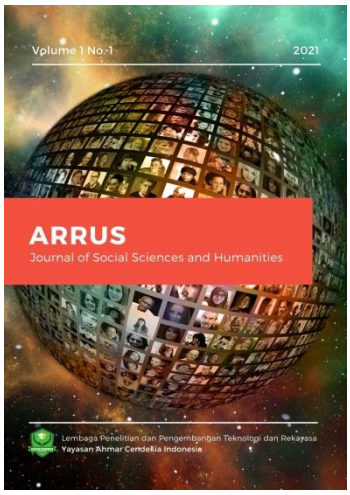
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RESEARCH ARTICLE

Innovating Growth: The Synergy of Human Capital, Dynamic Capability and Entrepreneurial Orientation in SMEs

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Abstract: Human capital and dynamic capability are configurations through which SMEs convert knowledge and agility into innovation advantage, yet their interplay with entrepreneurial orientation in developing-economy contexts remains under-specified. This study investigates how human capital and dynamic capability shape SMEs' entrepreneurial orientation and innovation capability, and whether entrepreneurial orientation mediates these effects. Data were collected from SMEs manager in Bali Province, Indonesia (396 questionnaires distributed; 177 valid responses) and analyzed using partial least squares structural equation modeling. Results show that human capital significantly and positively enhances entrepreneurial orientation and innovation capability, while dynamic capability exerts a stronger positive influence on both outcomes. Entrepreneurial orientation, in turn, significantly strengthens innovation capability, confirming its central role as an innovation engine in SMEs. Mediation tests reveal that entrepreneurial orientation partially transmits the effects of both human capital and dynamic capability to innovation capability, indicating that capabilities yield innovation not only directly but also through an entrepreneurial posture that mobilizes them. By integrating RBV and dynamic capabilities theory, the study extends their explanatory power for SMEs in developing economies and offers actionable guidance: investment in people and capability-building should be aligned to cultivate entrepreneurial orientation, thereby accelerating innovation and competitive advantage.

Keywords: human capital, dynamic capability, entrepreneurial orientation, innovation capability, SME

1. Introduction

In the face of rapid technological advancements and increasing globalization, innovation has become a central driver of competitive advantage. Firms must continuously adapt and proactively foster innovation to ensure long-term success (Wendra et al., 2019). Within this context, the role of human capital (HC) and dynamic capability (DC) has gained significant attention. HC, encompassing the workforce's knowledge, skills, and experience, is increasingly recognized as a critical resource for driving innovation (Noreña-Chavez & Thalassinos, 2023). Simultaneously, DC the ability of a firm to integrate, build, and reconfigure internal and external competencies in response to a rapidly changing environment, is seen as a vital enabler of organizational adaptation and innovation (Muriuki et al., 2023). Despite extensive research on these concepts, the direct relationships between

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HC, DC, and innovation capability (IC) are complex and not always straightforward. The effectiveness of these relationships often hinges on various mediating factors (Silva et al., 2021).

Among these factors, entrepreneurial orientation (EO) encompassing innovativeness, proactiveness, and risk-taking, has emerged as a key mediator that may channel human capital and dynamic capabilities into successful innovation outcomes (Chen et al., 2022). EO fosters an organizational culture that encourages creativity and risk-taking, facilitating the active involvement of a skilled workforce in innovation activities (Long & Liao, 2022). Moreover, EO is believed to play a pivotal role in enhancing the relationship between DC and IC by enabling entrepreneurial actions that drive innovation. Conceptually, HC and DC create resource and reconfiguration potential, whereas EO supplies the strategic posture through which these capabilities may be mobilized into innovation. Although prior studies portray EO as an innovation-enabling mechanism (Edgar et al., 2022) competing evidence cautions that entrepreneurial risk-taking can weaken innovation when resources or routines are constrained (Mahrous et al., 2020). However, the role of EO as a mediator in the relationship between HC and IC remains underexplored, presenting a significant research gap. While EO's importance is acknowledged, the mechanisms through which it mediates these relationships have not been fully understood (Rosa, 2023). There is particularly limited research on how the distinct dimensions of EO: innovativeness, proactiveness, and risk-taking, individually and collectively influence these relationships (Mitchell et al., 2020).

Furthermore, while the interaction between HC and DC is well-established, the mediating role of EO in this interaction remains largely unexamined (Donate et al., 2019). It is unclear whether EO's mediation functions similarly across various sectors or whether its impact varies in high-tech and low-tech environments or across firms of different sizes and maturities (Ali et al., 2021). The influence of external factors such as market competition, industry dynamism, and regulatory conditions on these relationships remains an area requiring further exploration (Zahoor et al., 2023).

This research seeks to fill these gaps by examining how EO mediates the relationship between HC and IC. The study aims to explore the individual and combined mediating effects of EO's dimensions innovativeness, proactiveness, and risk-taking, across different sectors and firm sizes. The novelty of this research lies in its comprehensive analysis of EO's role in facilitating innovation in dynamic environments, offering both theoretical and practical implications for firms aiming to enhance their IC through effective leveraging of HC and DC.

The primary objective of this study is to investigate how human capital and dynamic capability contribute to the development of innovation capability, with entrepreneurial orientation as a mediating factor. The study will contribute both theoretically and practically to the understanding of how firms can strategically leverage their internal resources to drive innovation and competitive advantage in the evolving business landscape.

2. Literature Review

2.1. Human capital

The concept of HC focus on education, skills, and health, and their impacts on both micro and macroeconomic outcomes. Recent studies emphasize the dynamic nature of HC, recognizing that it evolves through investments in education and training while also depreciating due to skill obsolescence and health decline (Usman, 2019). Consequently, continuous investment in HC is crucial to sustaining its role in economic development (Kara, 2023). Additionally, the relationship between HC and organizational outcomes has gained attention, with research indicating that firms with effective HC management strategies outperform in innovation and competitiveness (Beisembina, 2023). This relationship is often mediated by factors such as employee engagement, organizational culture, and leadership, which shape how HC is utilized (Khayinga & Muathe, 2018). By

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integrating HC theory with perspectives from organizational behavior and strategic management, recent studies offer a more comprehensive understanding of how HC drives organizational success (Don-Solomon & Michael, 2022). The dynamic interaction between HC, technology, and organizational practices is particularly crucial in rapidly changing economic environments (Fagbemi et al., 2022).

2.2. *Dynamic capability*

DC, a central concept in strategic management, refers to a firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Araújo et al., 2018). Recent research has expanded on this foundational idea, examining its implications across various sectors and contexts (Nguyen et al., 2022). The growing interest in DC stems from their potential to explain sustained competitive advantage in volatile and uncertain markets, where traditional resource-based views may not suffice (Danneels, 2016). Studies show that firms with strong DC are better positioned to innovate, adapt to technological changes, and respond to evolving customer preferences (Zhang et al., 2024). DC foster innovation by enabling learning, knowledge integration, and strategic flexibility (Hernández-Linares et al., 2024). This capability is especially vital in high-tech industries where rapid innovation is necessary for competitive survival (Tran et al., 2022). Additionally, recent studies have examined the micro-foundations of DC, focusing on the processes and routines that underpin their development (Ortiz-Avram et al., 2024).

