

Enhancing the Performance of Indonesian E-Business Start-Ups: The Influence of Innovation Capability and Dynamic Capability

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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v13-i4/23570> DOI:10.6007/IJARPED/v13-i4/23570

Published Online: 06 November 2024

Abstract

Purpose: This study aims to highlight the influence of innovation capability on e-business success by investigating the presence of dynamic capabilities and the impact of government assistance and entrepreneurial orientation in firms. The objective of this research is to enhance the association between dynamic capabilities and the performance of e-business. **Design/methodology/approach:** Data was collected from 117 e-commerce startups operating in Indonesia for a duration of less than 5 years. The survey was conducted by disseminating questionnaires by email and Google Form digital channels, and subsequently analyzed using PLS 3.0. **Findings:** The study found that the effectiveness of the innovation process is a key factor in affecting the dynamic capacities and performance improvement of e-business start-ups. It was determined to be the most significant link between these relationships. Furthermore, government support plays a crucial role in strengthening the link between dynamic capability and the performance of e-businesses. **Practical implications:** E-business start-ups and the government should prioritize enhancing their ability to adapt and respond to changing circumstances by investing in training programs and structured initiatives. Additionally, they should aim to improve their capacity for innovation by collaborating with educational institutions and digital communities to develop a skilled workforce. These efforts will ultimately lead to improved performance. **Originality/value:** This research is expected to fill the gap in knowledge indicated in the literature review and provide a new discovery that improves and complements the research of RBV theory and dynamic capacities, specifically in relation to the performance of e-business start-ups in developing countries.

Keywords: E-Business Start-ups Performance, Innovation Capability, Dynamic Capability, Government Support

Introduction

The rise of e-business start-ups is a definitive sign of the arrival of the Entrepreneurship 4.0 age. The convergence of technological advancement, globalization, and sociological transformations has ushered in a novel era marked by swift and perpetual change. Establishing corporate practices is frequently regarded as a problem and presents a potential threat to conventional business entities (Danarahmanto, 2020; Lalkaka, 2001; Lubis, 2019; Verhoef et al., 2021; Walrave et al., 2018; Wiesböck & Hess, 2020)

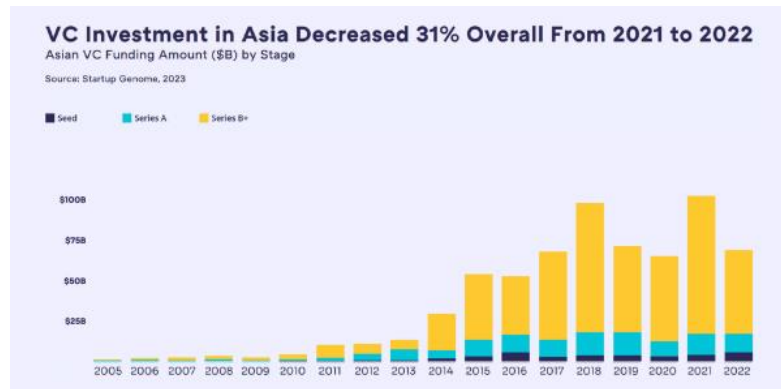


Figure 0. Venture Capital Investment in Asia Decreased by 31% 2021-2022.

Source: Global start-ups ecosystem report 2023

Figure 1 depicts a graphical representation of the fluctuating pattern of start-up ecosystems that successfully secured funding from the Seed stage to the Series B level. Based to the Startupgenome study, the Asia venture capital sector experienced a substantial increase of 62% in investment between 2020 and 2021. Moreover, the funding deals for early-stage initiatives have had a significant increase of 69% during the specified time period. However, they have unhappily witnessed a decline of 31% between the years 2021 and 2022 (Startup Genome, 2023). It is expected that in the future year, this number will continue to increase due to the rapid growth of the digital ecosystem in many nations globally, although they may encounter a new issue if startups are prevented from obtaining finance. This ecosystem is regularly measured, and its progress is monitored based on eight success metrics connected to performance

Funding is a tangible expression of investors' confidence in the future success and potential growth of e-business start-ups. Obtaining funding for e-commerce start-ups will undoubtedly speed up business progress and market growth. Investors evaluate the triumph and future growth prospects of e-business start-ups by considering multiple aspects. Internal variables encompass elements such as organizational leadership, optimal performance, effective team communication, and robust organizational dedication. Nevertheless, customer satisfaction and relationships with other stakeholders sometimes have a strong correlation with external factors (Guo et al., 2020; Leendertse et al., 2021).

Table 0

Percentage of Start-ups Funded in 2020

Stages	Indonesia	Singapore	Vietnam	Malaysia	Philippines	Thailand
Seed	411	903	160	186	107	108
Series A	173	359	49	48	28	46
M&A	100	145	31	43	22	30
Series B	68	136	14	19	7	14
Bridge	65	158	11	25	11	12
Pre-Series A	62	108	19	11	7	14
Strategic Investment	37	55	16	14	7	1
Grant	29	58	3	20	6	4
Series C	26	55	7	5	1	3
Early Stage	19	58	12	3	6	5
Series D	8	25	3	2	0	1
IPO	7	7	1	4	2	0
Series E	5	11	0	1	0	1
Series F, G & H	6	0	0	0	0	0
Debt	4	28	4	3	2	1
ICO	1	28	0	0	0	1
Product Crowdfunding	2	19	1	10	1	3
Late Stage	4	16	1	1	1	2
Unspecified Stage/Other	6	32	0	10	7	9
Total Funded	1033	2201	332	405	215	255
Total Startup Counted	7.703	6.819	1.985	1.924	825	796
%tage funded	13%	32%	17%	21%	26%	32%

Source: Processed by authors based on data from Technasia accessed August 2021.

The data in Table 1.1 indicates that the proportion of start-ups that successfully obtained finance is rather small, falling below 15%. Singapore, with the second highest number of start-ups after Indonesia, obtained the largest amount of funding, showcasing its excellence as the fourth most prominent global ecosystem in the Asia-Pacific region and the highest-ranking country in ASEAN. Akkaya (2019), asserted that a substantial proportion of start-ups encounter failure, especially in the early stages. These companies encountered a substantial rate of failure. Less than one-third of new businesses are able to withstand the challenges. The lack of adequate financial resources, poor comprehension of business principles and technology, and managerial obstacles have eventually led to the difficulties encountered by start-ups (Akkaya, 2019).

