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When does entrepreneurial bricolage mediate the effect of entrepreneurial orientation on new product development? The role of environmental dynamism as moderator

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ABSTRACT

Objective: The objective of the article is to investigate the environmental dynamism (ED) conditions for entrepreneurial bricolage (EB) to function as the mediator between entrepreneurial orientation (EO) and new product development (NPD).

Research Design & Methods: This research was conducted using the cross-sectional method surveying 258 entrepreneurs in West Java, while the mediation role of the variables was analysed through macro PROCESS for SPSS developed by Andrew F. Hayes (Hayes, 2018).

Findings: The results showed that the influence of entrepreneurial bricolage is weak as a direct or mediating variable when the environmental dynamism is high or strong but has a strong mediating effect when the environmental conditions are stable.

Implications & Recommendations: To add to the body of knowledge on entrepreneurship, this research investigated the role of environmental dynamism in the direct and mediating relationship between entrepreneurial bricolage and new product development.

Contribution & Value Added: The investigation of entrepreneurial bricolage at varying levels of environmental dynamism is expected to make a substantial contribution to the entrepreneurship literature.

Article type: research article

Keywords: entrepreneurial orientation; entrepreneurial bricolage; environmental dynamism; new product development; conditional analysis process

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INTRODUCTION

New product development is a concrete and important effort to keep an advantage over competitors (Sheng *et al*., 2013; Wu *et al*., 2017; Zhao *et al*., 2022). However, entrepreneurs often fail to thrive due to limited resources (Davidsson *et al*., 2017). Some of the factors associated with these resources include a highly competitive market, operating in an environment with poor resources, and being personally attracted to opportunities considered unfavourable by investors. Fackler *et al*. (2013) reported that micro, small, and medium-sized enterprises (MSMEs) mostly experience difficulty in obtaining strategic resources. Yu *et al*. (2019) noted that this was more challenging for business owners in emerging nations, particularly during the current Covid-19 pandemic (Kuckertz *et al*., 2020). Moreover, the data published by the Ministry of Cooperatives and MSMEs in 2021 showed that Indonesia, being a

developing country, has 64.2 million MSMEs. Therefore, it is important to study the new product development (NPD) performance of MSMEs during the Covid-19 pandemic and consider the existence of a hyper-competitive environment with limited resources.

Liu and Wang (2022) have recently found entrepreneurial orientation (EO) to be the main motivation for entrepreneurs to pursue innovative goals such as NPD. In the meantime, several earlier studies emphasise the impact of EO on performance (Rezaei & Ortt, 2018) while none was reported on its effect on new product development (Yi *et al*., 2021). Ferreras-Méndes *et al*. (2021) state that EO is necessary to ensure successful new product development but not sufficient. This is because companies do not usually develop new products when they only have high entrepreneurial orientation without enough resources (Patel *et al*., 2015).

Ferreras-méndes *et al*. (2021) further explained that EO and the creation of innovative products highly depend on the company's internal capabilities such as *absorptive capacity* (Patel *et al*., 2015), organizational learning (Bouncken *et al*., 2014), and *organizational change* (Wales, 2016). Entrepreneurial bricolage, one of the internal skills, was found to have received less focus despite serving as a dependable method of addressing the issue of high uncertainty and difficulty in locating unique resources (Baker & Nelson, 2005).

As An *et al*. (2018) explain, the concept behind bricolage was developed by a French anthropologist called Lévi Strauss as a concept theoretically recommended to remain productive using available resources in times of crisis. It was further adapted by Baker and Nelson (2005) to define entrepreneurial practice as an attempt to engage in production activities by reusing and re-combining available resources (Desa, 2012). Several studies also confirmed the possibility of using entrepreneurial bricolage in new product development (Cunha *et al*., 2014; Senyard *et al*., 2015; Tasavori *et al*., 2018; Wu *et al*., 2007).

It has been noted that in the last five years, research on EB in the context of entrepreneurship has been dominated by the social-entrepreneur landscape as exemplified by Kwong *et al*. (2017); Tasavori *et al*. (2018); Janssen *et al*. (2018); Langevang and Namatovu (2019); Servantie and Rispal (2018); Malsch and Guieu (2019). Meanwhile, research on EB and its contribution to the company's ability to develop new products is yet to be firmly established because there have been very few studies conducted, thereby, making the research an endless topic for discussion (Bechky & Okhuysen, 2017).

The result of some previous studies showed that only four articles tested empirically the effect of EB on NPD. They are An *et al*. (2018), Sivathanu and Pillai (2020), Wu *et al*. (2017), and Yu *et al*. (2019). Meanwhile, Kwong *et al*. (2019) and Santos *et al*. (2020) showed the concept as a capability needed by companies in times of crisis, especially during the Covid-19 pandemic. Therefore, to bridge this gap, this research conducted an empirical evaluation of the impact of EO and EB on NPD by including ED in the framework as a moderating factor.