2.3. *Entrepreneurial Orientation*

EO is a critical concept in entrepreneurship, characterized by innovativeness, proactiveness, and risk-taking, shaping a firm's strategic posture (Hossain & Azmi, 2021). Recent studies have expanded our understanding of EO, particularly in its influence on firm performance across varying contexts (Ngo, 2023). The literature highlights EO's essential role in fostering innovation, driving growth, and enhancing competitive advantage, particularly in dynamic and uncertain environments (Adam et al., 2022). EO enables firms to navigate challenges and seize opportunities effectively, emphasizing the need for an entrepreneurial mindset (Hernández-Linares et al., 2024). In highly dynamic environments, the positive impact of EO on performance is amplified, as entrepreneurial firms better navigate uncertainty and capitalize on emerging opportunities (Zahoor & Lew, 2022). Conversely, in more stable environments, the benefits of EO may be less pronounced, with some studies suggesting that excessive risk-taking could be detrimental (Mahrous et al., 2020). Additionally, EO's role in different firm types, such as SMEs and family businesses, has been explored, with findings indicating context-specific variations (Koyuncuoğlu & Tekin, 2022).

2.4. *Innovation Capability*

IC, the ability of an organization to develop new products, processes, and ideas for competitive advantage, has become a focal point in recent research Zhu et al. (2022). With the accelerating pace of technological change, its importance in sustaining long-term success has grown increasingly evident (Hu et al., 2022). Recent studies have explored various dimensions of IC, including its drivers, outcomes, and contextual factors influencing its effectiveness (Wu & Ding, 2020). Organizational learning enables firms to continually update their knowledge base and apply it to innovate. Additionally, knowledge management processes, such as acquisition, dissemination, and application, are crucial in fostering a creative culture within organizations (Zia, 2020). Firms that effectively manage knowledge resources demonstrate higher levels of IC (Mi et al., 2020). Another key area of study is the impact of leadership and organizational culture on IC. Transformational leadership, which encourages experimentation, risk-taking, and open communication, has been shown to promote innovation (Malik et al., 2022). Similarly, a culture that values creativity and flexibility is essential for fostering innovation (Le et al., 2020).

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2.5. *The relation of Human Capital to Entrepreneurial Orientation and Innovation Capability*

HC, which encompasses employees' knowledge, skills, and experience, is a critical enabler of both EO and IC (Krieger et al., 2021). Firms with higher levels of HC typically exhibit stronger EO, characterized by greater innovativeness, proactiveness, and risk-taking, alongside enhanced IC, enabling the effective development and implementation of new ideas (Hanifah et al., 2021). Investing in HC fosters an entrepreneurial mindset and supports innovative practices within organizations (Noreña-Chavez & Thalassinos, 2023). Skilled and knowledgeable employees drive innovation and take calculated risks, enhancing EO and organizational innovation (Prasetyo & Kistanti, 2020). Moreover, HC strengthens decision-making processes that support entrepreneurial success (Hareebin, 2020). It also enhances the firm's ability to integrate knowledge, foster creativity, and adapt to technological advancements, which are essential for sustaining innovation (Andreeva et al., 2021). Thus, HC is hypothesized to positively influence both EO and IC. Therefore, this study hypothesis:

H1: human capital has an effect on entrepreneurial orientation.

H2: human capital has an effect on innovation capability.

2.6. *The relation of Dynamic Capability to Entrepreneurial Orientation and Innovation Capability*

Firms with strong DC are better positioned to exhibit entrepreneurial behaviors and drive innovation (Saddam et al., 2023). DC enhance a firm's ability to respond to market changes with agility, fostering the proactivity and risk-taking behaviors central to EO (Mikalef et al., 2019). Firms with developed DC can anticipate market shifts, reconfigure resources, and capitalize on emerging opportunities, thus strengthening their EO (Yi et al., 2018). Moreover, DC enable firms to realign strategies, maintaining an entrepreneurial posture in volatile environments (Monteiro et al., 2019). This adaptability is crucial for sustaining competitive advantage in rapidly changing markets. By enabling the effective adaptation of resources and processes, DC support the continuous development and implementation of new ideas, driving sustained innovation (Heubeck, 2023). Additionally, DC facilitate organizational learning, fostering a culture of innovation (Arranz et al., 2020). Thus, DC are hypothesized to positively influence both EO and IC. Therefore, this study hypothesis:

H3: dynamic capability has an effect on entrepreneurial orientation.

H4: dynamic capability has an effect on innovation capability.

2.7. *The relation of Entrepreneurial Orientation and Innovation Capability*

Firms with a high level of EO are more inclined to explore new opportunities, take calculated risks, and engage in creative problem-solving, all of which are essential for fostering innovation (Yang & Yu, 2022). EO, characterized by innovativeness, proactiveness, and risk-taking, is a key driver of IC, defined as a firm's ability to develop and implement new ideas, products, or processes (Lazarte-Aguirre, 2024). Studies indicate that EO enhances IC by creating an organizational environment conducive to experimentation and novel idea generation (Fang, 2024). EO-driven firms invest in research and development, adopt new technologies, and engage in continuous learning, strengthening their innovation ability (Teng et al., 2020). However, the risk-taking component of EO may lead to excessive or poorly calculated risks, potentially harming long-term IC (Zahra, 2018). Additionally, a focus on radical innovations may overshadow incremental innovations, reducing overall effectiveness (Lazarte-Aguirre, 2024). In Bali's tourism-dependent and creative SME economy, EO may be consequential because volatile demand and uneven digitalization reward proactive opportunity recognition and experimentation. Yet resource constraints can limit the conversion of risk-taking into innovation outcomes. EO is a context-sensitive activation mechanism, not a sufficient condition for IC. Bali SME managers should balance entrepreneurial experimentation with

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resource discipline. Thus, EO is hypothesized to positively influence IC, with potential risks involved in its excessive application. Therefore, the following hypothesis was developed:

H5: entrepreneurial orientation influences the innovation capability.

2.8. *The mediation of Entrepreneurial Orientation on Human Capital and Dynamic Capability to Innovation Capability*

Recent studies suggest that EO plays a mediating role in the relationship between HC and IC. HC, encompassing a firm's workforce knowledge, skills, and abilities, is a critical driver of innovation (Salimi & Della Torre, 2022). However, the direct impact of HC on innovation may be limited without the presence of EO. EO fosters a proactive, innovative, and risk-taking culture that enhances the utilization of HC, enabling firms to leverage the skills and knowledge of their workforce effectively (Noreña-Chavez & Thalassinos, 2023). EO acts as a catalyst, transforming HC into creative and entrepreneurial activities, significantly enhancing IC (Liu & Xiao, 2022). Without EO, the potential of HC may remain underutilized, as employees might not be motivated to take risks or pursue novel ideas (Kusumawijaya & Astuti, 2023).