Based on the data presented by the Minister of Communication and Informatics in 2019, only 5% of start-ups managed to overcome the challenges, while the remaining 95% encountered failure. It is imperative to conduct research on this subject because of the potential of digital commerce to enhance the Indonesian economy and generate job prospects. In the end, it is forecasted to aid in the reduction of poverty in Indonesia. Statistic Indonesia (2018) reported a total of 55,903 individuals employed in the digital start-up industry. This figure represents a substantial percentage, including 7.9% of Indonesia's overall population, specifically among the working-age group actively looking for jobs (Zaky et al., 2018).

The main objective of this research is to enhance the efficiency of e-business start-ups, which plays a crucial role in the economic development of Indonesia. These start-ups face various

limitations and challenges that need to be addressed. The references cited are Indrawati et al., 2020 and Prasanna et al., 2019. The government, through its regulatory power and competence, plays a vital role in supervising, assisting, and guaranteeing the long-term sustainability of start-ups. Nevertheless, it has been ineffective in fulfilling this responsibility, as emphasized by Panjaitan et al. (2020). This study focuses on several research problems in the context of Indonesian e-Business Startups. These problems include insufficient investment in the sector, limited innovation capabilities to enhance start-up performance, inadequate dynamic capability to adapt to uncertain conditions, a lack of entrepreneurial orientation among start-up owners, and insufficient government support to boost the performance of e-business start-up companies (Indrawati et al., 2020).

Literature Review

This study utilizes the Resource Based View (RBV) theory as its main framework, complemented by the Teece-dynamic capabilities theory. The RBV Theory serves as the foundation for the overall research model. Harnessing resources and competencies will enable the firm to achieve a competitive advantage. Therefore, this study examines the relationship between the existence of start-ups in Indonesia and the capabilities of businesses in terms of technological and non-technological innovation, as well as networking. Dynamic capabilities enhance the ability of an organization to engage in sensing activities, recognize prospective opportunities, grasp them, and build and improve the business model, encompassing both technical and non-technological innovation. The allocation of resources and implementation of essential modifications to alter and reorganize the structure and culture.

Prior studies have mostly examined the impact of dynamic capacities on corporate success, as evidenced by the works of Eisenhardt and Martin (2000), J. Ferreira et al. (2020), Moreno (2020), Vu (2020), and L. Y. Wu (2010). However, there is a scarcity of research that specifically investigate the role of dynamic skills in early-stage start-ups as a mediator between innovation and the performance of e-business start-ups. Thus, the use of early-stage start-up dynamic skills as a mediator is being explored to draw more accurate conclusions about the effectiveness of start-up performance among Indonesian start-up enterprises, both in theory and in practice (Eisenhardt & Martin, 2000; Ferreira & Pereira, 2021; Moreno, 2020).

E-Business Start-ups Performance

A start-up is a tangible representation of inventive entrepreneurship in the midst of the digital revolution. Start-ups are typically defined as newly founded economic enterprises that are entering the market. In the past, this concept was not a matter of disagreement until the arrival of the new era, marked by the Internet, which acts as a platform for extensive, immediate, and virtually limitless communication. These developments generated hope about the emergence of innovation and the swift expansion of the economy, especially in industrialized countries. As a result, the word "start-up" is commonly associated with a certain set of enterprises that operate within the quickly changing information and communication technologies (ICT) market (Skala, 2019).

Upon careful observation of the evolution of start-ups, it can be concluded that a start-up is a recently established business venture with limited financial resources. It is typically less than 3 years old and has the potential for significant growth. Additionally, it is characterized by its geographic reach, encompassing both the market and user base, within specific business

sectors. Additionally, it is crucial for it to possess innovation to effectively address any potential challenges that may occur in the industry, while also having the capacity to generate novel opportunities. Start-ups must rapidly achieve success and secure finance within a certain timeframe, based on the product lifecycle criteria. If the firm fails to progress, the start-ups must possess the ability to swiftly adapt their tactics and transition to alternative business models. Start-ups are not exclusively tied to technology, but it is crucial to prioritize their advancement and potential growth by incorporating technology into various business processes. Consequently, start-ups must adapt dynamically over time to ensure their continued existence and longevity.

This study employs the e-business performance measuring framework established by Migdadi (2016). The framework has a total of 5 measurement items for efficiency, 5 measurement items for sales performance, 3 measurement items for customer satisfaction, and 2 measurement items for relationship development (Migdadi et al., 2016). The current research holds managerial significance since investors often consider qualitative variables in addition to standard financial quantitative analysis when evaluating creative e-business start-ups (Čirjevskis, 2017).

Innovation Capabilities

Innovation encompasses the process of generating, endorsing, and implementing original ideas, methods, products, or services. Innovation is a complex process that occurs in multiple stages, involving activities ranging from basic research to the successful launch of new products in the market (Harwiki & Malet, 2020). Investors typically look for qualitative characteristics when evaluating innovation-driven e-business ventures. The innovation and expertise of micro or small enterprises foster sustainable business expansion (Halim et al., 2014; Özgüner & Iraz, 2006). An innovation competency is the ability to regularly transform information and ideas into new and original goods, processes, and systems that provide advantages to the firm and its stakeholders (Lawson & Samson, 2001).

The performance of small and medium businesses can be enhanced through the quality of innovation achieved through internal efforts (Halim et al., 2014). The performance of small and medium-sized enterprises (SMEs) can be enhanced by using their innovative skills (Ahman et al., 2020). An elevated capacity for creativity in management would undoubtedly generate distinctive characteristics in products, particularly in the realm of digital creative industries. Hence, innovation management serves as the primary method employed by management to confront the intensifying competitiveness inside the industry. This research will examine innovation indicators in the industrial sector, specifically product innovation, process innovation, and marketing innovation (Exposito & Sanchis-Llopis, 2018; Harwiki & Malet, 2020).

Multiple research initiatives undertaken at technology-based organizations and startups study the exploration of technological innovation capability. Overall, studies on the influence of innovativeness on technology-based businesses typically demonstrate a positive association between innovation and firm performance (Donbesuur et al., 2020). The ability to innovate in e-business start-ups has become essential due to the rapid advancements in technology and the changing demands of the industry. The study tested innovation capability using unidimensional questions that were adapted from a previous study (Camisón & Villar-

López, 2014b; Sánchez-Gutiérrez et al., 2019). These items assessed both technological and non-technological innovation capability.

The study will employ marketing innovation as a distinct type of non-technological innovation capabilities, as suggested by Camison (2014). Sanchez (2019) discovered a significant and favorable correlation between marketing innovation and the generation of consumer value in his research. According to Sánchez-Gutiérrez et al. (2019), the combination of strong management skills, improved marketing strategies, and increased innovation initiatives results in a greater level of competitiveness. According to Camisón and Villar-López (2014b), organizational innovation is believed to be shaped by the presence of a robust culture, well-established systems, adaptability to technology advancements, and the organizational structure. This study employed a 5-item measurement scale to assess Product Innovation Capability, an 11-item measurement scale to evaluate Process Innovation Capability, which was derived from the work of Camisón and Villar-López (2014b), and a 5-item measurement scale to gauge Marketing Innovation, as developed by (Camisón & Villar-López, 2014).