Importantly, placing ED as a moderating variable in one framework has not been conducted previously. Wu *et al*. (2017) considered technological turbulence, meanwhile, during the Covid-19 pandemic, changes occur in all aspects and not only in the technological aspects. It was also discovered that the majority of recent research places it as an independent variable, thereby showing a direct negative effect (Kim *et al*., 2020; Seo *et al*., 2020). The research objectives are to close the gaps in knowledge by offering convincing findings about how EO and EB affect MSMEs' capacity to NPD using the ED landscape.

This investigation focuses on 1) developing a conceptual framework based on the relationship between OE and EB in NPD, 2) ascertaining the beneficial effects of including ED as a mediator in the suggested conceptual model, and 3) firmly establishing the effect of EO and EB on NPD. Academically, this article contributes to fairly complex research on EO, EB, and NPD by incorporating an important construct that has not been fully explored, namely environmental dynamism.

The following sections will present the theoretical background, development of hypotheses, methodology, finding, discussion, conclusion, theoretical implication, practical implication, limitations and future research.

LITERATURE REVIEW

Entrepreneurial Orientation and New Product Development

In short, NPD is the utilisation of a company's resources and capacity to produce or enhance new or extant products (Cooper, 2003), which is performed after making predictions on the situation and conditions in the market (Liu & Wang, 2022). This means that new product development is company's effort to change the demand information from potential consumers. Even though new product development is required to maintain business sustainability, it is still practically associated with the risk of failure.

According to Wang *et al*. (2021), the success of NPD is crucial to company's survival, because it correlates with the company's success. Therefore, companies need the right strategy to anticipate failures when developing a new product. Karami *et al*. (2020) explain that entrepreneurial orientation, being the most established construct in the management and entrepreneurship literature, is useful for making strategic decisions. Moreover, Mu *et al*. (2017) found that the contribution of EO to the success of NPD has become a concern for managers in every company in the last few decades.

Moreno-Moya and Munuera-Aleman (2016) argue that EO allows for recognizing opportunities and threats in their environment, assisting in NPD in response to those opportunities. This belief is supported by the results from Donbesuur *et al*. (2020) that EO is a crucial and strategic element for NPD's success, which affects the company's success. Several previous research has also shown that EO is very important for the sustainability and creation of company's economic stability (Głodowska *et al*., 2019; Oghazi & Hultman, 2017).

Covin and Wales (2019) define EO as a company's strategy concerning decision-making and processes of generating new market entries. This practically increases company's awareness in relation to opportunities, which indicates the ability of those with a strong EO to invest in the skill development necessary to perpetually examine and monitor the environment for new opportunities. According to Lumpkin and Dess (1996), EO consists of five dimensions which include risk-taking, innovation, proactiveness, autonomy, and competitive aggressiveness. Meanwhile, Anwar *et al*. (2021) discovered that several studies in developing countries focus on three of these dimensions. Miller and Friesen (1978) were the first to include in their research innovation, risk-taking, and proactiveness as the elements believed to be the determinants of business success and the development of new products (Anwar *et al*., 2021; Ma *et al*., 2017).

Adam and Alarifi (2021) showed that a company's ability to innovate promotes the creation of new products and improves performance. Of course, these are important to maintaining a competitive position in the market (Anwar *et al*., 2021). This practically means that innovation ability which encourages the development of new products needs to be balanced with the courage to face risks (Brettel *et al*., 2014). This shows that entrepreneurs need the courage to take risks to achieve high-performance levels (Anwar *et al*., 2021). Moreover, proactiveness during the process of NPD significantly influences the search for the appropriate product to be developed. This is in line with the opinion of Gao *et al*. (2018) that it is very beneficial for companies to be proactive when scanning the environment for potentially profitable activities. This means the three dimensions of EO are important for the development of new products and values. This led us to the subsequent hypothesis:

H1: The development of new products is positively impacted by entrepreneurial orientation.

Entrepreneurial Orientation, Entrepreneurial Bricolage, New Product Development

In the entrepreneurship setting, bricolage has contributed to the birth of new insights in the process of implementing ideas (An *et al.*, 2018). According to Baker and Nelson (2005), this concept is the utilization of the available resources within the organization – including human and non-human resources – by successful entrepreneurs to solve challenges or execute new opportunities. In fact, the entrepreneurial literature states that entrepreneurial bricolage serves as the strategy of choice in the process of pursuing innovation and developing the company during a crisis or when resources are limited for various reasons (Phillimore *et al*., 2019; Senyard *et al*., 2015; Smith & Blundel, 2014).