Similarly, DC, which enables firms to adapt to changing environments, is crucial for sustaining innovation (Kareem et al., 2024). However, EO amplifies the effects of DC by providing the strategic direction necessary to convert adaptive changes into innovative outcomes (Syhachack et al., 2024). Without EO, DC alone may lead to incremental rather than radical innovation, limiting its impact on IC (Subramaniam, 2023). Therefore, EO is hypothesized to mediate the relationship between both HC and DC with IC, driving more substantial innovation outcomes. The hypothesis proposed as follows:

H6: entrepreneurial orientation can mediate the effect of human capital on innovation capability.

H7: entrepreneurial orientation can mediate the effect of dynamic capability on innovation capability.

3. Research Method and Materials

This research was conducted among SMEs in the Province of Bali, Indonesia. The surveyed SMEs represented several major sectors in Bali, including hospitality (homestays, restaurants, cafés), handicrafts and creative industries (woodcarving, silver jewelry, textiles, apparel, and traditional crafts), and manufacturing (food and beverage processing, furniture, garment production). Sectoral differences were considered because capability deployment varies according to operational requirements, market dynamics, technological intensity, and knowledge dependence. The population consisted of 36,387 SMEs recorded in the official Bali, Province (2025). This figure refers to the accessible SME population used to construct the sampling frame, not to the number of SMEs contacted for data collection. From this population list, 396 SMEs were selected as the target sample using the Slovin formula with a 5% margin of error. The initial target sample was estimated using Slovin's formula, $n = N/[1 + N(e^2)]$, where $N = 36{,}387$ and $e = 0.05$. Thus, $n = 36{,}387/[1 + 36{,}387(0.05^2)] = 36{,}387/[1 + 90.9675] = 395.78$, rounded to 396 SMEs. This value was used as a questionnaire distribution target rather than as the final analytical sample size. The 396 selected SMEs were then contacted through email-based questionnaire distribution, followed by reminders to reduce non-response. The study employed a non-probability purposive sampling approach with convenience-based access, because respondents were selected from 396 SMEs was based on the availability of complete contact information and managerial relevance to the study constructs. Eligibility required SMEs to have operated continuously for at least three years, ensuring sufficiently established organizational routines and capability-development processes. Respondents were owners, general managers, or senior functional managers with at least one year of managerial experience and direct involvement in strategic decisions. These criteria reduced key-informant error by ensuring

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adequate knowledge of HC, DC, EO, and IC. Distinguishing firm maturity from managerial seniority therefore strengthened informant validity while retaining sectoral heterogeneity. Because single-informant surveys may inflate covariance through consistency motives and evaluation apprehension, procedural safeguards included confidentiality assurance, neutral wording, separation of predictor and criterion sections, and avoidance of explicit causal cues. Although such controls cannot eliminate CMV, full-collinearity VIFs below 3.3 further supported reliable subsequent PLS-SEM estimation. Single-informant managers were appropriate knowledgeable respondents, yet the same perceptual source can generate consistency-based covariance and endogenous measurement error. Confidentiality, neutral wording, predictor–criterion separation, eligibility screening, and VIF diagnostics reduce observable method contamination, supporting reliable estimation, but they cannot remove unmeasured confounding or establish temporal causality. Although this procedure enabled direct access to qualified SME managers, it may limit strict statistical representativeness. Therefore, additional bias diagnostics were conducted to assess whether the achieved sample materially differed from the broader Bali SME population. Data were collected from managers representing SMEs as research respondents. A total of 396 questionnaire links were distributed to the selected SMEs, and 177 valid responses were returned, yielding a response rate of 44.70%. Because the 219 nonresponding SMEs provided no questionnaire data, direct respondent–dropout comparison was infeasible rather than methodologically omitted. Accordingly, early- and late-wave respondents were compared on HC, DC, EO, and IC, with late respondents serving as a proxy for nonrespondents. No significant differences were detected (all $p > 0.05$), indicating no observable response-wave bias; although not proving equivalence, this supports the 177 cases as statistically suitable for subsequent PLS-SEM analysis. Thus, the Slovin-derived figure of 396 represented the target sample size and questionnaire distribution base, whereas 177 represented the final achieved sample used for empirical analysis. The variables were measured using items developed and employed in previous studies to ensure the study's validity and reliability. Multiple items were used to test each construct, and each item was evaluated using a five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree).

Human capital was measured using 10 items adapted from the research of (Andersén, 2021): The employees in our organization have skills that are not widely available in the labor market; The employees in our organization have skills that would be very difficult to replace; The employees in our organization have skills that are not available to our competitors; The employees in our organization have skills that are widely considered the best in our industry; The employees in our organization have skills that are developed through on the job experiences; The employees in our organization have skills that are difficult for our competitors to buy away from us; The employees in our organization have skills that are unique to our organization; The employees in our organization have skills that are difficult for our competitors to imitate or duplicate; The employees in our organization have skills that are customized to our particular needs; The employees in our organization have skills that distinguish us from our competition. Dynamic capability was measured using 8 items adapted from the research of (Monferrer et al., 2021): The workers in our firm are able to find alternative ways of doing their work; Our firm is able to develop flexible processes to respond rapidly to changes and opportunities detected in our markets; Our firm is able to change strategy rapidly according to our business priorities; Our firm is able to apply external knowledge commercially; Our firm is able to understand analyse and interpret information from the environment; Our firm is able to combine its internal knowledge with external information; Our firm has an organisational culture that promotes innovation; Our firm is able to use knowledge from various sources to develop products efficiently and rapidly.

Entrepreneurial orientation is measured using 8 items adapted from research (Chou et al., 2020): We are usually the first to find and introduce new products technologies; We are usually the first to introduce new innovations in our market area; We are the innovation leader in the market; We proactive in pursuing market opportunities; We act in anticipation

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of future problems needs or changes; We track industry trends in anticipation of future developments; We willing to try new management marketing services and produce technology; We aggressively maximize potential opportunities. Innovation capability was measured using 10 items adapted from the research of (Yu et al., 2017): My firm continually develops programs to reduce production costs; My firm has valuable knowledge on the best processes and systems for work organization; My firm organizes its production efficiently; My firm is able to offer environmentally friendly processes; My firm manages production organization efficiently; My firm is able to replace obsolete products; My firm is able to extend the range of products; My firm is able to develop environmentally friendly products; My firm is able to improve product design; My firm is able to reduce the time to develop a new product until its launch in the market.