Dynamic Capability

Resource-based view (RBV) focuses on the presence of resource capabilities and the achievement of enduring competitive advantage. Nevertheless, there is a substantial discourse over the governance of these resources and skills, specifically concerning organizational and environmental issues. Previous studies on the Resource-Based View theory (RBV) have demonstrated that a company's competitive advantage stems from its internal resources and capabilities that it owns and effectively controls. Teece also discussed the study of dynamic capabilities, which encompassed various areas such as business models, industrial management, enterprise resource management, asset orchestration, decision making, platform, business ecosystem, competitive advantage, and transaction cost economics. Based on current research, it seems that studies on dynamic capabilities, resource-based view, and digital (platform) and business ecosystem are still in their early stages. The present study examines the innovation capabilities of an organization, specifically in terms of product, process, and marketing innovation. These capabilities are considered intangible resources and their impact on competitive advantage is analyzed through the lens of dynamic capability, which refers to the organization's ability to adapt to external conditions and environmental changes. To thrive and advance, e-business start-ups must carefully assess their resources and capabilities to effectively adapt to environmental changes (Makkonen et al., 2014; Ringov, 2017; C. L. Wang et al., 2015). The ability to respond dynamically can impact the performance of e-business start-ups. This ability is enhanced by factors such as government support through policies and facilities, as well as the presence of entrepreneurial orientation among organization members. By collaborating and contributing, these factors contribute to the relationship between dynamic capability and e-business start-up performance, which is difficult to predict (Fainshmidt et al., 2016b).

Entrepreneurial Orientation

Entrepreneurial orientation can act as a moderating variable in the relationship between dynamic skills and various outcomes, such as business process performance (J. J. Ferreira et al., 2021; Jingkun Bai, 2017). A study discovered that entrepreneurial orientation and dynamic capabilities have a favorable influence on operational capabilities, which subsequently have a beneficial effect on global performance in microenterprises (Herve et al., 2020; Machmud & Herlinawati, 2019). An additional investigation analyzed the role of international

entrepreneurial orientation as a mediator in the relationship between dynamic capacities and the success of internationalization in small and medium-sized enterprises (SMEs) (AlShehhi et al., 2023). In addition, a study examined how pioneering orientation affects the development of dynamic capacities, including the influence of cognitive closeness and bridge relationships as moderating factors. The study by Lin and McDonough (2014) highlights the importance of considering the entrepreneurial attitude as a moderating factor when investigating the relationship between dynamic abilities and specific outcomes in various organizational settings.

According to a study by J. Ferreira et al (2020), when there is a higher level of entrepreneurial orientation, dynamic talents have a more significant influence on competitiveness and performance. Based on their research conducted on 124 technology companies in Indonesia, the study found that entrepreneurial orientation plays a crucial role in the impact of gamification on firm performance in technology companies (Elidjen et al., 2022a). Therefore, this study assumes that entrepreneurial orientation can greatly enhance the connection between innovation capabilities and dynamic capabilities. Covin and Wales (2018) argue that the existence of entrepreneurial orientation is crucial in facilitating dynamic organizational changes. Lee (2008) found that firms with a greater degree of entrepreneurial orientation (EO) in terms of autonomy, innovativeness, and competitive aggressiveness achieved better performance compared to those with a lower level of EO (S. M. Lee & Lim, 2009). Kropp (2008) found a strong correlation between the proactive and risk-taking aspects of an entrepreneurial mindset and the decision-making process of start-ups (Kropp et al., 2008). In their study, Li et al. (2008) provided evidence that EO (entrepreneurial orientation) significantly influences the connection between market orientation and overall firm performance. According to Y. Li et al. (2008), EO can enhance a company's competitive position and performance.

This study is employing two dimensions of entrepreneurial orientation, specifically risk-taking and proactivity, which are regarded as the primary indicators of product and service innovation as well as corporate performance. The selection of these dimensions is based on their suitability for analyzing individual enterprises at the unit level, considering the factor of time and the influence of technical advancements (Covin & Wales, 2019).

Government Support

Government support programs (GSP) should focus on reducing the financial and non-financial barriers that hinder the establishment of new enterprises, while also improving existing entrepreneurial methods (Nakku et al., 2020). The GSP, or Government Start-up Program, was established by policymakers with the objective of cultivating entrepreneurial abilities and furnishing start-ups with essential resources, such as financial assistance. The primary objective is to create job prospects and foster economic expansion. However, a thorough investigation of previous studies has revealed that the Indonesian government has not been involved in enabling small and medium enterprises (SMEs) to improve their commercial performance (Panjaitan et al., 2020).

Government aid programs typically implement rigorous eligibility requirements, with a particular emphasis on businesses that can demonstrate revenue, profitability, and collateral. Nevertheless, this criterion eliminates a multitude of start-ups from obtaining any form of

Research Hypotheses

in Indonesian start-ups.

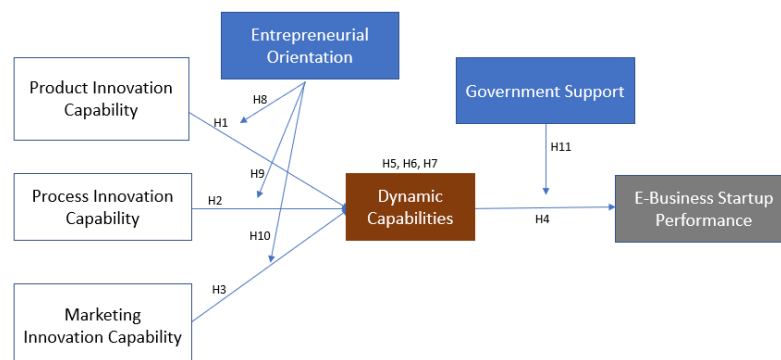


Figure 0. Research Framework
Source: Processed by researchers

Eleven major hypotheses have been developed to investigate the relationship between innovation capability (product, process, marketing), dynamic capabilities, and start-up performance. This study investigates the direct relationship between the capability to innovate and the ability to develop dynamic capabilities. This study investigates the direct relationship between dynamic capabilities and the performance of start-up companies.

Additionally, it examines the correlation between dynamic capacities and corporate success, considering the influence of government backing as a moderating factor. The purpose of establishing these hypotheses is to achieve the research aims and address the research questions of this study.

