









# “Barriers to technology innovation among nascent entrepreneurs in deprived areas”

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# BARRIERS TO TECHNOLOGY INNOVATION AMONG NASCENT ENTREPRENEURS IN DEPRIVED AREAS

## Abstract

Entrepreneurs in economically challenged areas frequently rely on financial and technical incentives and aid from public and local governments to embrace and apply new technology. This study aims to investigate the challenges to technology innovation that these businesses face. Based on a survey of 422 nascent entrepreneurs in Banjarmasin, Indonesia, an empirical model of the determinants influencing the adoption of technology innovation is developed. The current study used factor analysis as a methodological tool to identify the critical impediments to technology innovation. The study's findings highlighted five major barriers. More financial resources are needed: as nascent entrepreneurs in these locations frequently need help to get the necessary funds to support their creative endeavors. There is a need for more skilled individuals: new businesses need help to locate and keep employees with the appropriate technological skills. Unfavorable economic conditions exacerbate the problem by making it difficult for new entrepreneurs to access markets and resources that could support their innovative efforts. Furthermore, there needs to be more collaborative efforts, with nascent entrepreneurs in these places frequently needing more collaboration and networking possibilities, expanding their potential to develop. Finally, the study identifies insufficient government support as a barrier to assisting entrepreneurs in adopting novel technologies. These hurdles can be efficiently overcome by government assistance, private-sector investment, and collaborative efforts among nascent entrepreneurs.

## Keywords

technology innovation, nascent entrepreneurs, human resources, government support, emerging economy

## JEL Classification

L26, J24, O32

## INTRODUCTION

Implementing technology innovation in small businesses is hampered by resource constraints like a need for specialized knowledge and certainty about return on investment. Notwithstanding these challenges, small enterprises must adopt technology to survive and enhance their competitive advantage. Addressing these difficulties requires the careful selection of appropriate technologies and the flexibility to adapt. This is crucial to balance the possible benefits, such as increased efficiency and enhanced customer experiences.

Historically, entrepreneurs in underdeveloped nations operated in relatively protected economic environments, frequently characterized by limited international competition and a concentration on domestic markets. This protected environment afforded protection and insulation from the intense competition in more developed economies. However, this situation has changed significantly in recent years due to globalization and technological development.

The transition of businesses in less developed countries from closed economic systems to globalized and highly competitive markets highlights the imperative for adaptability. Given the intensifying competition, nascent entrepreneurs are pushed to utilize innovation and technology more. Consequently, adopting a comprehensive strategy involving a wide range of stakeholders is crucial to overcome obstacles and cultivate a conducive atmosphere for entrepreneurship development.

## 1. LITERATURE REVIEW

Globalization has interconnected economies and markets to an unprecedented degree, eliminating geographical boundaries and establishing a fiercely competitive global marketplace. Due to this increased competition, entrepreneurs in underdeveloped nations face formidable obstacles. The historical protection that shielded them from international competitors has eroded, necessitating reevaluating their strategies and methods. In this new economic environment, nascent entrepreneurs must not only survive but also flourish if they want to succeed. These entrepreneurs must adopt a proactive attitude toward innovation and technological adoption to compete globally (Akpan et al., 2022; Meekaewkunchorn et al., 2021; Mushtaq et al., 2022). Developing novel products and adopting innovative technologies is no longer a choice but a necessity for their survival and expansion.

Innovation and technology adoption are potent instruments for boosting a company's competitiveness (Kurmanov et al., 2019; Jalil et al., 2022; Skare et al., 2023). They allow business owners to differentiate their offerings, enhance operational efficiency, and enter new markets. In the face of intensified competition, nascent entrepreneurs can carve out a niche by developing distinctive products that meet shifting consumer demands or address unmet needs. In addition, adopting innovative technologies can enable these enterprises to streamline processes, reduce costs, and maximize resource utilization (Wirdiyanti et al., 2022).

