

# The Impact of Business Ecosystem and Lifecycle on Start-up Creation Process – A Case Study of Indonesian Software Technology Start-ups

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## ABSTRACT

Establishing start-ups with a higher level of maturity requires a higher level of techniques, methods, and tools. However, presently established start-ups still encounter difficulties in determining how to quantify their performance and resilience with knowledge of the start-up development process. This study intends to investigate and evaluate the features of the start-up ecosystem throughout its existence. It employed an in-depth case study through interviews and observations to better understand the start-up ecosystem and lifecycle of Indonesian software technology start-up companies. This study utilized a qualitative approach based on multiple explanatory case studies. By providing a conceptual understanding of eight fundamental elements of the start-up ecosystem and lifecycle processes, this study contributes to the identification and investigation of start-up enterprises. The findings provide insight into how to describe start-up enterprises through a multiple-case study. This study discovered that each stage of the start-up lifecycle has a distinct emphasis on improving the ecosystem in order to create a more resilient start-up company.

## KEYWORDS

Start-up business  
Start-up ecosystem  
Start-up lifecycle  
Start-up creation

## INTRODUCTION

Due to the rapid advancement of technology, today's youths are competing in creating various inventions in technology, commonly referred to as start-ups. A start-up is seen as a new endeavor to promote a country's economic growth by carrying out changes in innovation and supporting new business prospects with a proper business strategy (Blank, 2010). In Indonesia, especially, new start-up enterprises with various technologies and categories arise every year. According to data from the start-up ranking, this country has over 2,000 start-ups and has risen to the top five nations for the development of start-ups. A number of Unicorn start-ups are developing in Indonesia, including Bukalapak, Tokopedia, Go-Jek, Blibli, Traveloka, and others (Startup Ranking, 2020).

Regardless of their capability, numerous early-stage startups fail within two years for a variety of reasons, such as the inability to learn from mistakes regarding users and product development and the absence of a proper problem-solving strategy (CB Insight, 2021; Giardino, Wang, and

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Abrahamsson, 2014; Paternoster et al., 2014). This failure also occurs in some start-up companies in Indonesia. Due to the lack of commercialization of products during the development and establishment process and lag behind other competitors, some start-ups are forced to close their businesses (Burhani 2015; Linangkung, 2016).

A previous study in the context of Indonesia interviewed three digital start-ups that had been established for three years. This study discovered that the success factors of start-up performance in this country depend on the start-up team, funding, and business model (Jaya, Ferdiana, and Fauziyati, 2017). However, the discussion on a strategy to measure start-up performance and resilience remains untouched by previous research.

To maintain and enhance start-up resilience at each development step, an appropriate ecosystem and awareness of the start-up lifecycle are imperative (Salamzadeh et al., 2015; Tripathi et al., 2019). Specifically, this would have an effect on the need to initiate software operations. A discrete life-cycle phase is needed to aid start-ups in establishing the right infrastructure for their specific circumstances (Berg et al., 2018). Thus, this present study tackles the appropriate ecology at each stage of the start-up lifespan.

This study attempts to address these questions, "How can a new start-up grow in each lifecycle?" and "Why does each start-up lifecycle require a suitable ecosystem?" The purpose of this research is to look into which software technology may be adopted by a new venture or start-up, with a good grasp of the characteristics of start-up formation using the integration of start-up ecosystem and lifecycle. It is conducted on a sample of two Indonesian software start-ups that have passed the bootstrap, seed, and creation stages and have been operating for more than a year.

The remaining parts of this article are arranged as follows. In the second section, the theoretical background and theories supporting this study are examined. The third and fourth sections present methodology and data analysis results, respectively. The fifth portion presents results and practical implications while the sixth segment discusses future prospects for study.

## LITERATURE REVIEW

### Start-Up Creation Theory and Concept

Joseph Schumpeter (1937) defines start-up enterprises as those that demonstrate entrepreneurship via innovation and creativity. The purpose of entrepreneurship in economic growth is to combine productive elements that bring innovation and creativity components together and manage productive capital. According to Van de Ven (1984), start-ups are founded on the characteristics of new organization founders and promoters. A start-up is the first stage of an entrepreneurial venture where the founding members are seeking a reproducible and scalable business strategy (Bruyat and Julien 2001). However, the concept of start-up originally appeared in a paper published by Errand Camel (1994). Camel (1994) maintained that the creation of start-up products is motivated by five goals: lowering the amount of time, boosting invention, maximizing productivity, decreasing manufacturing costs, and reducing development expenditures.