H1. There is a positive relationship between product innovation capability and dynamic capabilities.

H2. There is a positive relationship between process innovation capability and dynamic capabilities.

H3. There is a positive relationship between marketing innovation capability and dynamic capabilities.

H4. There is a positive relationship between dynamic capabilities and e-business start-up performance.

H5. There is a significant relationship among product innovation capability and e-business start-up performance positively mediated by dynamic capabilities.

H6. There is a significant relationship among process innovation capability and e-business Start-up performance positively mediated by dynamic capabilities.

H7. There is a significant relationship among marketing innovation capability and e-business start-up performance positively mediated by dynamic capabilities.

H8: There is a significant moderator effect of entrepreneurial orientation can strengthen the effects of product innovation capability on dynamic capabilities.

H9.: There is a significant moderator effect of entrepreneurial orientation can strengthen the effects of process innovation capability on dynamic capabilities.

H10: There is a significant moderator effect of entrepreneurial orientation can strengthen the effects of marketing innovation capability on dynamic capabilities.

H11. There is a significant moderator effect of government support that can strengthen the effects of dynamic capabilities on e-business start-up performance.

Method

This study uses the scientific method to examine human behavior in a specific context, reducing potential bias and speculation. It employs a cross-sectional design to assess the impact of business success on e-business start-up firms in Indonesia, particularly within the Indonesian context. The study examines variables such as innovation capabilities, dynamic capability, government support, entrepreneurial orientation, and e-business performance. The theoretical framework is developed based on literature review findings, and hypotheses are formulated to determine the relationship between independent, dependent, mediating, and moderating variables. Data was collected from 1000 digital startups in Indonesia, selected from a pool of 1400 startups. Purposive sampling was used, with 117 samples gathered. A closed-ended questionnaire was used to assess variables such as product, process, and marketing innovation capability, dynamic capability, e-business performance, government support, and entrepreneurial orientation.

Findings

Response Rate and Respondent Profile

The questionnaire was sent to the owner/manager of E-business start-ups included in the 1000 Start-up Digital community via mail. Of the 600 online surveys given, 117 questions were

successfully completed and returned, yielding a usable response rate of 19.5%. This response percentage is still acceptable, as the typical response rate for online surveys is 10% or even lower (Saunders, 2016, p. 441).

Table 2

Respondent's Background Information

Demographics	Frequency	Percentage
Gender		
Male	95	81.2
Female	22	18.8
Age		
Below 20 years	7	5.9
20-25 years	32	27.3
26-30 years	27	23.0
31-35 years	23	19.6
36-40 years	15	12.8
Above 40 years	13	11.1
Education		
High school	21	17.9
Bachelor Degree (S1)	76	65.0
Master Degree (S2)	20	17.1
Business Domicile		
East Java	29	24.8
Jakarta and its surrounding (Jabodetabek)	27	23.1
Sulawesi	17	14.5
Central Java	13	11.1
Bali and its surrounding (NTT NTB)	11	9.4
Sumatera	9	7.7
West Java	9	7.7
Kalimantan	1	0.8
Papua	1	0.8
Company's E-business type		
Professional Service	22	18.8
E-Commerce	15	12.8
Health and Medical Service	12	10.2
Support		
Marketplace	12	10.2
Education apps	13	11.1
Gaming and Media Ad Tech	7	6.0
Crowdfunding & Social Movement	7	6.0
Logistic and Transportation	6	5.1
Fintech	4	3.4

Other type	19	16.2
Years of established		
2018	26	22.2
2019	11	9.4
2020	22	18.8
2021	32	27.4
2022	26	22.2

The founders, being entrepreneurs, are the most suitable individuals to respond to the survey as they hold the primary authority in making critical decisions. In terms of personal background, the majority of entrepreneurs, specifically 81.2%, were male, while the remaining 18.8% were female. The majority of the respondents were in the age range of 20-30 years (50.3%), followed by the age range of 31-40 years (32.4%). Most of the respondents achieved a bachelor's degree as their highest level of education, with 65% of them having this qualification. Additionally, 66.7% of the respondents are residents of Java island, which includes Jakarta (the capital city of Indonesia) and its surrounding areas, such as West Java, Central Java, and East Java. Other islands in Indonesia, such as Bali, Sumatera, Kalimantan, and Papua, make up 33.3% of the total. The study included a range of e-business types, with the majority of respondents operating in professional services, e-commerce, health and medical service support, marketplace, education apps, gaming and media ad tech, social movement, transportation, and fintech sectors. The remaining businesses came from various sources. All of these businesses were established between 2018 and 2022.

Assessment of Measurement Model

The evaluation of the measurement model encompassed the assessment of reliability, including individual item reliability and internal consistent reliability. Additionally, the discussion will address the examination of validity, namely convergent validity and discriminant validity.

Table 3

Reliability & Internal Consistency

Constructs	Item	Loadings	Cronbach's Alpha	CR	AVE
Product Innovation Capability	PD2	0.780	0.854	0.901	0.696
	PD3	0.862			
	PD4	0.839			
	PD5	0.854			
Process Innovation Capability	PC2	0.775	0.917	0.931	0.600
	PC3	0.789			
	PC4	0.818			
	PC5	0.766			
	PC6	0.762			
	PC7	0.758			
	PC8	0.742			
	PC10	0.752			
	PC11	0.807			
Marketing Innovation Capability	MI1	0.814	0.916	0.937	0.750
	MI2	0.867			
	MI3	0.915			
	MI4	0.879			
	MI5	0.851			
Dynamic Capability	DIC1	0.721	0.942	0.949	0.590
	DIC2	0.824			
	DIC3	0.686			
	DIC4	0.826			
	DLC1	0.756			
	DLC2	0.800			
	DLC3	0.811			
	DLC4	0.784			
	DLC5	0.666			
	DRC1	0.720			
	DRC2	0.778			
	DRC3	0.803			
	DRC4	0.792			
Entrepreneurial Orientation	EOR2	0.758	0.850	0.894	0.629
	EOR3	0.732			
	EOP1	0.901			

	EOP2	0.816			
	EOP3	0.746			
Government Support	GS1	0.858	0.914	0.936	0.744
	GS2	0.898			
	GS3	0.903			
	GS4	0.837			
	GS6	0.814			
E-Business Startup Performance	PE1	0.562	0.929	0.939	0.546
	PE3	0.618			
	PE5	0.529			
	SP1	0.759			
	SP2	0.781			
	SP3	0.744			
	SP4	0.811			
	SP5	0.827			
	PCS1	0.750			
	PCS2	0.723			
	PCS3	0.844			
	PRD1	0.771			
	PRD2	0.803			

Eight measurement items are excluded during outer loading due to their values being below 0.6 and their negative impact on reliability. These items are specifically PD1, PC1, PC9, EOR1, GS5, GS7, PE2, and PE4. According to the results of external loading relevance testing, researchers retain certain items with values below 0.7 in the study Hair (2017) because these items are deemed significant and do not have an impact on the validity and reliability of the study (Hair et al., 2014, 2019b; Manley et al., 2021).