The transition of enterprises in underdeveloped nations from protected economic environments to globalized and competitive markets emphasizes the necessity of adaptation. With increased competition, nascent entrepreneurs must embrace innovation and technology adoption as fundamental success drivers. With global competition, this shift necessitates a holistic approach involv-

ing multiple stakeholders to surmount obstacles and create an environment conducive to entrepreneurial growth. Although technical product and process orientations are primary sources of technological innovation, there needs to be more research on comprehending external and internal knowledge sources by nascent entrepreneurs (Hervás-Oliver et al., 2021). These nascent entrepreneurs face unique challenges compared to established entrepreneurs due to their smaller scope and limited resources (Holzmann et al., 2020; Vu & Nguyen, 2022). While innovation in industrialized economies is well-researched, nascent entrepreneurs in emerging economies lack sufficient attention, particularly concerning the obstacles they face in nurturing innovation (Etemad, 2020; Epede & Wang, 2022; Smallbone et al., 2022).

### 1.1. Technology innovation and nascent entrepreneurs

Throughout history, there has been significant diversity in official attitudes toward nascent entrepreneurs across and within countries (Cavich & Chinta, 2022; Fritsch et al., 2022). The advent of new technology-based small and medium companies (SMEs) in the United States (Mustafa & Treanor, 2022; Bravo et al., 2022) and Europe has sparked debate on the need for government assistance for nascent entrepreneurs (Gaies et al., 2021; Jalo et al., 2022).

Research has shown characteristics that influence firm-specific innovation barriers (Indrawati et al., 2020). These issues include cost constraints, human resources, organizational culture, information flow, and government policy, which limits their ability to overcome barriers to innovation (Thukral, 2021) related to engaging in novel or unconventional practices (Rajiani & Ismail, 2019).

The term innovation refers to both technological and organizational breakthroughs. Technology innovation has two primary dimensions: product innovation, which refers to changes in products or the

introduction of new products into the market, and process innovation, which refers to changes in manufacturing processes or the adoption of new equipment (Ratten, 2020; Nawawi et al., 2022). Managerial and system innovation is based on changes to a company's organizational structure and administrative processes, specifically in management or administration, purchasing, and commercial/sales. These changes are mostly related to management functions rather than the company's core activity (Satispi et al., 2023).

Barriers to innovation can be divided into two types: external obstacles are connected with high operational environment risk. In contrast, internal barriers are viewed as challenging to overcome and impair innovation adoption. Obstacles such as limited financial resources, insufficiently skilled personnel, a precarious financial situation, and high levels of risk, for example, may be perceived as formidable barriers to overcome, limiting a corporation's innovation efforts (de Moraes Silva et al., 2022).

Many factors influence the firm's external environment, including global competition, government policy, and economic uncertainty (Hameed et al., 2021; Thukral, 2021). The problems above necessitate organizations successfully communicating innovation's value as a crucial business strategy preserving market competitiveness (Loureiro et al., 2020).

Expertise in innovation policies and their implementation gained in wealthy economies may be limited in less developed countries. Disparities in the corporate environment, political structure, and cultural issues contribute to this constraint (Kaplinsky & Kraemer-Mbula, 2022). In the case of Indonesia, the presence of central planning and regional development discrepancies offer hurdles for nascent entrepreneurs, limiting their potential to engage in innovative activities. As a result, it is critical to customize rules to the unique characteristics of specific players by employing the most effective technique for promoting innovation.

## 1.2. Factors affecting technology adoption

Numerous studies highlight the vital role of nascent entrepreneurs in commercializing novel products and disseminating innovative technologies. However,

existing research primarily concentrates on internal factors like technology stress, impacting innovation outcomes, successes, and failures (Jurek et al., 2021; Nasiri et al., 2022; Chaudhary et al., 2022). As a result, more literature needs to examine the influence of external, institution-based factors on innovative activities among nascent entrepreneurs, particularly in emerging economies such as Indonesia (Basuki et al., 2021; Trinugroho et al., 2022).

Government support is a prominent factor in technology innovation (Mohamad et al., 2022). It can provide entrepreneurs with financial, technical, and policy support (Liu et al., 2022). This can help entrepreneurs overcome the financial and knowledge barriers to innovation. The government can also establish technological innovation-friendly policies, such as tax breaks and subsidies. This can motivate entrepreneurs to invest in innovative technologies. For example, Zhang et al. (2022) discovered that government policies that provide incentives for innovation, such as tax exemptions and subsidies, can positively affect technology innovation. However, government support must be clear and well-defined. If the government's objective is ambiguous, it can create confusion and uncertainty among business owners, resulting in a lack of trust and diminished motivation to implement new technologies (Indrawati et al., 2020).