This simply means that companies with good entrepreneurial bricolage perceive crises or scarcity of resources as opportunities to be creative (Cunha *et al*., 2014). This is mainly because the concept of bricolage was developed based on the assumption that limited resources can provide unexpected resources when utilized based on the bricoleur perspective (Lévi-Strauss, 1984). This point of view emphasizes three main principles, which include immediate action, the combination of resources for new purposes, and the application of resources at hand (An *et al*., 2018; Baker & Nelson, 2005).

Vanevenhoven *et al*. (2011) generally divide EB into two types which include internal and external bricolage. External bricolage refers to activities intended to expand the pool of potential resources available to business owners in their external surroundings, including social connections, tangible assets, and useful assets, while internal bricolage refers to the entrepreneur's internal resources, such as life experience, prior knowledge, education, and possible certification to use, improvise, or employ in operation and management processes. Thus, external bricolage refers to external resources (Nor-Aishah *et al*., 2020).

Notably, amid high uncertainty, rapid change, and difficult access to production resources, entrepreneurial bricolage is determined by entrepreneurial orientation because it reflects the strategic position of a company even during the process of exploring different actions. Ma and Yang (2021) defined bricolage in relation to the actions of companies and it was observed by Salunke *et al*. (2013) to be mainly driven by entrepreneurial orientation, thereby, allowing companies to maintain sensitivity to new opportunities and take risks (Ma & Yang, 2021; Zhenduo, 2015). Several studies showed that EO is the main driver of EB (Hooi *et al*., 2016; Mohammadi, 2021; Salunke *et al*., 2013). This is because EO makes companies always sensitive to new opportunities and risk-taking as a dimension of EO (Ma & Yang, 2021; Zhenduo, 2015). Some studies also suggested that entrepreneurs tend to run their businesses in environments with limited resources (Salunke *et al*., 2013; Sirmon *et al*., 2007). This condition makes entrepreneurs dependent on EO competencies to NPD or services with bricolage efforts or combining the available resources (Gundry *et al*., 2011). According to Zhenduo (2015), entrepreneurial orientation increases sensitivity to new opportunities through entrepreneurial bricolage activities. This resulted in the formulation of the subsequent hypothesis.

H2: Entrepreneurial orientation has a positive influence on entrepreneurial bricolage.

Several theoretical arguments showed that entrepreneurial bricolage triggers new product development. Firstly, it manifests a quick reaction to market demand (Guo *et al*., 2018) as well as trial and error efforts to modify a product (Xiang *et al*., 2020). Secondly, bricolage promotes new product development at a low price, because it uses the resources available (Su *et al*., 2020; Yu *et al*., 2019). Theoretical arguments regarding the entrepreneurial influence of bricolage on new product development are supported by Wang *et al*. (2021), Yu and Wang (2021), and Sivathanu and Pillai (2020). This observation resulted in the following hypothesis:

H3: The development of new products is positively impacted by entrepreneurial bricolage.

Mediating Role of Entrepreneurial Bricolage

Ferreras-Méndes *et al*. (2021) confirmed that for an NPD to be effective, EO is a required but not sufficient condition. This means a company also needs to pay attention to other factors such as internal capabilities and adequate resources to minimize failure while developing new products. In reality, Lumpkin and Dess (2001) claimed that ED plays a significant role in the connection between EO and NPD at the early stages of the concept's development.

Based on these reasons, several previous research has tried to add factors related to the company's internal capabilities as a mediating mechanism to increase the influence of EO on NPD. These internal factors included absorptive capacity (Patel *et al*., 2015), organizational learning (Bouncken *et al*., 2014), organizational change (Wales, 2016), and business model innovation (Ferreras-Méndes *et al*., 2021). Moreover, from these proposed internal factors, those that have been proven to increase the influence of entrepreneurial orientation on new product development have not been explored amid uncertainty and difficulty in accessing production resources.

This study aimed to propose entrepreneurial bricolage as an antecedent that mediates the effect of EO on NPD. It was motivated by the fact that companies with limited resources, entrepreneurial

orientation, and the ability to recognize opportunities must have entrepreneurial bricolage. This means that companies could create value through entrepreneurial bricolage by utilizing their resources effectively (Baker & Nelson, 2005; Senyard *et al*., 2015). Furthermore, companies could develop new products to meet existing opportunities by applying EB principles (Simba *et al*., 2020).

Entrepreneurial orientation is the initial phase in stimulating the development of new ideas. This means entrepreneurial orientation complements entrepreneurial bricolage, which focuses on new product development through immediate action using the available resources. Entrepreneurial bricolage is an internal mechanism needed to realize a company's entrepreneurial orientation. In line with this, the following hypothesis was proposed:

H4: Entrepreneurial bricolage mediates the effect of entrepreneurial orientation on new product development.