Table 3 shows that all 7 constructions meet the threshold values or minimum cut-off values for CR (Composite Reliability) and AVE (Average Variance Extracted). All the CRs are greater than 0.7 and all the AVEs are greater than 0.5. The citation is attributed to Hair et al. (2014). At this stage, it can be deduced that the structures meet the criteria of dependability and convergent validity.

The results of the Fornell-Larcker criterion can be seen in Table 4, The correlation outputs revealed that the latent construct demonstrated a superior level compared to all the other constructs. Table 3 shows that the square root of the Average Variance Extracted (AVE) for each construct is greater than the correlation for each construct. This discovery confirms the satisfactory ability of the constructs used in this investigation to differentiate between different variables.

Table 0

Fornell Larcker Criterion

	DC	EO	GS	MI	PC	PD	PERF
DC	0.768						
EO	0.640	0.793					
GS	0.684	0.589	0.863				
MI	0.725	0.711	0.494	0.866			
PC	0.701	0.681	0.482	0.822	0.775		
PD	0.468	0.498	0.239	0.697	0.773	0.834	
PERF	0.671	0.625	0.599	0.564	0.616	0.408	0.739

Note: Diagonals in this context symbolize the square root of the average value of a variable, while the off-diagonals reflect the relationships between variables.

DC=dynamic capabilities, PERF =E-Business Startup Performance, EO= Entrepreneurial Orientation, GS= government support, MI= Marketing Innovation Capability, PC= Process Innovation Capability. PD= product innovation capability

The HTMT technique, developed by Henseler, Ringle, and Sarstedt (2015), is employed for assessing the discriminant validity. Table 5 shows that all the values satisfy the HTMT.90 criterion, as defined by Kline (2011). This indicates that the discriminant validity has been verified. Furthermore, the HTMT inference result reveals that none of the constructs possess a confidence interval value of 1, as revealed by Henseler et al. (2015). This discovery provides additional evidence in favor of the concept of discriminant validity.

Table 5

Heterotrait-Monotrait Ratio (HTMT)

	DC	EO	GS	GS_DC	MI	MI_EO	PC	PC_EO	PD	PD_EO	PERF
DC											
EO	0.704										
GS	0.742	0.668									
GS_DC	0.316	0.107	0.134								
MI	0.768	0.804	0.539	0.443							
MI_EO	0.443	0.492	0.370	0.664	0.618						
PC	0.744	0.770	0.523	0.326	0.897	0.522					
PC_EO	0.310	0.386	0.238	0.564	0.475	0.862	0.517				
PD	0.511	0.585	0.265	0.269	0.783	0.441	0.879	0.420			
PD_EO	0.298	0.309	0.194	0.452	0.367	0.734	0.379	0.885	0.307		
PERF	0.706	0.701	0.637	0.225	0.604	0.339	0.668	0.297	0.460	0.213	

Assessing and Testing The Structural Model (Hypothesis)

The outcomes of the literal collinearity test are displayed in Table 6. It has been proven that all of the VIF outputs are significantly lower than the usually accepted threshold of 5. If the VIF score is 5 or higher, it indicates the existence of a potential collinearity problem. According to Hair et al. (2019b), it is advised that the VIF values should ideally be around 3

or below. Therefore, the occurrence of collinearity among the predictor components does not present any issues in the structural model in this experiment.

Table 6
Lateral Collinierity Assessment (VIF)

Construct	Dynamic Capability	E-Business Startup Performance
EO	2.527	
MI	4.075	
MI_EO	4.318	
PC	4.059	
PC_EO	4.997	
PD	2.399	
PD_EO_	3.056	
DC		1.871
GS		1.713
GS_DC		1.122

DC=dynamic capabilities, EBSUP =E-Business Startup Performance, EO= Entrepreneurial Orientation, GS= government support, MI= Marketing Innovation Capability, PC= Process Innovation Capability. PD= product innovation capability

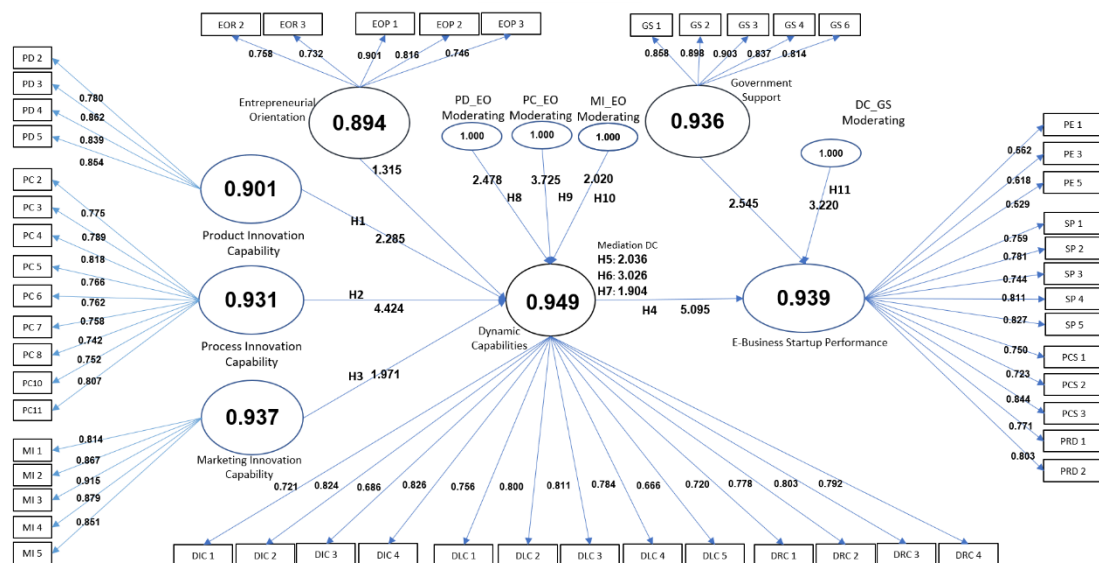


Figure 2. Structural Model Assessment

Table 7

Hypothesis testing of Direct Effect

Hypothesis	Relationship	Path Coefficient	STD DEV	t-value	p-value	LL	UL	Result	f ²
H1	PD → DC	-0.239	0.104	2.285	0.022	-0.457	-0.045	Not Accepted	0.061
H2	PC → DC	0.591	0.134	4.424	0.000	0.349	0.873	Accepted	0.187
H3	MI → DC	0.300	0.152	1.971	0.049	-0.013	0.581	Accepted	0.053
H4	DC → PERF	0.534	0.105	5.095	0.000	0.324	0.732	Accepted	0.255