4. Results and Discussion

4.1. Results

The descriptive statistics in Table 1 show that HC has a mean of 4.161 and a standard deviation of 0.526, reflecting a moderately high and consistent level of perceived HC among respondents, with a slight variation towards the lower end.

Table 1. Descriptive statistics of variables studied

	Theoretical Score		**Actual Score**		**Mean**	**SD**
	Min	**Max**	**Min**	**Max**		
Human Capital	1	5	3.100	4.8000	4.161	0.526
Dynamic Capability	1	5	3.000	4.840	4.109	0.527
Entrepreneurial Orientation	1	5	3.125	4.875	4.082	0.472
Innovation Capability	1	5	3.100	4.870	4.057	0.498

Source: The Authors, 2026

This aligns with literature emphasizing the role of HC in organizational growth and competitive advantage. DC also shows a high mean score of 4.109 with a standard deviation of 0.527, suggesting similar consistency, but with a slightly wider range, indicating some challenges in achieving DC. EO has a mean of 4.082 and a lower standard deviation of 0.472, showing less variability in perceptions of entrepreneurial activities and risk-taking. IC, with a mean of 4.057 and a standard deviation of 0.498, indicates strong organizational innovation potential, though some firms may benefit from increased focus.

Table 2. Descriptive statistics of respondent profile

		Frequency	**Percent**
Gender	Female	37	20.9
	Male	140	79.1
	Total	177	100
Age	20 - 30 years	37	20.9
	31 – 40 years	54	30.5
	41 and above	86	48.6
	Total	177	100
Education	Undergraduate	150	84.7
	Postgraduate	27	15.3
	Total	177	100
Work Experience	1 – 5 years	88	49.7
	5 and above	89	50.3
	Total	177	100

Source: The Authors, 2026

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The results indicate a male-dominated sample (see table 2), with 79.1% male respondents compared to 20.9% female respondents, which may reflect a broader gender trend in managerial and entrepreneurial roles globally. This gender disparity could impact constructs such as HC and EO. The age distribution is fairly balanced, with 48.6% of respondents aged 41 and above, suggesting a workforce with considerable experience. This may influence findings related to DC and EO, as older respondents likely possess more developed leadership skills. Educationally, 84.7% of respondents hold an undergraduate degree, highlighting the standard qualifications in SMEs, while only 15.3% have postgraduate education, which is linked to advanced strategic thinking and IC. Experience is evenly distributed, with 49.7% having 1-5 years of experience and 50.3% with over 5 years, providing a mix of early-career and experienced professionals beneficial for analyzing HC and EO.

Table 3. Results of goodness of fit research model

Evaluation	Value	Criterion
APC	0.372*	significant if < 0.05
ARS	0.803*	significant if < 0.05
AVIF	2.595	acceptable if <= 5

**All significant at p< 0.001*

The goodness-of-fit test results for the research model (Hair et al., 2019), presented in Table 3, indicate a moderate relationship strength between the latent variables, with an APC value of 0.372 ($p < 0.001$), suggesting significant effects of independent variables like HC, DC, EO, and IC on the dependent variables. The ARS value of 0.803 ($p < 0.001$) demonstrates that the model explains 80.3% of the variance in the dependent variables, indicating a strong model fit and effective capture of organizational dynamics and capabilities. The AVIF value of 2.595 is below the acceptable threshold of 5, confirming that multicollinearity is not a concern. These findings suggest that the model is both robust and reliable, providing meaningful insights into the relationships between the study's variables.

Table 4. Validity and reliability test results

Variables		Factor Loading	AVE > 0,5	Q-square > 0	Composite reliability > 0.7	Cronbach's alpha > 0.7	Full Collinearity VIP < 3.3
Human Capital	Hc1	0.765	0.792		0.906	0.885	2.752
	Hc2	0.717					
	Hc3	0.763					
	Hc4	0. 711					
	Hc5	0. 716					
	Hc6	0.753					
	Hc7	0.770					
	Hc8	0.767					
	Hc9	0.782					
	Hc10	0.748					
Dynamic Capability	Dc1	0.732	0.785		0.882	0.845	3.056
	Dc2	0.798					
	Dc3	0.791					
	Dc4	0.733					
	Dc5	0.817					
	Dc6	0.760					
	Dc7	0.811					
	Dc8	0.795					

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Variables		Factor Loading	AVE > 0,5	Q-square > 0	Composite reliability > 0.7	Cronbach's alpha > 0.7	Full Collinearity VIP < 3.3
Entrepreneurial Orientation	Eo1	0.817	0.701	0.751	0.838	0.778	2.346
	Eo2	0.823					
	Eo3	0.733					
	Eo4	0.744					
	Eo5	0.738					
	Eo6	0.818					
	Eo7	0.750					
	Eo8	0.762					
Innovation Capability	Ic1	0.829	0.720	0.853	0.877	0.843	3.079
	Ic2	0.762					
	Ic3	0.734					
	Ic4	0.738					
	Ic5	0.782					
	Ic6	0.783					
	Ic7	0.771					
	Ic8	0.780					
	Ic9	0.811					
	Ic10	0.839					

**All significant at p< 0.001*

Table 4 presents strong evidence for the validity and reliability of the research model (Hair et al., 2019). The factor loadings for all items range from 0.711 to 0.839, exceeding the 0.7 threshold, confirming the convergent validity of the constructs. The Average Variance Extracted (AVE) values for HC (0.792), DC (0.785), EO (0.701), and IC (0.720) are all above the 0.5 threshold, demonstrating that the constructs explain a substantial portion of the variance in their respective variables (Fornell & Larcker, 1981). The Q-square value greater than 0 indicates adequate predictive power for the model, with strong predictive relevance for EO (0.751) and IC (0.853), although missing values for some constructs need to be addressed. Composite reliability scores for all constructs exceed the minimum of 0.7, with values ranging from 0.838 to 0.906, ensuring high internal consistency and reliability. Cronbach's alpha values for all variables surpass 0.7, further supporting the stability and consistency of the measurement scales. Additionally, the Full Collinearity VIF values, all below the critical threshold of 3.3, indicate that multicollinearity is not a concern, ensuring the robustness and interpretability of the model.