The relationship between economic conditions and technology innovation is crucial to entrepreneurship. A stable, expanding economy provides the financial resources necessary for entrepreneurs to incorporate new technology (Kiani et al., 2022). The dynamics of the market, which drive technology innovation, are inextricably linked to economic conditions (Akpan et al., 2022). An expanding economy increases consumer demand, which prompts entrepreneurs to develop new goods and services to meet evolving preferences (He et al., 2020). In an ever-changing market, technology innovation helps entrepreneurs compete. Economic vitality and innovation enhance the responsiveness and dynamism of entrepreneurs, illustrating the catalytic effect of market forces (Teirlinck, 2022). A favorable economic climate attracts talent and expertise, augmenting the entrepreneurs' population with advanced technology specialists. This influx of qualified specialists enhances technology assimilation and incor-

poration, allowing businesses to utilize innovation for competitive advantage (Ramaditya et al., 2022). It is believed that favorable economic conditions encourage entrepreneurs to take risks. In a flourishing economy, entrepreneurs are encouraged to utilize technology because it can increase market share and performance (Arabeche et al., 2022).

Jahangir et al. (2022) found a positive relationship between economic growth and technology innovation in developing nations. Liu et al. (2022) examined the connection between China's economic development and technological innovation. The study revealed a positive correlation between economic development and technological innovation. Promoting economic development through government policies can positively impact innovation (Khan et al., 2022).

Setini et al. (2020) assert that a sufficient comprehension of labor and business ownership can facilitate the development of innovative business concepts. Employees with a higher level of education can assimilate new technologies quickly and effectively (Szczepańska-Woszczyzna & Gatnar, 2022). Moreover, organizations can identify and capitalize on emerging technology opportunities to enhance their competitive advantage (Vahdat, 2022). According to Fritsch et al. (2022), within the Polish industry, similar perspectives were held, asserting that human resources represent the most significant innovation barriers. These obstacles include inadequate skills, formal competencies and qualifications, and a lack of motivation to innovate. Torres de Oliveira et al. (2022) determined that the primary impediment to innovation is primarily attributable to the organizational need for additional human resources. According to Klein et al. (2022), establishing a comprehensive communication network among corporate partners can boost human resource performance and innovation.

Several studies have demonstrated the positive correlation between human resources and technology innovation among entrepreneurs. Kutieshat and Farmanesh (2022) discovered a positive correlation between human resources and technology innovation. Marchiori et al. (2022) revealed a positive correlation between human capital and technology innovation. Kiani et al. (2022) found that the relationship between entrepreneurship and technology innovation is positive. These studies offer additional em-

pirical support for the correlation between human resources and technology innovation among entrepreneurs. Human resources can significantly stimulate technology innovation and economic growth by equipping entrepreneurs with crucial skills and knowledge.

Business partnerships provide entrepreneurs access to resources that might otherwise be unavailable: financial assets, technical expertise, and market knowledge (Toxopeus et al., 2021). A collaboration between a new entrepreneur and a more prominent firm can provide access to financial reservoirs for innovation funding. Furthermore, the collaboration can use the larger company's technology capabilities in creating and commercializing inventions (Katila et al., 2022). This partnership also allows for easier access to the partner's market intelligence, which aids in finding and targeting potential innovative consumers. Besides, entrepreneurs can reduce the risks of innovation by working together (Vivona et al., 2023), and business partnerships help new entrepreneurs build a network of relationships, providing doors to resources, market knowledge, and opportunities (Battisti et al., 2022).

Several studies confirm that business partnership positively relates to technology innovation for nascent entrepreneurs. Organizations that formed strategic alliances were more likely to launch new products and services (Klein & Todesco, 2021). Martínez-Cháfer et al. (2023) discovered that enterprises in a cluster were more likely to innovate. Also, companies that collaborate with universities are more likely to innovate (Apa et al., 2021).

The funding issue has been identified as a significant obstacle to innovation (Molina-Garcia et al., 2023). The presence of inherent uncertainty in the context of innovation may give rise to tensions between innovators and donors. Conflicts may arise between the imperative to foster innovation and the risk aversion exhibited by managers and owners (Alrawad et al., 2023). This predicament is especially pronounced among business owners, who face constraints on their financial resources, rendering them particularly susceptible to such conflicts. This risk, coupled with the substantial costs associated with monitoring and the intricacy of assessing the feasibility of innovation, exacerbates the challenges associated with funding innovation (Lorenzo et al., 2022). In the



context of technological innovation, entrepreneurs are more likely to implement innovations if they have sufficient funds to cover the costs of the innovation and if they believe the innovation will benefit their business (Zhu & Tao, 2022).