Environmental Dynamism as a Moderator

Environmental dynamism is the regularity with which environmental variables change, including technology, market demand, suppliers, customer preferences, and competitors (Ma & Yang, 2021; Seo *et al*., 2020; Wijbenga & van Witteloostuijn, 2007), as well as frequent rapid change and a high degree of ambiguity (Jahanshahi & Brem, 2020). According to contingency theory, environmental dynamism encourages companies to exhibit behaviours, processes, abilities, and management styles that adapt to various opportunities in their environment (Scott & Davis, 2007). This indicates that contingency is a crucial consideration when selecting the most suitable business strategy (Tajeddini & Mueller, 2018).

The increasingly dynamic customer preferences for consuming a product are impacted by the high level of ED, which leads to shorter product cycles, therefore, companies need to introduce new products more frequently (Atuahene-Gima *et al*., 2006) or modify them continuously (Zhao *et al*., 2014). Furthermore, environmental dynamism also affects the unstable supply of production factors, because it puts the company in a dilemma of having to introduce new products and at the same time need to overcome the scarcity of production factors. Based on these conditions, it is understood that environmental dynamism stimulates EB to overcome the instability of resource supply (Ma & Yang, 2021) by continuously integrating the available resources creatively, to develop new products. Therefore, the following hypothesis is put forth:

H5: The relationship between entrepreneurial bricolage and new product development is moderated by entrepreneurial dynamism.

Taking into account the previously mentioned arguments, the current one builds on two postulates, according to which entrepreneurial bricolage is a mediator of EO and NPD and ED strengthens the positive impact of EB on NPD. This means that when the occurrence of ED is high, the mediating effect of EB becomes stronger than the influence that EO has on NPD. Thus, we hypothesise as follows:

H6: Environmental dynamism is necessary for the indirect impact of entrepreneurial orientation on new product development through entrepreneurial bricolage. The stronger the indirect relationship between entrepreneurial orientation and new product development, the greater the environmental dynamism.

Figure 1 depicts the conceptual model of the connection between the suggested variables, which include EO, EB, ED, and NPD.

RESEARCH METHODOLOGY

Data Collection and Sample Size

The population consisted of owners of MSMEs in the food and beverage sector in the province of West Java, Indonesia. The survey location was selected based on data from the Central Statistics Agency in 2020 which shows this province has the largest number of food and beverage MSMEs. A non-probability sampling technique was used to obtain 258 MSME owners with less than five years in business

that were willing to respond to the survey, and the information was gathered cross-sectionally through an online-based survey conducted from December 2021 to March 2022.

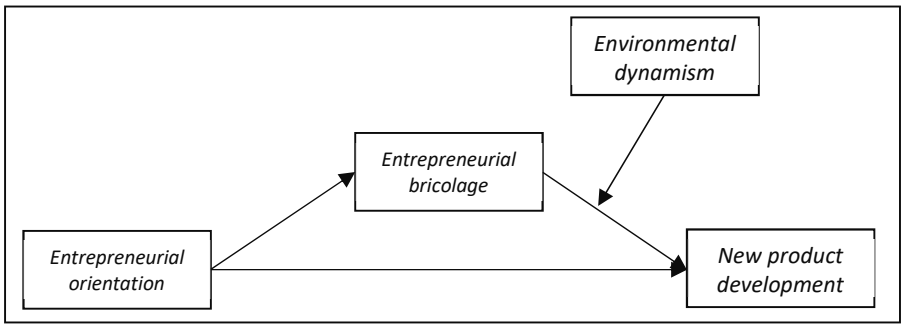

Figure 1. Conceptual model
Source: own elaboration.

Measures

Variables were measured using an instrument designed with a numerical scale of 1 to 7 points in line with the recommendation of Nunnally and Bernstein (1994) according to which the scale tends to produce interval data when using the anchoring technique. This measurement instrument was adapted from several previous research provided necessary modifications such as adaptation of the instrument used by Anwar *et al*. (2021) which consists of dimensions of innovation, risk-taking, and proactiveness for EO. Meanwhile, EB was measured using an instrument developed by Davidsson *et al*. (2017) and the other instrument developed by Yapu Zhao *et al*. (2022) was adapted to measure NPD. The environmental dynamics were measured using an instrument developed by Seo *et al*. (2020) and the results of this analysis show that all measurement instruments have good construct validity with standardized regression weights > 0.5.

Data Analysis

The measurement model test procedure used for data analysis was SEM-AMOS after which micro-PROCESS was applied to conduct conditional process analysis. This conditional process analysis is a relatively new term introduced by Hayes (2012, 2018) and further described by Hayes and Rockwood (2020) as a methodological approach that combines mediation and moderation to examine and evaluate theories about how different mechanisms vary depending on the environment or the individual. Meanwhile, Preacher and Hayes (2004) introduce a bootstrap method to perform this analysis before it was later recommended by Zhao *et al*. (2010) and widely applied in different research fields based on Yang *et al*. (2019).