Table 5. HTMT Discriminant-Validity Assessment

Construct pair	HTMT	*p*	90% CI	HTMT2	*p*	90% CI	Assessment
HC–DC	0.842	0.040	[0.838, 0.878]	0.848	0.026	[0.835, 0.880]	Supported
HC–EO	0.835	0.023	[0.826, 0.882]	0.837	0.031	[0.825, 0.896]	Supported
DC–EO	0.841	0.039	[0.831, 0.868]	0.823	0.041	[0.800, 0.846]	Supported
HC–IC	0.829	0.040	[0.820, 0.865]	0.839	0.030	[0.826, 0.892]	Supported
DC–IC	0.827	0.047	[0.820, 0.880]	0.846	0.028	[0.824, 0.869]	Supported
EO–IC	0.844	0.029	[0.821, 0.871]	0.822	0.033	[0.819, 0.875]	Supported

Source: The Authors, 2026

Table 5 provides robust evidence that HC, DC, EO, and IC are empirically distinct despite their close theoretical interdependence. All HTMT values (0.827–0.844) and HTMT2 values (0.822–0.848) remain below the conventional 0.90 threshold and, importantly, below the more conservative 0.85 benchmark; additionally, every 90% confidence interval excludes unity. This combination of threshold and inferential evidence provides stronger support for discriminant validity than reliance on Fornell–Larcker alone. The near-boundary values are theoretically informative rather than merely statistical. EO–IC records the highest HTMT (0.844), consistent with entrepreneurial behavior—innovativeness, proactiveness, and

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calculated risk-taking—being closely connected to firms' capacity to implement new products and processes, while remaining conceptually distinct. Likewise, HC–DC shows the highest HTMT2 (0.848), suggesting that firm-specific knowledge and skills are strongly intertwined with the routines through which SMEs integrate and reconfigure resources. In Bali's hospitality, creative-industry, and manufacturing SMEs, where managerial roles often overlap and adaptation occurs through compact organizational structures, such proximity is theoretically plausible. Yet the absence of empirical equivalence indicates complementary specialization rather than construct redundancy. This advances the model by portraying HC, DC, EO, and IC as a tightly connected but differentiated capability architecture through which Bali SMEs transform resources into entrepreneurial action and innovation

Table 6. Collinearity and Common-Method-Bias Diagnostics

Diagnostic	SEM Result	Recommended Criterion	Assessment
Indicator-level VIF	1.216–2.441	<2.50 desirable*	Satisfied
Inner/block VIF predicting EO	HC = 3.075; DC = 2.775	≤3.30 ideal; ≤5.00 acceptable	Ideal
Inner/block VIF predicting IC	HC = 2.428; DC = 3.141; EO = 2.656	≤3.30 ideal; ≤5.00 acceptable	Ideal
Average Block VIF (AVIF)	2.595	≤3.30 ideal; ≤5.00 acceptable	Ideal
Average Full-Collinearity VIF (AFVIF)	2.633	≤3.30 ideal; ≤5.00 acceptable	Ideal
Full-collinearity VIF—HC	2.752	≤3.30	Satisfied
Full-collinearity VIF—DC	3.056	≤3.30	Satisfied
Full-collinearity VIF—EO	2.346	≤3.30	Satisfied
Full-collinearity VIF—IC	2.379	≤3.30	Satisfied
Common-method-bias diagnostic	2.346–3.056	Full-collinearity VIF ≤3.30	No material CMB indication

Source: The Authors, 2026

Table 6 provides consistent evidence that multicollinearity is unlikely to distort the estimated structural relationships. The block VIFs for EO (2.775–3.075) and IC (2.428–3.141) all remain below the conservative 3.30 benchmark, indicating that HC, DC, and EO retain sufficient unique variance when entered jointly as predictors. This result is theoretically consequential because these capabilities are expected to co-evolve; therefore, some shared variance is substantively plausible rather than inherently problematic. The comparatively higher DC→IC VIF (3.141) suggests the strongest capability interdependence, yet it remains below the conservative threshold and therefore does not indicate destabilizing redundancy. This interpretation is reinforced by AVIF (2.595) and AFVIF (2.633), both within the ideal range, and by construct-level full-collinearity VIFs of 2.346–3.056. Following the full-collinearity criterion, values ≤3.30 are consistent with the absence of pathological vertical/lateral collinearity and provide evidence against substantial common-method bias. Importantly, this diagnostic should be interpreted as evidence against material CMB rather than proof of its complete absence. Full-collinearity VIFs below 3.30, together with satisfactory reliability and discriminant-validity evidence, indicate that severe collinearity and material common-method bias are unlikely to destabilize estimation. However, such diagnostics address measurement robustness, not structural endogeneity; significant path coefficients therefore remain associational and statistically suitable for inference, not causal identification. Collectively, the pattern indicates theoretically meaningful capability complementarity while preserving empirically distinguishable explanatory contributions.

Table 7. Fornell–Larcker Discriminant-Validity Assessment

Construct	Human capital	Dynamic Capability	Entrepreneurial Orientation	Innovation Capability	Assessment
Human capital	0.890				Satisfied
Dynamic Capability	0.869	0.886			Satisfied

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Construct	Human capital	Dynamic Capability	Entrepreneurial Orientation	Innovation Capability	Assessment
Entrepreneurial Orientation	0.814	0.831	0.837		Satisfied
Innovation Capability	0.842	0.838	0.829	0.849	Satisfied

Source: The Authors, 2026

Table 7 confirms discriminant validity because the square root of AVE for HC (0.890), DC (0.886), EO (0.837), and IC (0.849) exceeds every corresponding interconstruct correlation. However, the margins are narrow for several pairs—particularly HC–DC (r=0.869), DC–EO (r=0.831), and HC–IC (r=0.842). Rather than indicating construct equivalence, this pattern reveals substantial theoretical proximity among capabilities that are expected to develop jointly within an integrated organizational capability system. The distinction is therefore one of complementary specialization rather than statistical independence. The EO–DC comparison is particularly informative: EO's √AVE (0.837) exceeds their correlation by only 0.006, suggesting that digital capability may be deeply embedded in entrepreneurial enactment while remaining empirically distinguishable. Such tight separation warrants corroboration beyond Fornell–Larcker because this criterion can be insensitive when constructs are highly related (Henseler et al., 2015). Importantly, the accompanying HTMT results (0.802–0.844) remain below 0.85, strengthening the conclusion that the observed overlap reflects theoretically meaningful interdependence rather than measurement redundancy.

The results of testing the research structural model can be seen in the following figure:

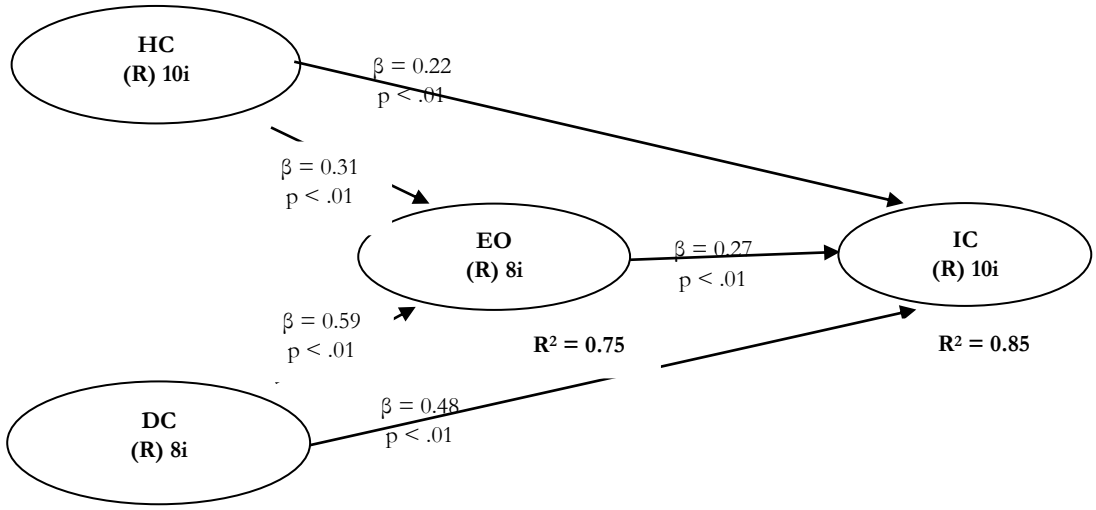


Figure 1. Research model testing results

The results of testing the structure of the research model for hypothesis testing are in the following table:

Table 8. Path coefficient

Variables	Human Capital	Dynamic Capability	Entrepreneurial Orientation
Entrepreneurial Orientation	0.309*	0.585*	
Innovation Capability	0.220*	0.478*	0.272*

*All significant at p<0.001**

Table 8 and figure 1 presents significant path coefficients reflecting key relationships among the variables. The path coefficient of 0.309 demonstrates a moderate positive relationship between HC and EO, indicating that skills, knowledge, and experience contribute significantly to fostering an entrepreneurial mindset and driving innovation and risk-taking

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behaviors. A stronger relationship is observed between DC and EO, with a path coefficient of 0.585, highlighting the critical role of adaptability in promoting entrepreneurial behaviors such as proactiveness and innovation. The relationship between HC and IC is weaker but still significant, with a path coefficient of 0.220, suggesting that HC alone is not sufficient to drive high innovation levels without additional resources like DC. DC shows a positive relationship with IC (path coefficient 0.478), emphasizing its role in fostering continuous innovation. Lastly, a moderate positive relationship is found between EO and IC (path coefficient 0.272), suggesting that firms with a strong EO are more likely to develop higher IC by actively pursuing new ideas and taking risks. These results underline the interconnectedness of HC, DC, EO, and innovation in driving organizational success.

Table 9. Mediation Analysis

Relations	Direct effect (β)	Indirect effect (β)	SE	t-value	p-value	95% CI	Total effect	VAF	Result
Human Capital → Entrepreneurial Orientation → Innovation Capability	0.220	0.084	0.052	1.615	0.055	[−0.018, 0.186]	0.304	27.63%	No significant mediation at α = 0.05 / Hypothesis not supported
Dynamic Capability → Entrepreneurial Orientation → Innovation Capability	0.476	0.159	0.051	3.118	0.001	[0.059, 0.259]	0.635	25.04%	Complementary partial mediation

Source: The Authors, 2026

Table 9 reveals a theoretically important asymmetry in EO's mediating role. The HC→EO→IC indirect effect is positive but does not reach the conventional 5% significance threshold (β=0.084, p=0.055), despite significant direct HC→IC effects. Thus, HC appears to generate innovation principally through knowledge, expertise, and problem-solving capacity rather than requiring entrepreneurial reorientation. This unexpected result qualifies the proposition that EO necessarily catalyzes HC into innovation. In Bali SMEs, specialized employee knowledge may be translated directly into process, product, or service improvements, while resource scarcity, uneven digitalization, and constrained experimentation may restrict its conversion through risk-taking and proactiveness; these contextual mechanisms remain interpretations rather than directly measured effects. Conversely, EO significantly mediates DC→IC (β=0.159, p=0.001), while the direct effect remains substantial (β=0.476), establishing complementary partial mediation. This accords with the view that DC enables adaptation and resource reconfiguration, whereas EO provides the strategic posture through which such adaptability becomes opportunity-seeking innovation. Theoretically, the findings distinguish resource possession from resource orchestration: EO is not a universal conduit for all valuable resources but a selective activation mechanism particularly suited to converting reconfigurational capability into innovation. This refines RBV and dynamic-capability reasoning for Bali's volatile, tourism-dependent and creative SME environment.

Table 10. Effect size and R-squared

Structural relationship	Path coefficient (β)	*p*-value	Effect size	R^2	Interpretation
Human capital - entrepreneurial orientation	0.309	<0.001	0.253	0.752	Significant; medium effect; substantial explanatory power
Human capital - innovation capability	0.220	0.001	0.189	0.853	Significant; medium effect; substantial explanatory power
Dynamic capability - entrepreneurial orientation	0.585	<0.001	0.500	0.752	Significant; large effect; substantial explanatory power

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Structural relationship	Path coefficient (β)	*p*-value	Effect size	R^2	Interpretation
Dynamic capability - innovation capability	0.476	<0.001	0.430	0.853	Significant; large effect; substantial explanatory power
Entrepreneurial orientation - innovation capability	0.272	<0.001	0.235	0.853	Significant; medium effect; substantial explanatory power

Source: The Authors, 2026

Table 10 demonstrates strong explanatory performance with differentiated antecedent effects. HC and DC jointly explain 75.2% of EO variance, whereas HC, DC, and EO explain 85.3% of IC variance, indicating substantial predictive explanation. More importantly, effect-size decomposition shows that DC is the dominant structural driver: its effects on EO (0.500) and IC (0.430) are large, compared with the medium effects of HC on EO (0.253) and IC (0.189). EO itself contributes a medium incremental effect on IC (0.235). This pattern sharpens the theoretical distinction between resource possession and capability deployment. HC supplies knowledge and expertise, but DC appears to convert organizational resources more powerfully into entrepreneurial action and innovation through sensing, seizing, and reconfiguration processes. The substantial EO→IC contribution further indicates that strategic entrepreneurial posture is not merely an outcome of capabilities but an additional innovation-generating mechanism. Hence, the high R^2 values are not attributable to one dominant predictor alone; rather, they reflect a layered capability architecture in which DC provides the strongest leverage, HC supplies foundational resources, and EO translates strategic action into innovation outcomes.