Several studies have confirmed that funding availability is critical for technology innovation. Bradley et al. (2021) assert that businesses with access to venture capital are more likely to engage in innovative endeavors. Hajjghasemi et al. (2022) showed that countries with well-established financial systems are likelier to foster innovative enterprises. According to Odilovich and Nuraliyevich (2021), government-funded enterprises are more likely to innovate.

In Indonesia, the prevalence of nascent entrepreneur-led enterprises positively affects local economic development, as evidenced by increased labor force participation, investment, and output metrics (Widyanti, 2020). However, proprietors and employees of nascent businesses in the region require more excellent technological proficiency (Basuki et al., 2021).

Thus, this study aims to investigate the barriers that impede technology innovation among nascent entrepreneurs in Indonesia, a country with an emerging economy, and to examine the factors that influence the adoption of technology innovation.

The present study formulates the subsequent hypotheses:

- H1: Government support is positively related to technology innovation for nascent entrepreneurs.*
- H2: Economic conditions are positively related to technology innovation for nascent entrepreneurs.*
- H3: Human resources are positively related to technology innovation for nascent entrepreneurs.*
- H4: Business partnership is positively related to technology innovation for nascent entrepreneurs.*
- H5: Funding availability is positively related to technology innovation for nascent entrepreneurs.*

## 2. METHODOLOGY

This cross-sectional study investigated the factors influencing technology innovation among nascent entrepreneurs in Banjarmasin, Indonesia. Using a snowball sampling method, a web-based survey was conducted from June 15, 2022, to February 15, 2023. Five hundred individuals participated, and 422 responses were deemed valid, resulting in a response rate of 84.4%. The study used a seven-point Likert scale to measure respondents' perceptions of the following factors.

Government support was measured by three items: the provision of minimal financial aid by the government (Indrawati et al., 2020), the absence of government-sponsored training programs for technology innovation, and the lack of clarity regarding the intended beneficiaries of government assistance for innovative equipment (Zhang et al., 2022).

Economic conditions were measured by three items: challenges encountered in obtaining innovative equipment (Setini et al., 2020), the volatility of the economy (Arabeche et al., 2022), and the limited purchasing power (Martínez-Cháfer et al., 2023).

Five items measured human resources: the difficulty in recruiting a high-quality workforce (Mohamad et al., 2022), the presence of an incompetent workforce (Fritsch et al., 2022), resistance among the workforce toward technology innovation (Toxopeus et al., 2021), resistance among business owners toward technology innovation (Katila et al., 2022), and the lack of knowledge among business owners (Vivona et al., 2023).

Business partnerships were measured by the absence of suppliers as business partners (Apa et al., 2021) and the absence of marketing agencies as business partners (Battisti et al., 2022).

Availability of funding was measured by three items: the substantial expenses associated with technology innovation (Liu et al., 2022), challenges in securing loans from financial institutions (Molina-Garcia et al., 2023), and the presence of high-interest rates (Zhu & Tao, 2022).

Technology innovation was measured by six items: the ability to generate products with innovative characteristics (Kiani et al., 2022), the utilization of cutting-edge technology for the development of new products (Marchiori et al., 2022), the swiftness of new product development (Lorenzo et al., 2022), the competitiveness of technology (Ramaditya et al., 2022), the incorporation of up-to-date technology in the production process (Klein et al., 2022), and the rapid evolution of processes, techniques, and technology (He et al., 2020).

The data analysis consisted of two phases. The first phase used descriptive statistics to describe the attributes of the research participants and their overall perceptions of the variables. The second phase used factor analysis to reduce the complexity of the factors by retaining loadings of 0.50 or higher for each factor (Hair et al., 2020). Cronbach's alpha coefficients were used to assess the reliability of the analyses, and the probability associated with each path of direct and indirect impacts was determined through hypotheses testing. Cronbach's alpha coefficients must surpass the threshold of 0.60 to be reliable (Bonett & Wright, 2015; Shrestha, 2021). The hypotheses were assessed by computation of t-statistics and p-values to determine the impact of various factors. According to Hair et al. (2020), the acceptance of the hypothesis occurs when the p-value is below 0.05.