With the fast expansion of the Information and Communication Technology (ICT) industry, numerous new companies have formed every year. A start-up is a company or team's endeavor to change the world by producing benefits via advancements. Steve Blank (2010) proposed the start-up theory, by explaining that a start-up is a transient company seeking a profitable and repeatable business model. In 2011, Eric Ries defined a start-up as any organization that seeks to develop a new product or service despite considerable unpredictability.

Start-up activities cover the process of identifying, developing, and implementing sustainable and scalable business models in order to capitalize on market possibilities (Ehrenhard et al., 2017). The chances of successful start-ups can be significantly increased with creativity and innovation (Jaya et al., 2017). Start-up practices vary widely from existing companies to new ventures (Criscuolo, Nicolaou, and Salter, 2012). However, previous research has also confirmed that start-ups have insufficient organizational structures, unproductive project management, insufficient coordination with the non-governmental sector, a lack of communication with stakeholders, and discordant political behavior (Khalil Zadeh et al., 2017). Thus, to establish a profitable start-up, the founding members should maintain and expand their expertise in order to grow (start-up creation) (Dessyana et al., 2017). The start-up ecosystem and the start-up lifecycle both depict the start-up creation process.

### **Start-Up Ecosystem**

Previous studies have identified eight critical aspects (with an emphasis on software-intensive products) that give impacts on start-up creation. The aspects are entrepreneurship, finance, economy, technology, human capital, education, demographics, and supporting factors. These aspects greatly affect the start-up ecosystem of MVP development. In the designing phase, for example, founders and developers must transform their visionary ideas into a business strategy. Previous studies have also implied that supporting elements, such as incubators and accelerators, may have an impact on MVP development by providing aspiring entrepreneurs with the knowledge and training needed in order to establish an ideal product-market fit (Tripathi et al., 2019).

Organizational innovations have a role in developing creative ecosystem regions in start-ups. Previous research on organizational innovation ecosystems suggested that managers should consider dynamic capacities, innovation network development, and developing innovation ecosystems into innovative business efforts and evaluations. It aims to increase innovation success and to speed the creation and manufacture of a new product. It is important to achieve dynamic capabilities to make the company survive and grow by establishing new products to improve innovation efficiency and effectiveness. It will help the start-up ecosystem to solve its problems and become evolutionary (Feng et al., 2019).

According to Kollmann et. al. (2019), understanding the start-up ecosystem may assist entrepreneurs and policymakers to identify important players and resources required to maintain innovation and set priorities appropriately. It is expected that through fostering creativity and cooperation, start-ups would be able to develop their leading products and services. In start-up innovation, Lean Startups lead to the development of start-up software and activities in the ecosystem as one of the priorities for a successful start-up business (Melegati, Guerra, and Wang, 2020). Besides, managers' history, founders' backgrounds, and market demands of a successful start-up have a big influence on the start-up ecosystem.

### **Start-Up Lifecycle**

According to Fukugawa (2018), the company lifecycle is the process through which entrepreneurs plan to establish their enterprises, identify possible markets, and fine-tune their business strategies. Previous studies have affirmed that enabling factors, such as incubators or accelerators, may have an impact on start-up creation and growth. The performance and characteristics of the incubator can help the start-up to achieve success in each lifecycle.

In the start-up lifecycle, the founders' education level will impact the business in raising more funds. Previous studies confirmed that the CEO's ability as an entrepreneur with a high level of education in managerial and finance can facilitate start-ups to attract more investors (Talaia, Pisoni, and Onetti, 2016). The CEO's education level has a considerable association with the start-up's capacity to attract financing, and the causal relationship is significantly stronger if the CEO possesses an MBA.