Confirmatory factor analysis (CFA) with the multi-factor method and the AMOS were used to perform the measurement model test. It showed that $\chi 2 = 705.387$, df = 293, RMSEA = 0.07, CFA = 0.8, and TLI = 0.8. According to Hair *et al*. (2018), a RMSEA score lower than 0.08 indicates that the model fits the data and meets the criteria of goodness of fit (GOF). The CR, AVE, descriptive statistics, and correlations between variables are presented in Table 1.

RESULTS AND DISCUSSION

Test of Mediation Hypotheses

The proposed hypotheses used the transmittal and segmentation approach such that hypotheses 1, 2, and 3 were tested through the segmentation approach and hypotheses 4, 5, and 6 – through the transmittal approach. The transmittal hypothesis focuses on a single statement that the mediator (M) mediates the relationship between X and Y without exploring the hypothesis that links X to M and M to Y (Memon *et al*., 2018).

Table 1. CR, AVE, descriptive statistics, and correlation between variables

Variable	CR	AVE	M	SD	EO	EB	NPD	ED
EO	0.89	0.51	36.18	8.24	1	–	–	–
EB	0.88	0.62	38.08	6.73	0.524**	1	–	–
NPD	0.89	0.58	32.48	6.85	0.548**	0.728**	1	–
ED	0.83	0.50	23.64	5.57	0.638**	0.540**	0.675**	1

Note: N = 258. *p < 0.05, **p < 0.01
Source: own study.

The outcomes of the Macro PROCESS study are displayed in Table 2. It was discovered that the direct effect of EO on NPD had a p-value of 0.000 (< 0.05). This indicates that the hypothesis (H_1) was verified. This was supported by the range between the lower-level confidence interval (LLCI) and the upper-level confidence interval (ULCI) attaining its maximum value between 0.112 and 0.270. This is in line with the recommendation of Hayes (2018) that the proposed hypothesis should not be rejected when the LLCI and ULCI values are not below 0.

Table 2. Mediation analysis results

Model	Effect	SE	P	t	95% CI
Direct					
EO → NPD	0.191	0.040	0.000	4.760	0.112 to 0.270
Indirect (mediation)					
EO→EB	0.428	0.043	0.000	9.841	0.342 to 0.514
EB→NPD	0.618	0.049	0.000	12.558	0.521 to 0.714
EO→EB→NPD	0.264	0.039			0.193 to 0.345

Source: own elaboration of macro PROCESS model 4 output.

The second hypothesis (H_2) on the advantageous impact of EO on EB was tested and also accepted as indicated by the coefficient of the p-value of 0.000 (<0.05) was in line with a1 and LLCI with ULCI reaching between 0.342 and 0.514. Moreover, the third hypothesis (H_3) concerning the connection between EB and NPD was in line with b1 and showed positive results due to the p-value of 0.000 (<0.05) as well as the LLCI with ULCI values in the range between 0.521 and 0.714.

The mediation hypothesis was tested in line with the developments by Baron and Kenny (1986) on the application of four conditions to determine mediating effects. In the first condition, the predictor variable was seen to have a direct impact on the mediator, whereas, in the second condition, the mediator variable greatly impacted the dependent. Thirdly, the coefficient of the mediator had to be significant while the fourth required the independent variable's coefficient – insignificant.

The outcomes of the mediation study are shown in Table 2. An indirect impact of EO was discovered on NPD via EB as indicated by an effect of 0.264 with SE = 0.039, LLCI = 0.193, and ULCI = 0.345, and this means that the fourth hypothesis (H_4) was also accepted, thus supporting Hooi *et al*. (2016), Mohammadi (2021), and Salunke *et al*. (2013). Moreover, it was discovered that EB had a partial mediating role in the direct and significant relationship between EO as an independent variable and NPD as a dependent variable. This is also in line with the rules stated by Baron and Kenny (1986) that the direct influence of the independent variable on the dependent variable constitutes partial mediation, thus supporting Ma and Yang (2021).

Test of Moderated Mediation

Based on several guidelines from prior research, the 14 macro PROCESS model was used to assess the moderating-mediating impact of the proposed variables. These conditions include the existence of 1) a significant indirect effect, 2) a significant interaction between mediators, and 3) a moderator to predict the criterion and the independent variable that has a conditional indirect effect. These

were based on different criteria related to the mediators at high and low moderating levels (Guarana & Hernandez, 2015; Srivastava & Agrawal, 2020).

The results of the analysis conducted using the moderation-mediation model validated the fifth non-directional hypothesis (H_5) by showing that ED moderated the relationship between EB and NPD. However, ED had a negative moderating effect of -0.017 on the relationship between EB and NPD with a p-value of 0.017, LLCI of -0.030, and ULCI of -0.003. These results indicated that the tendency of EB to affect NPD becomes weak when the ED is high. This is in line with the rule by Holland *et al*. (2017) that the impact of variable X on Y becomes weak when the moderator is high in terms of a negative moderating effect. Thus, the fifth hypothesis (H_5) was accepted.