Note: The f-square is a measure of effect size, with values more than or equal to 0.02 considered small, values greater than or equal to 0.15 considered medium, and values greater than or equal to 0.35 considered high, according to Cohen (1988). Cohen (1988) proposed that R² values for endogenous latent variables should be evaluated in the following manner: The values are as follows: 0.26 (significant), 0.09 (moderate), 0.01 (weak). (Parker et al., 2005). DC=dynamic capabilities, PERF =E-Business Startup Performance, EO= Entrepreneurial Orientation, GS= government support, MI= Marketing Innovation Capability, PC= Process Innovation Capability. PD= product innovation capability

Based on the study of the path coefficient shown in Table 7, all linkages were found to have t-values more than 1.645, which indicates statistical significance at a significance level of 0.05. According to the results, the predictor of product innovation capability ($\beta = -0.239$, Pvalue < 0.05) showed a significant link with dynamic capabilities. However, since the hypothesis stated a positive relationship (one-tailed assessment), H1 is not accepted. The study found that process innovation capability ($\beta = 0.591$, Pvalue < 0.05) and marketing innovation capability ($\beta = 0.300$, P < 0.05) were positively associated with dynamic capabilities. These two predictors explained 64.4% of the variance in dynamic capabilities, confirming the acceptance of H2 and H3. The R² value of dynamic capabilities, which is 0.644, surpasses the recommended threshold of 0.26 set by Cohen (1988), suggesting a statistically significant model.

Furthermore, the influence of dynamic skills on the performance of e-business startups indicates a strong and meaningful correlation ($\beta = 0.534$, P < 0.05). Dynamic capabilities account for 49.3% of the variability in the performance of e-business start-ups. Thus, H4 was confirmed. The R² value of 0.493 above the threshold of 0.26, as suggested by Cohen (1989), suggesting a statistically significant model.

Table 8

Hypothesis testing of mediation effect

Hypothesis	Relationship	Path Coefficients	Std. Deviation (STDEV)	t-value	p-value	Result	LL	UL
H5	PD -> DC -> PERF	-0.127	0.063	2.036**	0.042	Not Accepted	-0.269	-0.023
H6	PC -> DC -> PERF	0.315	0.104	3.026**	0.002	Accepted	0.143	0.547
H7	MI -> DC -> PERF	0.160	0.084	1.904*	0.057	Accepted	-0.008	0.324

DC=dynamic capabilities, PERF =E-Business Startup Performance, MI= Marketing Innovation Capability, PC= Process Innovation Capability. PD= product innovation capability *Sig. 10%; **Sig.5%;

Table 9

Hypothesis testing of moderating effect

Hypothesis	Relationship	Path Coefficient	Std. Deviation	t-value	P-value	Result
H8	PD -> DC * EO	-0.253	0.102	2.478	0.013	Not Accepted
H9	PC -> DC *EO	0.485	0.130	3.725	0.000	Accepted
H10	MI -> DC * EO	-0.244	0.121	2.020	0.043	Not Accepted
H11	DC -> PERF * GS	0.184	0.057	3.220	0.001	Accepted

DC=dynamic capabilities, PERF =E-Business Startup Performance, MI= Marketing Innovation Capability, PC= Process Innovation Capability. PD= product innovation capability, EO=entrepreneurial orientation, GS=government support

The coefficient of determination, represented by R², varies from 0 to 1. Greater levels of expected accuracy are indicated by higher values of R² (Manley et al., 2021). Table 9 shows that the R² value for the endogenous components is higher than the recommended threshold of 10% proposed by Falk and Miller (1992). Cohen (1989) shows that the R² values of 0.26, 0.13, and 0.02 for the endogenous constructs explain a substantial, moderate, and minimal amount of the variation, respectively, as stated by Cohen (1989). To summarize, Table 8 shows that the model is statistically significant, as evidenced by R² values beyond the threshold of 0.26.

Table 11

R² values for endogenous

Construct	R ² Value	Threshold
Dynamic Capabilities	0.644	≥0.26 (Substantial)
E-business Startup Performance	0.493	≥0.26 (Substantial)

The findings in Table 7. suggest that product innovation capability (0.061) and marketing innovation capability (0.053) have a negligible impact on the generation of R2 for dynamic capabilities, while process innovation capability (0.187) has a moderate impact on the generation of R2 for dynamic capabilities. The results concerning dynamic capabilities (0.255) suggest a moderate influence on the R2 of performance in e-business start-ups. It is important to understand that a little impact does not necessarily mean an unimportant impact.

Table 9

Predictive relevance Q2

Construct	Q ² Value
Dynamic capabilities	0.304
E-business start-ups performance	0.224

Table 4.9 demonstrates that both the Q2 values for dynamic capabilities (0.304) and e-business start-ups performance (0.224) exceed 0, indicating that the model possesses enough predictive relevance.

Discussion

The Relationship Between Product Innovation Capability and Dynamic Capabilities

Prior research has examined the correlation between the ability to innovate products and dynamic capabilities (Colombo et al., 2016; Jafari-Sadeghi et al., 2022; Jiang et al., 2020). These studies suggest that as technology advances rapidly and dynamically, innovations in technology must also keep pace in a swift and adaptable manner. The relationship between dynamic capabilities and innovative capabilities, particularly in the high-tech business, is quite significant (Vu, 2020). Product innovation is a concrete manifestation of dynamic capacities, which arises from the capacity to innovate (Eisenhardt & Martin, 2000; Francis & Bessant, 2005).

The ability to innovate products is influenced by external organizational factors that are uncertain and constantly changing. These factors also provide an opportunity to achieve a dominant position in the market, which involves making changes to technical aspects, materials, or functional specifications in order to meet external demands such as competition, shorter product lifecycles, technological advancements, and shifting market needs (Mendoza-Silva, 2020).

The study also indicated that the limited ability to innovate products had an impact on dynamic capacities. Due to their limited ability to innovate products, executives of e-business start-ups can allocate their time and resources towards developing integration, learning, and

reconfiguration capabilities. This will enable them to effectively navigate through unforeseen and uncontrollable situations. Insufficient ability to innovate can result in the loss of knowledge, dysfunction within the organization, and a reluctance to embrace change. Contradictory information can impede the ability to adjust and respond to changing circumstances. The absence of a culture that promotes flexibility and adaptability in human resources worsens these impacts. Developing a culture that prioritizes flexibility, continuous learning, and compatibility is essential for improving the adaptability of a business. These findings are consistent with recent studies on the topic of innovative capacities. In his study, Yusof (2023) discovered that organizations with a strong capacity for innovation exhibit a negative slope. This implies that as these companies adopt more incremental innovations, their commercial performance becomes more moderate.