4.2. *Discussion*

4.2.1. The Impact of Human Capital on Entrepreneurial Orientation

The relationship between HC and EO is complex and context-dependent. HC, which includes the skills, knowledge, and competencies of employees in the context of SME in Bali, plays a crucial role in driving entrepreneurial initiatives by fostering innovation and enabling the identification and exploitation of opportunities (Zapata & Ramírez-Gómez, 2021). The significant HC→EO effect suggests that human capital becomes entrepreneurial only when knowledge is actively mobilized. In Bali, tourism volatility, creative-cultural activity, informal networks, and digitalization may condition this conversion. The moderate effect therefore supports context-dependent arguments and reinforces that HC alone is insufficient without supportive organizational mechanisms. This extends HC theory by positioning local context as an activation condition rather than a passive setting. While HC's contribution to EO is universally recognized, its influence is more pronounced in knowledge-intensive sectors, where specialized knowledge and creativity are vital for maintaining competitive advantages (Yamin et al., 2024). However, in industries with less emphasis on innovation, the impact of HC on EO appears to be weaker, highlighting the importance of industry context (Sen et al., 2023). Despite the positive association between HC and EO, some scholars argue that HC alone is insufficient to cultivate a strong EO. The presence of a supportive organizational culture and leadership is essential for maximizing the potential of HC in fostering EO (Kim, 2023). This suggests that organizations must integrate HC development with strategic organizational initiatives and leadership support to fully leverage its benefits. Thus, a holistic approach that combines HC with organizational culture and leadership is critical for fostering robust EO.

4.2.2. The Impact of Human Capital on Innovation Capability

HC plays a critical role in driving IC within organizations in the SME of Bali. A skilled and knowledgeable workforce enhances the ability to generate new ideas, develop products, and improve processes, which are essential for fostering innovation (Andreeva et al., 2021). The relatively modest HC→IC effect indicates that skills alone do not automatically yield innovation. In Bali's tourism-dependent and creative SME setting, volatile demand, informal networks, post-pandemic adjustment, and uneven digital adoption may constrain

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knowledge commercialization. This supports absorptive-capacity arguments while explaining why talented firms may still underperform innovatively. Thus, HC requires enabling structures and experimentation-oriented cultures to become innovation capability. The importance of investing in human resources to stimulate innovation is underscored by foundational HC theories (Zhang et al., 2017). However, the impact of HC on IC is contingent on continuous investment in employee development. Organizations that prioritize ongoing training and development tend to experience a stronger relationship between HC and IC, as it enhances their absorptive capacity to assimilate and exploit new knowledge (Abredu, 2023). In contrast, firms that neglect HC development may struggle with lagging IC, despite having talented employees (Kafetzopoulos & Psomas, 2015). Additionally, factors such as organizational structure and culture can moderate this relationship. Rigid structures and cultures that do not foster experimentation or risk-taking can limit the potential of HC to enhance IC (Merzlikina, 2020). Thus, a flexible organizational structure and a culture of creativity are essential for HC to effectively contribute to IC (Kusumawijaya & Astuti, 2023).

4.2.3. The Impact of Dynamic Capability on Entrepreneurial Orientation

DC of SME in Bali play a pivotal role in shaping EO, highlighting the importance of a firm's ability to adapt to changing environments to foster entrepreneurial initiatives (Kareem et al., 2024). DC enables firms to identify and seize new opportunities, reconfigure resources, and transform strategies, key components of EO (Hernández-Linares et al., 2024). The effect of DC→EO suggests that adaptive capability is especially important for converting environmental uncertainty into entrepreneurial action. In Bali, tourism dependence, post-pandemic adjustment, informal networks, and uneven digitalization may intensify the need to sense opportunities and rapidly reconfigure resources. This extends dynamic-capability theory by showing that DC does not merely support adaptation but can actively activate entrepreneurial posture. However, this contextual interpretation should remain cautious because the manuscript does not report sector-specific subsamples. These capabilities are particularly crucial in dynamic markets, where firms must innovate and respond quickly to maintain competitiveness (Karman & Savanevičienė, 2021). In rapidly evolving industries, firms with strong DC are better equipped to pursue new ventures and enhance their EO (Akhtar et al., 2020). The effectiveness of DC in fostering EO is further amplified when organizations cultivate a learning orientation, which helps continuously improve DC (Dias et al., 2020). However, in more stable industries, the relationship between DC and EO may be weaker, as rapid adaptation is less critical. In these contexts, market knowledge and customer orientation may play a more prominent role in driving EO, and firms may rely more on established routines than on DC (Pundzienė et al., 2021). Thus, the impact of DC on EO is contingent on the industry context in which a firm operates.

4.2.4. The Impact of Dynamic Capability on Innovation Capability

DC significantly influence IC in the SME context in Bali, emphasizing their role in enabling firms to innovate by continuously adapting to external changes (Zhou et al., 2017). DC allows firms to integrate, build, and reconfigure internal and external competencies, which are crucial for developing new products, processes, and services that define IC (Zhou et al., 2018). The ability to reconfigure resources is a core aspect of DC that directly contributes to innovation (Nieves Arranz et al., 2022). The effect of DC→IC, exceeding HC→IC, suggests that resource reconfiguration is more innovation-proximal than resource possession alone. In Bali, tourism volatility, creative industries, informal networks, post-pandemic recovery, and uneven digital adoption may intensify this adaptive value. Yet continual reconfiguration may destabilize routines. Thus, DC strengthens IC when adaptation is balanced with organizational stability. This impact is especially pronounced in industries with high technological dynamism, where rapid responses to technological advancements are essential for maintaining a competitive edge (Silva et al., 2021). In such

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sectors, firms with strong DC can better leverage new technologies and market opportunities to enhance their innovation capacity (Ghosh & Srivastava, 2021). However, excessive focus on DC can lead to organizational instability, as continuous resource reconfiguration may disrupt ongoing operations and hinder innovation implementation (Schiavon et al., 2022). Therefore, while DC is vital for fostering innovation, it must be balanced with a stable organizational structure to sustain IC without potential disruptions (Valdez-Juárez et al., 2024).

4.2.5. The Impact of Entrepreneurial Orientation on Innovation Capability

The significant relationship between EO and IC in the SME context in Bali underscores the critical role EO plays in fostering innovation within firms. As highlighted by previous studies, EO drives firms to take risks, engage in proactive behaviors, and seek out innovative activities, ultimately enhancing their IC (Nguyen et al., 2022). Entrepreneurial-oriented firms are more likely to encourage employees to explore new ideas, experiment with technologies, and challenge the status quo, all of which contribute to superior innovation outcomes (Sánchez-García et al., 2022). The EO→IC effect suggests that entrepreneurial posture promotes, but does not independently guarantee, innovation. In Bali's tourism-dependent and creative SME ecosystem, proactiveness and calculated risk-taking may facilitate opportunity capture and digital experimentation. However, resource scarcity can constrain implementation. Thus, EO operates as a context-sensitive activation mechanism rather than a universally sufficient innovation driver. This impact is especially pronounced in highly competitive and dynamic markets, where firms must innovate to sustain a competitive edge (Zhang et al., 2024). However, the relationship between EO and IC is not without its complexities. Organizational factors such as structure and resource availability play a pivotal role. A rigid organizational structure may limit the effectiveness of EO, stifling innovation (Barbosa Ferreira et al., 2019). Furthermore, resource constraints can hinder entrepreneurial-oriented firms' ability to pursue innovative activities, diminishing the impact of EO on IC (Berndt et al., 2023). Thus, organizational flexibility and resource access are crucial factors that influence the EO-IC dynamic.