A common start-up has 2 to 6 founder-investors, but as the business grows, additional employees are anticipated. It will influence the basic requirement of software processing as the process depends on the stage of the start-up lifecycle. On the other hand, a different life cycle stage may assist start-ups in certain situational circumstances in identifying the suitable needs for engineering approaches. Focusing on the start-up lifecycle may aid in meeting consumer wants and desires since each start-up lifecycle may provide unique difficulties and environments (Berg et al., 2018).

The start-up lifecycle can be classified into three stages: the bootstrap stage, the seed stage, and the creation stage. During the bootstrap stage, start-ups that show perfect opportunity, financial management experience, team building and management, and customer satisfaction are on the right track to success. At the seed stage, they are distinguished by teamwork, product invention, business breakthrough, company valuation, and the discovery of support systems, such as accelerators and incubators as an investment for them to expand (Salamzadeh et al., 2015). This stage is a challenging and unexpected period for most start-ups. Many of them have failed during this period because they are unable to locate funding sources, forcing them to transit to low-profit, low-performing enterprises in the best-case scenario. Then, the development process occurs during the creation stage when the company is able to sell its products, enter the market, and recruit its first workers (Salamzadeh et al., 2015). In this stage when an organization or company is formed, corporate finance is believed to be the primary source of funding, and venture capital may help a company's development process.

## RESEARCH METHOD

### Research Strategy

This study employed an explanatory multiple-cases qualitative method. The qualitative research approach is defined as a model that emerges in a natural setting, allowing researchers to develop a level of information through active participation in genuine experience (Creswell and Plano Clark, 2017). Because it conceptualizes and establishes new ideas, qualitative analysis is less formal (Bossuyt et al., 2018). In addition, a qualitative study is seen as an improvement and expansion that occur in a natural context and allows researchers to attain a level of depth via strong involvement with real-world experience (Creswell and Plano Clark, 2017). This technique is used for thoroughly describing and analyzing given phenomena based on a large amount of qualitative data (Eisenhardt, 1989). This study employed the qualitative approach because it can fully identify and assess a particular phenomenon in order to respond to and solve the question of "How is the process of start-up creation with an understanding of the start-up life cycle and ecosystem?" (Yin, 1994).

The data of this study was obtained from in-depth research on two Indonesian software technology start-ups. The study analyzed the start-ups' ecosystem and lifecycle through interviews and observations with start-up entrepreneurs. Experimental participant observations, personal interviews, and secondary information may aid in developing an empirical understanding of the software technology start-ups at every step of their lifecycle.

Each survey respondent was asked about the goals of the eight start-up ecosystem approaches at every stage of the start-up lifecycle. To grasp and answer the research's major issue and purpose, the ideas were separated into various sub-research topics (see Table 1).

Table 1. Sub-research issue of the start-up ecosystem and lifecycle stage

No.	Construct	Sources
1.	Entrepreneur	What are the personal characteristics of the founding team?
2.	Technology	What role does technology play in bringing this product to its full potential?
3.	Human Resource	What expertise does each team member require to produce the product?
4.	Finance	How can start-ups raise capital?
5.	Education	What is the degree of education of each actor in the start-up?
6.	Supporting Factors	When it comes to building a successful business, what supporting factors play the most significant roles?
7.	Demography	What features or identities define the start-up market?
8.	Market Adaptation	What channel is utilized to access the product of the start-up?

### Data Collection

The data of this study was obtained from a random sample of two Indonesian software technology start-ups by utilizing observations, interviews, and internet documents such as websites, social media platforms, blog posts, and others. The data was validated through observations of business actors who were directly involved in the business and secondary research from online documents such as social media and business websites. The data collection occurred in three steps. The data was initially acquired by interviewing each actor of the start-ups. Second, the researchers monitored how participants respond to opinion, motive, and tone of voice-based questions. Last, a cross-check on each document was conducted to preserve the exact foundation of proof and search for data saturation from PT. XXX and PT. YYY as an incubator or accelerator-founded startup.

### Data Analysis

Using grounded methodological principles and natural language coding and categorization, the data was interpreted inductively (Miles and Huberman, 1984). To compare the start-ups, both sets of data were separated into qualitative and open-coded data processing programs at the level of the smallest sense unit (Strauss and Corbin, 1998). The code addressed a variety of startup ecosystem subjects, including entrepreneur views, technical innovation, financial funding, market adaption, human capital, enabling factors, education, and demography. To restrict the process of wide classification, the data was structured using codes and categories associated with the original cycle-ecosystem relationship.