The post hoc probing effect presented in Figure 2 shows that the slope of the regression line for the NPD over EB gets steeper as the ED value increases. This further validates that there was a weakening effect caused by an increase in ED. The analysis also showed that the R^2 Change value of 0.008 indicated that 0.8% of the change in the relationship between EB and NPD was caused by the moderating effect of ED.

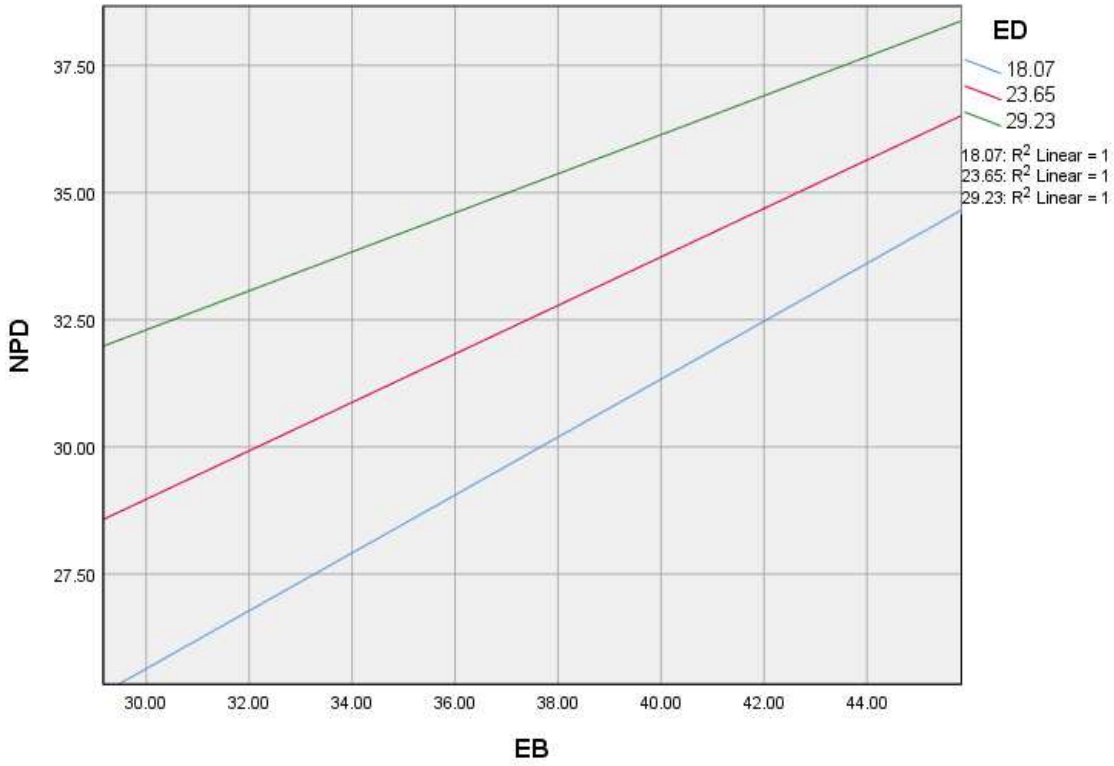

Figure 2. The moderating role of ED on the EB-NPD relationship
Source: own elaboration.

The macro PROCESS classifies environmental dynamism into three levels of conditions to prove the moderating-mediation conditional effect and these include low, moderate, and high levels as indicated in Table 3.

Table 3. Moderated mediation results for new product development

Value moderator	*Conditional indirect effect*	SE	95% CI
18.068 (-SD)	0.244	0.040	0.169 to 0.326
23.647 (M)	0.204	0.032	0.145 to 0.271
29.227 (+SD)	0.164	0.034	0.103 to 0.237

Source: own elaboration of macro PROCESS model 14 output.

Table 3 shows that effect of EO on NPD mediated by EB was strongest when ED was at a weak level (-SD; indirect effect = 0.244). Meanwhile, the indirect effect of EO on NPD got weaker when ED was

strengthened (+SD; indirect effect = 0.164). This analysis showed that the sixth hypothesis (H_6) constructed directionally was not accepted because a high environmental dynamism led to a weaker indirect relationship between the variables. Figure 3 showed the conditional direct and indirect effects.