### 3. RESULTS AND DISCUSSION

Nascent entrepreneurs have implemented subsequent technological advancements (Table 1). A significant proportion of nascent entrepreneurs (26.5%) employ technology to enhance existing processes, while a slightly smaller percentage (22.7%) utilize technology to generate novel products and explore alternative distribution channels. The implementation of technology in new processes is observed to be at its lowest level, accounting for 12.3%. This finding suggests that many nascent entrepreneurs still require preparedness to utilize technology to develop innovative products.

Table 2 displays the various lines of business pursued by the nascent entrepreneurs. The Batik home industry, which specializes in local clothing production called *Sasirangan*, constitutes the largest sector, accounting for 31.8% of the overall industry composition. Following this, handicrafts make up 20.4% of the industry, while food processing comprises 18.5%. Souvenirs represent 15.6% of the industry, and jewelry is the smallest segment at 13.7%.

Table 3 presents the results of the descriptive characteristics and construct reliability measures. Based on the findings presented in Table 3, nascent entrepreneurs perceive funding availability (mean

**Table 1.** Technology innovation implemented

Technology Innovation	Frequency	Percent	Cumulative Percent
New processes	52	12.3	12.3
New products	96	22.7	35.1
New distribution channels	96	22.7	57.8
Minor improvement to the current product	66	15.6	73.5
Minor improvement to the current process	112	26.5	100.0
Total	422	100.0	

**Table 2.** Nascent entrepreneurs' business

Industries	Frequency	Percent	Cumulative Percent
Food Processing	78	18.5	18.5
Batik Industry	134	31.8	50.2
Handicraft	86	20.4	70.6
Souvenirs	66	15.6	86.3
Jewelry	58	13.7	100.0
Total	422	100.0	

**Table 3.** Descriptive statistics and constructs reliability

Variables	Dimensions	Mean	Cronbach's alpha
Government Support (X1) Mean = 4.053	Government financial assistance	3.838	0.799
	Lack of training from the government	4.625	0.803
	Government unclear target	3.696	0.802
Economic Condition (X2) Mean = 5.199	Difficulty in getting equipment	4.995	0.799
	Unstable economy	5.113	0.801
	Low purchasing power	5.488	0.802
Human Resources (X3) Mean = 6.021	Difficulty in recruiting	5.767	0.802
	Incompetent workforce	6.407	0.800
	Workforce resistance	6.511	0.813
	Business owners resistance	6.388	0.813
Business Partnership (X4) Mean = 5.092	Business owners lack knowledge	5.033	0.818
	Lack of suppliers as business partners	6.199	0.816
	Lack of marketing agencies	3.985	0.817
Funding Availability (X5) Mean = 6.304	High cost	5.943	0.807
	Difficulties in obtaining loans	6.635	0.812
	High-interest rates	6.336	0.811
Technology Innovation (Y) Mean = 5.247	Products with novelty features	6.075	0.810
	Using the latest technology	5.090	0.814
	The speed of new product	4.251	0.814
	Competitiveness of technology	5.924	0.811
	Using up-to-date technology in the process	4.786	0.821
	Rapid change in technology	5.360	0.825

= 6.304 out of 7) and human resources (mean = 6.021 out of 7) as the main barriers to technology innovation. At the same time, government support has the lowest mean of 4.053, indicating the government is not fully supportive in the view of nascent entrepreneurs.

The appropriateness of factor analysis was assessed by examining the loading factors in the component matrix. According to the results in Table 4, Principal Component Analysis successfully identified six distinct factors in the model: government support, economic condition, human resources, business partnership, funding availability, and technology innovation. The model demonstrates discriminant validity as the cumulative number of items associated with these six components exceeds 0.5 (Hair et al., 2020). Bartlett's test of sphericity yielded a relatively small test statistic value (3,398,848) and a probability value of 0.00. The results indicate that the dataset is suitable for conducting factor analysis, as evidenced by the Kaiser-Meyer-Olkin (KMO) measurement of sampling adequacy, which is 0.881, surpassing the threshold of > 0.6. Following factor analysis and clustering techniques, the internal consistency of the distinct factors is assessed by calculating Cronbach's al-

pha coefficients for each component. According to Shrestha (2021) and Bonett and Wright (2014), all Cronbach's alpha coefficients for items in Table 3 exceed the criterion of 0.60.