The Relationship Between Process Innovation Capability and Dynamic Capability

Process innovation capability refers to a company's capacity to enhance its internal processes and decrease production costs, leading to improved performance (Damanpour et al., 2009). Process innovation capability is a component of internal organizational characteristics that improve the outcomes of operations within a corporation (Mendoza-Silva, 2020). Process innovation capability is a fundamental aspect of innovation capabilities that is connected to the presence of dynamic capabilities, which involve the ability to sense, seize, and convert process improvement and flexibility (Hanchi & Kerzazi, 2020). Implementing process innovation driven by digital technology and soft skills necessitates a comprehensive comprehension of the current processes as a vital component (Goni & Van Looy, 2022). The research findings confirm that there is a strong and positive association between process innovation capability and dynamic capabilities, with a beta coefficient (β) of 0.591 and a t-value of 4.424. Therefore, hypothesis H2 is accepted. The process innovation capability, particularly in e-business start-ups, is a fundamental aspect of innovation capability that pertains to the capacity to enhance business processes for greater effectiveness and efficiency. As a young company, e-business start-ups are dedicated to enhancing processes and methods, constantly seeking ways to improve efficiency and speed in order to achieve superior performance and long-term viability. Indeed, this research was conducted amidst a pandemic, and the findings emphasize the significance of process innovation skill as the most impactful component with the highest impact on dynamic capacities. This result is intriguing because process innovation is the only type of invention that possesses the ability to adapt to changes and uncontrollable external circumstances due to its inherent flexibility.

This finding corroborated numerous prior research that investigated the associations between process innovation capabilities and dynamic capabilities (Harel et al., 2020; Prajogo, 2006; Schriber & Löwstedt, 2018).

The Relationship Between Marketing Innovation Capability and Dynamic Capabilities

The development of marketing innovation capability, which is crucial for e-business start-ups, is closely linked to the dynamic nature of client expectations in their main company activities. According to Shergill and Nargundkar (2005), a company with a strong marketing innovation capability is likely to have a strong ability to shift dynamically.

The fluctuating and unpredictable nature of customer value poses a significant hurdle for firms aiming to gain a competitive advantage. Past research has indicated that employing a market approach and fostering customer value creation through marketing innovation

capability can lead to the acquisition of unique, lucrative, and difficult-to-replicate client market segments, as well as the attainment of market dominance. The ability of an organization to innovate in marketing, such as in product development, is closely linked to external factors. To be successful, an organization must be agile and able to adapt to changes that happen outside of the company (Guo et al., 2020; H. G. Kim & Wang, 2019; Z. Wang & Kim, 2017).

According to the results, it seems that the ability to innovate in marketing also has a positive and significant impact on the ability to adapt to change, with a beta coefficient of 0.300 and a t-value of 1.971. This supports hypothesis H3. The findings demonstrate that the ability to innovate in marketing is a crucial element in enhancing dynamic capacities. Consistent with prior research, a strong connection has been identified between the ability to innovate in marketing and the competitiveness of creating customer value (Sánchez-Gutiérrez et al., 2019). Additionally, the adoption of sustainable marketing practices within the context of start-ups, along with the use of multiple channels to gain an advantage, has been found to be associated with rapid changes (Sinčić Ćorić et al., 2020; Wilson & Daniel, 2007).

The Mediating Effect of Dynamic Capabilities between Innovation Capability and E-Business Start-up Performance

The presence of dynamic skills is essential for enhancing the performance of Indonesian e-business start-ups in this study. The study revealed a significant relationship between e-business start-up performance and dynamic capabilities, specifically in the areas of integration, learning, and reconfiguration. The integration skills of resources are crucial in e-business start-ups due to their limited resources during the early stages. The company's primary strength rests in its adeptness in seamlessly integrating both internal and external resources (Hanifah et al., 2019; Hudáková et al., 2019). Learning capabilities refer to the ability to complete tasks with greater effectiveness and efficiency by engaging in repetitive practice and review. Start-ups can leverage their prior experiences to avoid making the same mistakes repeatedly, enabling them to gain new information and create innovative products (Bates & Khasawneh, 2005; Pisano, 2017). The ability to reconfigure is crucial for effectively navigating a continuously evolving industry landscape. The aforementioned capabilities are regarded as the primary dynamic capabilities for monitoring market and technological developments and for promptly responding through the process of transforming resources (D. Teece et al., n.d.; D. J. Teece, 2015; D. J. Teece & Linden, 2017).

The findings from Indonesian e-business start-up businesses indicate that dynamic capabilities have a positive and significant relationship with e-business start-up performance. The beta coefficient (β) is 0.534 and the t-value is 5.095, confirming the acceptance of hypothesis H4. This finding further corroborated the earlier research conducted by Dejardin (2023), which indicated that dynamic capacities have a beneficial impact on firm performance, both before and during the pandemic (Dejardin et al., 2023; Martins, 2023).

Unfortunately, the dynamic capacities that are believed to act as mediators are incapable of fulfilling their job as mediators. In this scenario, the presence of digital start-ups necessitates a significant amount of financial resources to develop or introduce novel products. However, the constrained circumstances of start-ups pose a hindrance to this creative process. Furthermore, conducting research on the demands and challenges encountered by the

market, which can be addressed through technology-driven products, necessitates feasibility assessments of user interfaces, the creation of secure and dependable systems, and the fulfillment of coding service providers' or website developers' requirements in alignment with customer preferences. Unlike non-technology-based businesses, product development in digital-based businesses requires specialized capabilities to keep up with constantly evolving technological advancements. This involves conducting research, development, and rigorous quality and durability testing within a relatively short timeframe before launching the product in the market.

The study discovered a substantial positive relationship ($\beta=0.315$) between process innovation capability and e-business start-up performance. This relationship is mediated by dynamic capabilities, as evidenced by a T-value of 3.026 and a p-value of 0.002. This finding corroborated prior research that discussed the presence and function of dynamic capabilities as a mediating factor, as well as the connection between process innovation capability, dynamic capability, and business performance (Donbesuur, Ampong, et al., 2020; S. H. Jin & Choi, 2019; Valdez-Juárez & Castillo-Vergara, 2021; Yusof et al., 2023; Zhu et al., 2006). In the context of Indonesian digital start-ups, the presence of numerous business incubators, communities, and collaboration opportunities provided by public or government institutions can assist them in gaining a deeper understanding of the actual challenges within their system processes and how to enhance the technology adopted by users. This is particularly relevant in the collaborative, complex, and social business process environment. The study has found that the ability to innovate in processes, which is facilitated by dynamic capabilities, is the most significant factor. This is supported by external factors such as customer feedback through platforms like Playstore or Google rankings, as well as the presence of various communities. These factors contribute to the improvement of internal resources and capabilities, resulting in better services, enhanced systems, and increased customer satisfaction in terms of process efficiency and effectiveness.