## RESULTS

Table 2. Interviewees' detail information

Start up	Interviewee Position	Employee Size	Business Domain	Age (Years)	Product Type	Incubator/ Accelerator
PT. XXX	Vice President	113	Workforce Solution	3	Mobile + Website	Antler
PT. YYY	Business Director	10	Agricultural Technology	5	Mobile	LPIK

The units analyzed in the start-up sample were selected randomly to reflect each start-up stage in terms of specific data (see Table 2). Accelerator and incubator programs were used to classify each software technology start-up. While the majority of the incubator programs are based on academic spin-offs, in university spin-offs, companies are founded based on student study (academic research), with the majority of founders having an experience in software development or business. Furthermore, regarding solo entrepreneurs, start-ups develop products by looking at several phenomena that have an impact on society.

During the interview process, we assumed the positions of the vice president of technology and the business director, respectively. The interviewees had at least one year of experience launching a company in order to gain insight into early-stage start-ups, market entrance, and the perspective of enterprises in Indonesia. The influence of the start-up ecosystem can enhance the understanding of each step of the start-up life cycle.

Table 3. Each stage of the start-up ecosystem and lifecycle

Start-up Ecosystem	Start-up Lifecycle Stages					
	Bootstrapping		Seed		Creation	
	PT. XXX	PT. YYY	PT. XXX	PT. YYY	PT. XXX	PT. YYY
Entrepreneurship	The founders have previous experience in start-up development	The founders don't have previous experience in start-up development	The founders have to look for some potential accelerators from outside Indonesia	The founders must seek out a viable incubator that can fund research	The founders are looking for a venture capital	The founders are looking for some events to get fund
Technology	The company builds the technology based on the website with minimum variable	The company builds the technology along with a hardware development	Some features are added to the company's internet product	The company has added new capabilities to its mobile device	The company develops products for mobile	The company develops website products for marketing purposes

Table 4. Each stage of the start-up ecosystem and lifecycle (continued)

Start-up Ecosystem	Start-up Lifecycle Stages					
	Bootstrapping		Seed		Creation	
	PT. XXX	PT.YYY	PT. XXX	PT.YYY	PT. XXX	PT.YYY
Human Capital	Competence and commitment of the three founders	Competence and contribution of the eight founders	The founders recruit team members depending on their skills	The founders hire team members based on skill selection prioritizing a friend	The founders extend each division's squad depending on talent choices	The founders select team members depending on their skills
Financial Funding	Accelerator grants	Incubator grants	Accelerator grants	Grants	Venture capital series A	Grants
Education	The founders graduated from the same master's program	The founders were from a different program	The team members have different educational levels	The team members have different educational levels	The team members have different educational levels	The team members have different educational levels
Supporting Factors	Networking and community	Incubation	Accelerator	Incubation	Venture capital	Lecture and Incubation
Demography	Companies that need man-power in logistics	Farmers	Companies in need of market research	Farmers	Companies in need of selling management	Farmers
Market	Community	Incubation	Webinar	Events	Digital Marketing	Events

## DISCUSSION

Brush (2006) explained that at the bootstrap stage, a start-up is often created in less than two years and portrays itself as a growing enterprise by proving product viability, cash management skills, team and management engagement, and client acceptance. In this phase, the start-up must design and comprehend its company plans in order to employ its items and identify the most lucrative market opportunities. Existing start-ups have the same ecosystem characteristics; however, the entrepreneurial aspect of each founder influences the success of start-ups. The founder of PT. XXX, for example, has prior product development expertise and can immediately contribute to the next stage. In addition, technology and supporting variables play a crucial role in the development of a start-up ecosystem during the bootstrap phase. These initiatives provide PT.XXX, which participated in the Singapore accelerator program, with further possibilities and help. PT. YYY continues to get support from the regional incubator (See Table 3).