The path analysis results used to evaluate the hypotheses are summarized in Table 5. Based on the t-statistics exceeding the critical value (1.646) and the p-values falling below the significance level of 0.05, it is determined that all hypotheses are accepted. The implementation of technology innovation for nascent entrepreneurs in the South Kalimantan province of Indonesia is determined by factors such as government support, economic conditions, human resources, business partnerships, and funding availability.

The study found that funding availability had a mean value of 6.304 out of 7, the highest of all investigated factors. This means that nascent entrepreneurs in Banjarmasin, Indonesia, perceive funding availability as the most substantial factor hindering technology innovation. Several reasons justify why funding availability is a major inhibitor of technology innovation. First, technological innovation can be expensive. It requires the purchase of new equipment, the hiring of skilled workers, and the conduct of research and devel-



**Table 4.** Loading factors and variance explained

Items	Factors					
	1	2	3	4	5	6
Government financial assistance	.833	.054	-.019	.000	-.297	.151
Lack of training from the government	.848	-.041	-.014	-.057	-.034	-.073
Government unclear target	.837	-.001	.015	-.050	-.259	-.107
Difficulty in getting equipment	.022	.849	-.023	.064	.164	.096
Unstable economy	-.007	.853	.019	.039	.027	-.191
Low purchasing power	-.022	.861	-.005	.010	.102	.168
Difficulty in recruiting	.020	-.006	.857	.011	-.048	-.046
Incompetent workforce	.084	.014	.862	.056	.248	.032
Workforce resistance	.109	-.064	.889	-.001	.043	-.011
Business owners resistance	.049	-.005	.886	.016	-.003	-.038
Business owners lack knowledge	-.031	.012	.800	-.056	-.009	.479
Lack of suppliers as business partners	-.019	-.049	-.042	.885	.010	-.171
Lack of marketing agencies	-.061	.081	.090	.806	-.037	.051
High cost	.097	.039	-.002	.043	.864	.136
Difficulties in obtaining loans	-.042	-.223	-.020	-.025	.890	-.025
High-interest rates	-.043	-.148	.041	.021	.878	-.057
Products with novelty features	.039	.230	-.048	-.038	-.135	.869
Using the latest technology	-.062	.017	-.040	-.015	.250	.828
The speed of new product	-.030	-.040	.025	.049	.387	.804
Competitiveness of technology	.033	-.270	.012	-.035	.023	.853
Using up-to-date technology in the process	.081	.055	-.072	-.004	.120	.893
The rapid change in technology	-.040	-.059	.102	-.003	-.107	.899

Extraction Method: Principal Component Analysis

opment. Nascent entrepreneurs often need more financial resources to invest in these activities.

Second, even if nascent entrepreneurs have the financial resources to invest in technology innovation, they may need help to access them. Banks and other financial institutions are often reluctant to lend money to new businesses, especially those involved in technology innovation. This is because technology innovation is a risky proposition. There is no guarantee that new technology will succeed; otherwise, the business could go bankrupt.

The study's findings are consistent with those of previous research. For example, Indrawati et al.

(2020) found that financial constraints were the main barrier to technology innovation among nascent entrepreneurs in another region of Indonesia. The study also found that declining financial conditions in firms can reduce innovation efforts. This is because struggling firms may be unable to invest in innovation.

This study found that human resources were the second most crucial factor affecting technology innovation. This is because innovation requires both human resources and financial capital. Nascent entrepreneurs need to be able to recruit and retain skilled workers in order to innovate. They must also have the necessary knowledge and skills to manage innovation. The results show that the

**Table 5.** Path relationship among variables

Variables	Coefficient	t-Statistics	p-value	Hypothesis
Government Support	0.165	3.363	.001	Accepted
Economic Condition	0.150	2.806	.003	Accepted
Human Resources	0.065	1.699	.005	Accepted
Business Partnership	0.226	4.619	.000	Accepted
Funding Availability	0.111	1.828	.005	Accepted

R = 0.781, R<sup>2</sup> = 0.610, limit of p-values ≤ 0.05 and t-statistics ± 1.646

factors related to human resources as significant technology inhibitors were innovation, including difficulty in recruiting, incompetent workforce, workforce resistance, business owners' resistance, and business owners' lack of knowledge.