The findings of this study also demonstrate the connection between the ability to innovate in marketing and the performance of e-business start-ups is highly influenced by dynamic skills, with a mediation effect shown at a significance level of 10% ($\beta=0.160$; T-value=1.904 and P-value=0.057). The aforementioned studies have consistently found a strong positive correlation between marketing innovation and business performance. Additionally, these studies have identified dynamic capabilities as a mediator variable in this relationship (De & Cabral, n.d.; Sánchez-Gutiérrez et al., 2019; Sari et al., 2023; Shergill & Nargundkar, 2005; Vu, 2020). This study aims to provide a novel perspective by utilizing newly updated item indicators of the construct that specifically target digital start-ups in poor nations.

Entrepreneurial Orientation Strengthening the Relationship Between Innovation Capability and Dynamic Capabilities

This study examines the impact of entrepreneurial orientation as a moderating variable on the link between product innovation capability and dynamic capability. Unfortunately, the results show that entrepreneurial orientation decreases this association ($\beta=-0.253$; t-value=2.478; P-value=0.013). This outcome is likely associated with the business's age, which is less than 5 years and falls under the category of a start-up, therefore having limited resources. According to the respondents, 56% of them belong to the generation Z, which

refers to individuals born between 1997 and 2012 and are currently under 30 years old. The remaining respondents fall into the generation Y category, with ages ranging from 30 to 42. According to Gabrielova's (2022) research, Gen Z is characterized as a pragmatic and practical generation. They prioritize creating a positive impact and guaranteeing a stable personal life outside their professional commitments. Gen Z, having been born and raised during times of crisis, have witnessed the effects of economic downturns on their parents. This has instilled in them a strong awareness of financial matters and a prioritization of saving and employment stability. Gen Z has a significant level of concern for the future and tends to prioritize outcomes with minimal ambiguity, displaying a preference for risk aversion. Gen Z seems to prefer taking cautious approaches, opting for circumstances with more predictable outcomes rather than those with extremely uncertain consequences. According to Karina Gabrielova and Aaron A Buchko (2021), Generation Z has lesser aspirations and lacks the same level of confidence as millennials (Generation Y).

This study discovered that entrepreneurial attitude plays a crucial role in enhancing the connection between process innovation aptitude and dynamic capabilities. The statistical analysis revealed a substantial positive link, with a beta coefficient of 0.485, a t-value of 3.725, and a p-value of 0.000. This finding is corroborated by a prior study that examined the moderating impact of entrepreneurial orientation on its association with enhancing innovation performance, dynamic capabilities, creativity, and innovation capabilities (J. Ferreira et al., 2020; Jingkun Bai, 2017).

The COVID-19 pandemic, occurring from 2020 to 2023, has resulted in a global lockdown, leading to a period of extreme volatility, uncertainty, complexity, and ambiguity (VUCA) worldwide (Ramakrishnan, 2021). In a VUCA (volatile, uncertain, complex, ambiguous) world, there are numerous challenges related to managing risk and fostering innovation, maintaining control over mobile operations, demonstrating effective leadership during grassroots change, and minimizing unproductive complexity without oversimplifying the associated risks. An organization's ability to endure and overcome challenges and uncertainty is crucial for its survival and requires the development of strong resilience. During times of crisis in a volatile, uncertain, complex, and ambiguous (VUCA) world, entrepreneurs must emphasize the need for change and highlight the benefits of process innovation capabilities as the new approach to work. They should also strive to enhance their methodologies to increase effectiveness (Ramakrishnan, 2021; Taskan et al., 2022).

Unfortunately, this study has yielded a contrasting outcome, revealing that the presence of entrepreneurial attitude as a moderating variable substantially diminishes the correlation between marketing innovation aptitude and dynamic capacities ($\beta = -0.244$, t-value=2.020, P-value=0.043). This finding corroborates a prior study on the adverse environmental conditions resulting from the pandemic. The study highlighted that specific influential parties, such as customers, put significant pressure on the circumstances that can harm businesses and negatively impact their performance. Start-ups face more challenges in achieving competitiveness when stakeholders exert increased pressure due to environmental complexity. Engaging in dialogue and communication with stakeholders is crucial for developing effective survival strategies to overcome a crisis (Rubio-Andrés et al., 2023).

Government Support Strengthening the Relationship Between Dynamic Capabilities and E-Business Start-up Performance

The study's findings indicate that government funding influences the connection between dynamic capabilities and the performance of e-business start-ups. Fainshmidt (2016) elucidated the significance of the economic situation in regard to the presence and influence of dynamic skills on business performance. Dynamic capabilities have a stronger correlation with performance in developing economies. In industries that are technologically dynamic, building dynamic capabilities is crucial for remaining competitive in the market (Eisenhardt & Martin, 2000).

This study demonstrates that government funding has a substantial impact on enhancing the correlation between dynamic capabilities and the performance of e-business start-ups ($\beta=0.184$, $t\text{-value}=3.220$, $p\text{-value}=0.001$). The correlation between dynamic capabilities and e-business start-up performance more pronounced when there is a high level of government backing. Indonesian e-business start-ups are dependent on crucial resources such as financial capital, training support, technology/digital ecosystems, and digital infrastructure. These resources enable them to enhance their productivity and foster innovation inside their enterprises. This implies that if there is strong government backing for entrepreneurs, the tendency for members of an organization to be actively engaged will also be higher. Consequently, this will lead to improved performance of the organization. The findings corroborated the previous study on the substantial influence of government assistance and policy as a moderating factor in enhancing the association between constructs.

Conclusion

This study explores the importance of innovation capabilities, specifically product, process, and marketing innovation, in e-business start-ups. It highlights the role of dynamic capabilities as a mediator and the influence of government assistance and entrepreneurial orientation. The study emphasizes the need for Indonesian e-business start-up leaders to prioritize product and marketing innovation for improved business performance. The study also suggests that government support plays a significant role in establishing e-business start-ups in Indonesia. The findings contribute to the understanding of innovation capacities and highlight the importance of dynamic skills in boosting the nation's economy.

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