE	Q ² (=1-SSE/SSO)
BS	150.000	120.680	0.195
EE	240.000	260.361	-0.085
ED	150.000	117.137	0.219

Source: (*SmartPLS*, 2025)

Hypotheses Testing

The path coefficient score table was utilized to test hypotheses and quantify the effect of factors. Bootstrapping is used to obtain t-statistics or p-values. A p-value of 0.05 implies no direct influence. The impact is considered significant if the t-statistic is more than 1.96, which is 5%. The hypothesis was tested using SmartPLS 3 software, and the test outcome was a path coefficient score.

By the Table 8, the result show that the training program has a positive and significant influence on the startup business with a t-value of 7.801 and a p-value of 0.000, so this hypothesis is accepted, the results of this study are in line with previous research that explained that startup businesses are positively and significantly influenced by the training program. The training program affected the entrepreneurial ecosystem with a t-statistic of 0.560 and a p-value of 0.576, which suggests that the hypothesis was rejected, this results are not in line with previous research that stated that the entrepreneurial ecosystem is influenced and significantly by the training program (Munawar

et al., 2023). Then, the startup business significantly affects the development of entrepreneurship, because it has a t-value of 2.524 and a p-value of 0.012, so this hypothesis is accepted, the results of this study are in line with previous research that stated that entrepreneurial development is positively and significantly influenced by startup businesses. The entrepreneurial ecosystem affects the development of entrepreneurship which has a t-statistic of 0.976 and a p-value of 0.330, so this result is rejected, the findings of this study are not in line with previous research that found that the entrepreneurial ecosystem has a beneficial and substantial effect on entrepreneurial development (Kraus et al., 2023). Finally, with a T-statistic of 5.854 and a P-value of 0.000, this hypothesis is consistent. This research findings are not in line with previous research that found that training programs have a positive and significant impact on entrepreneurial development. The findings show that the training program has an impact on entrepreneurship development, with the startup business and the entrepreneurial ecosystem functioning as moderation, but these findings are not in line with the previous study where the moderation variable of the entrepreneurial ecosystem was not included in the research variable, and the results of the findings show that the training program has an important impact on entrepreneurship development with the startup business as moderation, and the entire hypothesis accepted and can be used for further research.

Tabel 8. Direct Effect

Hypothesis	Original Sample	Sample Mean
BS -> ED (H3)	0.556	0.522
EE -> ED (H4)	0.191	0.127
TP -> BS (H1)	0.709	0.728
TP -> EE (H2)	-0.154	-0.158
TP -> ED (H5)	0.660	0.671

Standard Deviation	T-Statistics	P-Values
0.220	2.524	0.012
0.196	0.976	0.330

0.091	7.801	0.000
0.275	0.560	0.576
0.113	5.854	0.000

Source: (SmartPLS, 2025)

Specific Indirect Effect

Based on Table 9, this result show that training programs impact on entrepreneurship development moderate by startup businesses, with a T-value of 2.452 and a P-value of 0.015, indicating that the hypothesis is accepted. This result show that the training programs impact on entrepreneurship development moderate by entrepreneurial ecosystem, with a T-value of 0.400, and a P-value of 0.690 indicating that the hypothesis is rejected, the results of this study are not in line with previous research that explain that training programs indirectly affect entrepreneurial development positively and significantly (Taopik et al., 2024). From the hypothesis test result, there are hypotheses that are accepted and rejected. Thus, startup businesses significantly moderate the relationship between training programs and entrepreneurial development, and the entrepreneurial ecosystem does not moderate the relationship between training programs and entrepreneurial development.

Tabel 9. Indirect Effect

Hypothesis	Original Sample	Sample Mean
TP -> BS -> ED (H6)	0.394	0.395
TP -> EE -> ED (H4)	-0.029	-0.023

Standard Deviation	T-Statistics	P-Values
0.161	2.452	0.015
0.074	0.400	0.690

Source: (SmartPLS, 2025)

Impilcation

The findings of this study offer both practical and theoretical implications for

entrepreneurship development. While training programs significantly influence both startup formation and entrepreneurial development highlighting the value of structured, skill-focused training and the importance of startup support mechanisms like mentoring and incubation the entrepreneurial ecosystem did not show a significant effect, either directly or as a moderating variable. This suggests that, particularly for student entrepreneurs in the early stages, the ecosystem may not yet function effectively due to limited exposure to key components such as funding access, incubators, or collaborative networks. Theoretically, this underscores that the ecosystem's moderating role is context-dependent and not universally applicable, indicating it may be better positioned as an independent or contextual control variable in future research. Practically, efforts should focus on strengthening training and startup support while gradually building ecosystem infrastructure and expanding student access to real-world entrepreneurial networks and institutional resources.

D. Conclusion

The research show training programs have a positive and significant influence on entrepreneurship development directly and through startup business moderation. This emphasizes the importance of the role of training programs in fostering entrepreneurial skills, especially in the context of newly pioneered businesses. The findings also show that startups function effectively as a moderator variable between training and entrepreneurial development. However, the entrepreneurial ecosystem did not show a significant influence, either directly or as a moderator variable. Thus, entrepreneurship development strategies should focus on optimizing training and support for startup businesses as the main link, when compared to using the entrepreneurial ecosystem as a moderation variable. This is in line with previous research that used a similar topic.

The authors employed pertinent theoretical ideas in this issue, which were expressly

targeted to the situation under consideration. Tables, graphs, and pictures of documents are used to display information in this publication. Furthermore, the researchers employed simple language, consulted a wide range of sources and literature, and collated their findings in a methodical manner. In the discussion part, the researcher does an excellent job of presenting and summarizing the research findings. They also gave supporting ideas based on outcomes from prior publications related to the themes mentioned. The responses to the hypotheses examined are provided in the discussion section.

The researchers were mindful of the research's imperfections. As the outcome, the researcher proposes conducting more study to broaden the reference so that the data gathered is more detailed and comprehensive. Furthermore, the entrepreneurial environment does not have a substantial moderating effect in the link between training programs and entrepreneurship development. The test findings revealed a low significant value in both direct and indirect effects. Therefore, in similar future research, the use of the entrepreneurial ecosystem variable as a moderation variable is considered inappropriate. In contrast, these variables are potentially more effective when used as independent variables that directly affect outcomes, or as control variables that help explain the context or conditions of the entrepreneurial environment in a region. And another findings of this study offer both practical and theoretical implications for entrepreneurship development. On the practical side, training programs significantly influence both startup formation and entrepreneurial development, highlighting the value of structured, skill-focused training and the importance of startup support mechanisms like mentoring and incubation. Theoretically, this study contributes to the ongoing discourse on the role of moderating variables in

entrepreneurship development. Specifically, the results provide empirical evidence that startup businesses function as a more effective and contextually relevant moderating variable than the entrepreneurial ecosystem. This advances theoretical understanding by emphasizing that the moderating influence of ecosystem-related factors may not be universally applicable, particularly in early-stage entrepreneurial contexts such as student entrepreneurs. Instead, startups due to their direct involvement in business formation and immediate value creation serve as a stronger conduit for translating training inputs into entrepreneurial outcomes. Therefore, future research should further refine models of entrepreneurship by differentiating the roles of moderators based on their contextual effectiveness, and consider positioning the entrepreneurial ecosystem as an independent or control variable rather than a moderator.

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