Nascent entrepreneurs in Banjarmasin, Indonesia, often find it challenging to find skilled workers. This is because the region has a shortage of skilled workers, and the talent competition is fierce. Even if nascent entrepreneurs can recruit workers, they may need help finding workers who are competent in the necessary skills. This can lead to problems with the innovation process, and it can also lead to frustration and dissatisfaction among the workforce. Nascent entrepreneurs also face resistance from their workforce when they try to implement new technologies. This is because they may be afraid of the risks involved or may not see the need for change.

Further, business owners may also lack the knowledge and skills to manage innovation. This can lead to problems with the implementation of new technologies. The study's findings are consistent with Mohamad et al. (2022), who found that recruiting skilled workers was a significant barrier to technology innovation among nascent entrepreneurs in Malaysia. The study also found that workforce resistance was a major problem.

The findings indicate that government support was the lowest of all investigated factors. This means that nascent entrepreneurs in Banjarmasin, Indonesia, perceive government support as the least important factor affecting their ability to innovate. There are several reasons why government support is perceived as being so low. First, nascent entrepreneurs often feel the government lacks financial assistance to support technology innovation. The government's financial assistance programs are often limited in scope and reach and are often difficult to access. Second, nascent entrepreneurs also feel that the government needs to provide more training and education to help them develop the skills and knowledge they need to innovate. The government's training programs are often outdated and irrelevant and often not tailored to the needs of nascent entrepreneurs. Third, nascent entrepreneurs also feel that the government is unclear about its technology innovation

goals and objectives. This makes it difficult for nascent entrepreneurs to know what the government is looking for, making it difficult for them to get the support they need. The study's findings are consistent with Zhang et al. (2022), who found that government support was a substantial barrier to technology innovation among nascent entrepreneurs in China. The study also found that the government's financial assistance programs were often inadequate and that the government's training programs could have been more effective.

Although government support is perceived as low, it is committed to helping nascent entrepreneurs improve their modernity and competitiveness. This commitment is evident in the government's policies that promote investment, particularly in underdeveloped areas like Kalimantan, to bolster the economy and reduce regional inequalities. The Indonesian government provides several programs to support small and medium-sized enterprises (SMEs), including the National SME Development Program and the Creative Economy Empowerment Program. These programs provide SMEs access to finance, training, and market information.

Indonesia's socioeconomic development is widely recognized to exhibit a regional divide, with the more advanced western region encompassing Sumatra, Java, and Bali, while the eastern region, including Kalimantan, lags (Rajiani et al., 2023). The government's policies aim to address this divide by encouraging investment in underdeveloped areas like Kalimantan. This investment will help to create jobs, improve infrastructure, and provide access to education and training. As a result, nascent entrepreneurs in Kalimantan will have the resources they need to innovate and compete in the global marketplace.

Supporting previous studies, hypotheses confirm that the implementation of technology innovation for nascent entrepreneurs in the South Kalimantan province of Indonesia is determined by government support (Zhang et al., 2022; Mohamad et al., 2022; Liu et al., 2022), economic conditions (Kiani et al., 2022; Jahangir et al., 2022; Khan et al., 2022; Arabeche et al., 2022), human resources (Kutieshat & Farmanesh; 2022; Marchiori et al., 2022), business partnerships (Klein & Todesco, 2021; Martínez-Cháfer et al., 2023; Apa et al., 2021), and funding

availability (Bradley et al., 2021; Hajjghasemi et al., 2022; Odilovich & Nuraliyevich, 2021).

Despite operating within the context of a developing economy, the identified determinants of technology innovation in South Kalimantan, Indonesia, resemble those typically associated with more developed economic contexts. This correlation demonstrates the robust universality of these factors in influencing entrepreneurial innovation across various economic environments.

Pursuing technology innovation in nascent entrepreneurship is a multifaceted endeavor that intersects with many influential factors. Emerging in the context of South Kalimantan, Indonesia, is a convergence of determinants that shapes the trajectory of technology innovation among emerging enterprises.