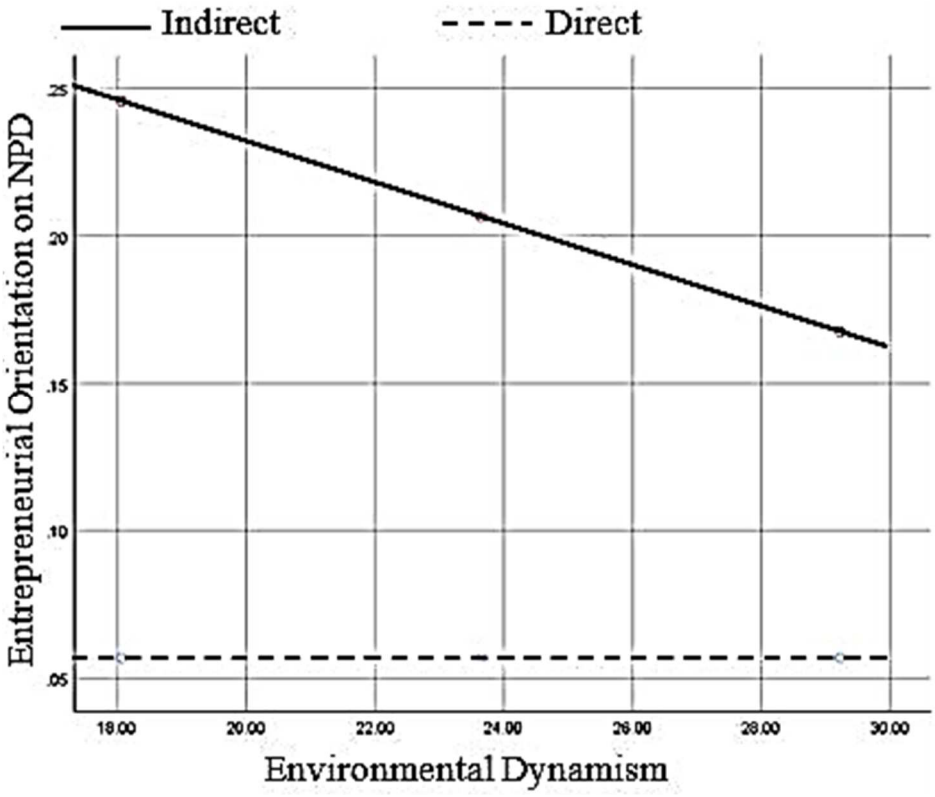

Figure 3. The conditional direct and indirect effect
Source: own elaboration.

The visualization results in Figure 3 show that the slope of the line indicates the level at which the indirect impact of EO on NPD is influenced by the strength of ED. Meanwhile, the direct effect was found to be constant at a value of 0.191 based on the coefficients in the conditional process model, because it is independent of the moderator variable. Noteworthy, the slope of the line for the indirect effect in Figure 2 is ab3 = 0.428(0.870) = 0.372. This resonates with the magnitude of the indirect impact of EO on NPD was influenced by ED through EB.

Discussion

This research examined the in-depth and direct effect of EO on NPD and the mediating influence of EB on the indirect effect. Previous studies showed that companies need to pursue an EO to achieve superior performance (Ferreras-Méndes *et al*., 2021; Tajeddini & Mueller, 2018). This is because an EO configures certain abilities to recognize threats and opportunities to NPD (Moreno-moya & Munuera-Aleman, 2016). However, some showed that EO needs to be supported by other variables in the mediating role to produce a more comprehensive explanation in terms of company performance and NPD (Ma & Yang, 2021). In this case, other variables should be involved to obtain a comprehensive model to achieve optimal new product development (Amankwah-Amoah *et al*., 2019).

It has also been previously reported that new product development is an important strategic process for company's success (Bouncken *et al*., 2020). Moreover, Wang *et al*. (2021) interpreted the perspective of the resource-based theory in relation to the need of a company to have strategic resources capable of increasing innovation in order to achieve superior NPD. However, some businesses, especially new ones, often experience difficulties in accessing strategic resources. This is why Ma and Yang (2021) suggested recognising how other factors act as mediators to increase EO's influence.

The study revealed that the effect of EO on NPD provides a larger coefficient when mediated by EB. These findings supported Ma and Yang (2021) that EO triggers EB, which enhances NPD. The results provided a new perspective in examining the relationship between EO and NPD, previously studied based on competence, entrepreneurial networks, and opportunity creation (Anwar *et al*., 2021a; Su *et al*., 2015). Meanwhile, the direct effect had a smaller coefficient which implicitly indicates that the ability to recognize threats and opportunities in a company's environment is not practically sufficient to develop new products as a response to existing opportunities (Moreno-Moya & Munuera-Aleman, 2016).

The higher coefficient recorded for the impact of EO on NPD after the involvement of EB as a mediator variable also validated the findings of previous research. For example, Ferreras-Mendes *et al*. (2021) and Lumpkin and Dess (2001) showed that a company also needs to pay attention to other factors such as internal capabilities and adequate resources to minimize failure when developing a new product. This is relevant to the description of Simba *et al*. (2020) that companies need NPD to meet opportunities by applying the principles of EB.