The seed stage is determined by the first capital employed in the production and/or provision of the product or service. Entrepreneurs seek funding structures such as accelerators, incubators, small business growth centers, and hatcheries to aid this process. Start-up founders or co-founders with a higher degree of education are more equipped to build networks and acquire funds (Talaia, Pisoni, and Onetti, 2016). This seed phase is frequently characterized by cooperation, prototyping, market entrance, and company evaluation (Salamzadeh et al., 2015). The impact of each member's education and human resources will improve the growth of the start-up since the business requires skilled and educated people resources that may be sourced by the team.

During start-up creation, a startup phase is developed, and corporate financing is the key source of funding. By financing the enterprise, venture capitalists can aid the development phase (Salamzadeh et al., 2015). The enormous number of investors and cash gained by start-ups will position them as market leaders and cause them to dominate the current market (Berg et al., 2018). PT. XXX must seek venture funding whilst PT. YYY is still concentrating on a number of market entry events. In conclusion, in this stage, start-ups must concentrate on acquiring venture capital (financial funding), gaining a grasp of demography, and launching into the market (market adaptation).

In the final analysis, this comparison reveals how the eight pillars of the start-up ecosystem might vary amongst start-ups. Even if a start-up is founded early, the variables of the start-up ecosystem, such as entrepreneurship, technology, human capital, financial founding, supporting factors, and the market, can accelerate its growth. The expertise of start-up founders and start-up supporting variables is a crucial role in the growth of start-ups at each level, from the bootstrap to the creation stage.

## CONCLUSION

This research focuses on identifying and investigating the relationship between the start-up ecosystem and the lifecycle of software technology startups in Indonesia. The results present new insight that start-ups must be prepared in addition to the characteristics of the start-up itself (Salamzadeh et al., 2015). Factors of the start-up ecosystem will affect its development significantly in addition to the characteristics in each lifecycle. The development of start-ups can be seen in the current start-up stage and the existing ecosystem. The results of this study also imply that each stage in the start-up lifecycle requires a minimum start-up ecosystem to develop a business. Furthermore, the founders' capability in management and technology to address potential markets in the start-up ecosystem will result in innovation and a successful business (Feng et al. 2019; Kollmann et al. 2019; Tripathi et al. 2019).

## MANAGERIAL IMPLICATION

This study intends to identify and analyze the development of new start-ups in Indonesia, especially in the field of software technology. The results can be utilized by practitioners to enhance and comprehend the existing state of start-ups prior to launching a new one. There are several implications that we suggest to leverage the start-up:

1. Experienced Founders: A founder or co-founder with experience in previous start-ups may give a great influence on the understanding of potential markets and user behaviors during the process of creating a new start-up. Experienced founders in the entrepreneurial aspect



and their capability to understand ideas in order to generate more market prospects can help start-ups achieve their goals faster in every start-up ecosystem.

2. Financial Funding: Start-up founders must have the knowledge of how to financially fund their business. It includes looking for incubators and accelerators in addition to helping with funding as well as building connections for the growth of the start-up.
3. Supporting Factors: Start-up founders should have a connection with several potential investors. The founders must choose a suitable business incubator or accelerator to accelerate product development.
4. Technology: To build a new start-up, the founders should be aware of potential markets and the purpose of their technology. The technology idea and product need to solve and address the problem of its niche market. Also, the product must be the only one in the market to reduce competitiveness.
5. Demography, Niche market, and User behavior: A start-up should know what are the goal of the company and the purpose of its product. Furthermore, it needs to understand how to make the market recognized and desired by analyzing its user behavior.

Finally, this study recommends start-ups have an understanding of each lifecycle stage and the goal to achieve. Each stage of start-up creation requires appropriate steps from the ecosystem that must be prepared, starting from the bootstrapping stage, seed stage, and creation stage.

## LIMITATIONS AND FUTURE RESEARCH

Despite its valuable implications, this investigation has a number of limitations. This research solely used comparative case studies to investigate and comprehend the function of the start-up ecosystem at each stage of the lifespan. For greater comprehension, future studies should conduct a more comprehensive analysis. In addition, they should emphasize the importance of human capital in offering the required business and technology specialists. Additionally, next researchers are suggested to explore how prospective members might acquire the new abilities needed for the efficient enhancement of the product. As a result, more studies may be required as the next step to find, investigate, and evaluate other components in a broader group of creative technological start-up businesses in order to establish a new start-up that may be a university spin-off.

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