Government intervention plays a catalytic role in nurturing technology innovation. Government support, which encompasses a variety of policies, incentives, and financial funding, plays a crucial role in fostering an ecosystem conducive to innovation. It mitigates the inherent risks associated with innovation and boosts the confidence of nascent entrepreneurs, allowing them to embark on novel technological endeavors with a sense of security. The government enables entrepreneurs to navigate the complex technology innovation landscape and materialize groundbreaking ideas by providing them with tangible resources, regulatory frameworks, and development platforms.

Economic conditions and technological innovation develop in a symbiotic fashion. To cultivate the seeds of innovation, nascent entrepreneurs require economic growth and stability. A prosperous economy provides entrepreneurs with the financial resources necessary to invest in the research, development, and implementation of innovative technologies. Market dynamism, indicative of a robust economic climate, generates demand for new solutions and encourages entrepreneurs to leverage technology to capitalize on changing consumer preferences. As nascent entrepreneurs engage in technology innovation, economic growth is mirrored by increased innovation, contributing to a self-sustaining development cycle.

Human capital serves as a fundamental pillar of technology innovation. A competent and knowledgeable

workforce is the fulcrum upon which innovative concepts are materialized. In South Kalimantan, the proficiency of human resources is a crucial factor in determining the rate and scope of technology adoption. Entrepreneurial endeavors are bolstered by individuals who can quickly grasp new technologies, adjust to shifting paradigms, and infuse innovative problem-solving abilities into the innovation process. These human resources serve as catalysts and stewards of technological advancement, imbuing nascent entrepreneurial endeavors with enduring innovation vigor.

Collaboration is essential for technology innovation. Partnerships between nascent entrepreneurs and established entities foster a cross-pollination environment where knowledge, resources, and insights flow freely. Collaborations with universities, industry partners, and research institutions equip nascent entrepreneurs with a broader set of tools to navigate the complexities of technology innovation. Collectively, these synergistic alliances provide access to expertise, infrastructure, and market intelligence, acting as accelerators to propel nascent entrepreneurs toward technological breakthroughs. Financial support is the foundation upon which technology innovation resides.

Adequate funding is the essence of fledgling entrepreneurial endeavors, enabling research, experimentation, and implementation of innovative technologies. In an environment where financial limitations can inhibit innovation, the availability of funds alleviates the burden of risk and resource scarcity. It enables nascent entrepreneurs to overcome the fears associated with innovation and allocate resources to transformative technological endeavors, bridging the gap between visionary ideas and tangible innovations.

In the vibrant tapestry of South Kalimantan's burgeoning entrepreneurial landscape, these determinants interweave and interact to conduct the symphony of technology innovation. Their interaction highlights the holistic nature of fostering innovation – where government support, economic vitality, human capital, collaborative efforts, and financial underpinnings converge to propel nascent entrepreneurs toward technological frontiers, contributing to localized progress and echoing the universal cadence of innovative advancement.

## CONCLUSION

This study investigated the factors contributing to technology innovation among nascent entrepreneurs in emerging economies, focusing on Indonesia. The findings revealed that funding availability, human resources, and government support were the major barriers to technology innovation. Nascent entrepreneurs perceived funding availability as the most substantial factor hindering technology innovation, followed by human resources and government support.

A mix of government assistance, private-sector investment, and collaborative efforts among nascent entrepreneurs can be implemented to overcome these barriers. The government can provide increased financial assistance targeted explicitly at supporting technology innovation. They can also improve training programs to equip nascent entrepreneurs with the necessary skills and knowledge. Clear communication of government goals and objectives for technology innovation can help nascent entrepreneurs understand and access the support they need. Private-sector investment can be crucial in providing funding and resources for technology innovation. Collaboration among nascent entrepreneurs can foster knowledge sharing, networking, and joint efforts to overcome common challenges.

The study has several limitations, including using a cross-sectional design and focusing on nascent entrepreneurs in Banjarmasin, Indonesia. Future studies can explore the barriers to technology innovation in other regions of Indonesia and include a more extensive and diverse sample. Longitudinal studies can provide insights into the long-term effects of government support and other factors on technology innovation. Additionally, qualitative research methods can provide a deeper understanding of the experiences and perspectives of nascent entrepreneurs in overcoming barriers to innovation.

## AUTHOR CONTRIBUTIONS

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