The conducted model conditional process analysis showed that the mediating effect of EB on the relationship between EO and NPD is highly dependent on the level of environmental dynamism. This simply means that the underlying effect of EO on NPD becomes weak when the ED is high. It also shows that the EB can only mediate the impact of EO on NPD when ED is at a low level or even in a stable environment. This is in line with the findings of Wang *et al*. (2021) that EB is optimal when the organization's structure consists of individuals from different backgrounds providing diverse knowledge.

The findings showed that ED mediates the effect of EB on NPD. These results contradict Ma and Yang (2021) that EB is the main antecedent in improving business performance in various environmental conditions. However, Ma and Yang (2021) used respondents with over five years of experience in managerial and business backgrounds, so they were more adept at surviving in various situations and conditions.

According to the sixth hypothesis test, in a rapidly changing and unpredictable environment, entrepreneurs must have internal capabilities that are more sophisticated than EB. This indirectly rejected the findings of Phillimore *et al*. (2019) and Smith and Blundel (2014) that EB is an alternative strategy to keep innovating during a crisis.

CONCLUSIONS

Several earlier studies used mediating factors like opportunity creation to analyse the relationship between EO and firm success (Anwar *et al*., 2021a), customers' satisfaction (Cuevas-Vargas *et al*., 2019), and functional performance (Rezaei & Ortt, 2018). However, studies involving internal capabilities as recommended by Ferreras-Méndes *et al*. (2021) are still limited. This means that studies on the effect of internal capabilities such as EB in the relationship between EO and NPD need to be improved.

This research demonstrated that EB is stimulated by EO (Hooi *et al*., 2016; Mohammadi, 2021) to influence NPD (Guo *et al*., 2018; Xiang *et al*., 2020). The relationship between EB and NPD is also influenced by high or low ED. This means that EB is a mediating variable moderated by ED in the relationship between EO and NPD. The results indicated that EO and bricolage support NPD. Therefore, entrepreneurs with adequate EO and bricolage achieve higher NPD.

The mediation effect analysis showed that EO and bricolage could become important aspects of NPD. The results showed that high ED weakens the influence of EB on NPD. This implies that when ED is high, entrepreneurs should focus more on EO because EB is usually weak. However, stable or low ED is important in the NPD process. The moderating effect of ED on the relationship between EB and NPD has been rarely studied. Therefore, it is quite difficult to find relevant literature that confirms this finding.

Theoretical Implications

This study adds a number of significant ideas to the literature on entrepreneurship. Firstly, it is consistent with Fisher's (2012) recommendation for more comprehensive research on entrepreneurial bricolage. The results showed that EB increases the influence of EO on NPD performance, especially to

assist new businesses in overcoming resource constraints as suggested by An *et al*. (2019); Busch and Barkema (2020); Su *et al*. (2020) and also for companies as a whole (Walheiser *et al*., 2019).

Secondly, the findings also established several environmental dynamism conditions in the connection between entrepreneurial bricolage and new product development. It confirms that entrepreneurial bricolage only improves the new product development performance in an environment with a low or even stable level of environmental dynamism. This novel discovery and understanding stem from the bricolage study in the context of entrepreneurship, wherein entrepreneurial bricolage serves as a tactic to be used in times of resource scarcity (Hota *et al*., 2019; Musona *et al*., 2020; Phillimore *et al*., 2019; Smith & Blundel, 2014) yet cannot overcome environmental dynamism.

Practical Implications

The results provided practical and managerial insights into the activities performed by entrepreneurial actors. Firstly, entrepreneurs could rely on EO and bricolage to trigger new product development. Secondly, high ED weakens the mediating role of EB, meaning that entrepreneurs should focus more on EO when ED is high. This would increase the company's sensitivity to opportunities, indicating that a strong EO supports competency development to identify new opportunities. Conversely, stable or low ED are important aspects to rely on in the NPD process. The moderating effect of ED on the relationship between EB and NPD is currently rarely studied. Therefore, it is quite difficult to find relevant literature that confirms this finding.

Limitations and Future Research

There are several limitations to this research. Firstly, the respondents were only entrepreneurs in West Java Province selected using a sampling method without a probability technique. This has statistical limitations in relation to the generalization of the results to a wider population. For example, the research on entrepreneurial orientation, entrepreneurial bricolage, and environmental dynamism has only been conducted in developed countries such as Italy, the United States of America, and China up to the present moment but their findings cannot be applied to developing countries. This study recommends further research to explore entrepreneurial bricolage using two culturally and demographically different populations to provide specific insights as a contribution to the development of entrepreneurial bricolage literature in general. These results are anticipated to stimulate additional investigation using a conditional process analysis methodology to look at additional factors enhancing the impact of entrepreneurial bricolage on new product development.

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Conflict of Interest

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