4.2.6. The Mediation of Entrepreneurial Orientation in Human Capital's Impact on Innovation Capability

EO partially mediates the relationship between HC and IC of SME in Bali, highlighting that while HC directly contributes to IC, EO plays a crucial role in translating HC into tangible innovation outcomes (Pérez & Guevara, 2023). EO acts as a catalyst by channelling the skills and knowledge within HC into innovative initiatives, fostering creativity, risk-taking, and proactiveness essential for innovation (Taleb & Pheniqi, 2023). Firms with high HC are more likely to realize their innovation potential if they cultivate a strong EO, which encourages the application of HC in innovative ways (Ho et al., 2024). The partial mediation indicates that EO converts only part of HC into innovation, leaving substantial direct and alternative pathways. In Bali's SME setting, this may reflect uneven opportunities to commercialize employee knowledge amid resource constraints and changing market conditions. This supports the catalytic role of EO while extending the argument by showing that HC also requires organizational learning, knowledge management, and absorptive capacity to generate innovation. Without a strong EO, HC's potential to drive innovation may be underutilized, as employees might lack the motivation or opportunities to apply their skills effectively. Moreover, organizational commitment, often enhanced by EO, significantly impacts the HC-IC relationship, reinforcing the importance of EO (Pérez & Guevara, 2023). However, the mediation effect is partial, suggesting that HC also influences IC through other pathways, such as organizational learning and knowledge management practices (Fredyna et al., 2019). These factors, alongside EO, enhance the ability of firms to leverage HC for innovation, underscoring the importance of absorptive capacity in driving innovation (Sánchez-García et al., 2022).

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4.2.7. The Mediation of Entrepreneurial Orientation in Dynamic Capability's Impact on Innovation Capability

EO partially mediates the relationship between DC and IC of SME in Bali, indicating that while DC directly enhances IC, EO plays a crucial role in converting DC into innovation outcomes. EO provides the strategic direction and entrepreneurial mindset necessary to channel a firm's adaptive capabilities into innovation (Mousavi et al., 2018). This integration of EO with DC is vital for firms to leverage their adaptive capabilities effectively toward innovation (He & Puttawong, 2024). The partial mediation of EO suggests that DC's impact on IC is most effective when supported by a strong EO, which facilitates entrepreneurial behaviors like risk-taking, innovation, and proactive market engagement (Han et al., 2022). The partial mediation indicates that EO channels only part of DC into innovation, consistent with its strategic-conversion role. In Bali, tourism volatility, informal networks, post-pandemic recovery, and digital transition may intensify this mechanism, although these contextual factors were not directly measured. This finding supports EO-enabled opportunity exploitation while confirming an independent DC pathway through knowledge and technology integration. Without EO, the innovative potential of DC may remain underutilized, as firms may lack the strategic orientation to apply their DC toward innovation (Pérez & Guevara, 2023). Firms with a strong EO are better positioned to capitalize on opportunities arising from their DC (Fredyna et al., 2019). However, the partial mediation indicates that DC also influences IC through other mechanisms, such as directly improving a firm's ability to integrate new knowledge and technologies into innovation processes, independent of EO (Hughes et al., 2019). Thus, while EO is an important mediator, it is not the sole pathway through which DC impacts IC.

5. Conclusion

This research highlights the critical roles of HC, DC, and EO in enhancing IC within organizations. The study confirms that both HC and DC positively influence EO and IC, with DC demonstrating a stronger impact. The findings underscore the importance of developing a skilled workforce and fostering an adaptive organizational culture to drive entrepreneurial activities and innovation. Additionally, EO was found to act as a significant mediator between HC, DC, and IC, illustrating the importance of cultivating an entrepreneurial mindset to leverage these capabilities for innovation. These results provide substantial evidence for the interconnectedness of these constructs and their collective impact on fostering innovation and sustaining competitive advantage.

For practitioners, this study emphasizes the importance of investing in both HC and DC to enhance EO and IC. Managers should focus on employee training and fostering a dynamic culture that supports adaptability. Encouraging entrepreneurial behaviors, such as risk-taking and innovation, within the organization is crucial for translating capabilities into tangible innovation outcomes. SME managers should operationalize this by allowing small-scale experiments, setting clear risk limits, reviewing failures as learning opportunities, and rewarding proactive problem-solving rather than only successful outcomes. When financial safety nets are limited, managers can use low-cost pilot projects, staged investment, team-based evaluation, and predefined stop-loss criteria to encourage calculated risk-taking without threatening organizational survival. Leadership initiatives that promote a culture of innovation and provide autonomy for idea exploration will enable firms to stay competitive in a rapidly changing market. For Indonesian local trade and SME authorities, these findings imply the need for targeted capability-building programs, innovation training, mentoring, digitalization support, and accessible financing schemes that strengthen human capital, adaptive capability, entrepreneurial orientation, and innovation among resource-constrained SMEs. From a theoretical perspective, the study extends the Resource-Based View (RBV) and Dynamic Capabilities Theory by empirically validating the relationships between HC, DC, EO, and IC. The identification of EO as a mediator offers new insights into the mechanisms through which these capabilities lead to innovation. The research

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enriches our understanding of how firms can strategically leverage their internal resources to drive innovation and competitive advantage, providing new directions for future theoretical exploration.

While this study makes significant contributions, several limitations must be acknowledged. First, the cross-sectional nature of the data restricts the ability to make causal inferences about the relationships between HC, DC, EO, and IC. Although PLS-SEM, discriminant-validity, reliability, and full-collinearity diagnostics support statistically robust associations, the cross-sectional, self-reported design cannot establish temporal ordering or eliminate reverse causality, omitted-variable bias, and managerial-perception endogeneity. Accordingly, results are interpreted as theory-consistent relationships rather than definitive causal effects; longitudinal, multi-source designs are required for causal confirmation. Future research using longitudinal data could offer a deeper understanding of how these relationships evolve over time. Second, the study's focus on a single industry limits the generalizability of the findings. The dynamics of HC, DC, EO, and IC may vary across different industries, and future studies should examine multiple industries to explore industry-specific effects. Third, the reliance on self-reported data introduces the possibility of common method bias (CMB). Incorporating multiple data sources, such as objective performance measures or third-party assessments, could address this issue in future research. Lastly, the study did not account for potential moderating variables, such as organizational structure and external environmental conditions. Exploring these factors could provide a more nuanced understanding of the relationships between the constructs.

Future research could extend this study by investigating the temporal dynamics of the relationships between HC, DC, EO, and IC. Longitudinal studies would provide insights into how these constructs evolve over time and how changes in one construct affect the others. Additionally, expanding the research to include multiple industries would offer a broader understanding of how industry-specific factors influence the impact of HC, DC, and EO on IC. The role of moderating variables, such as leadership style, organizational structure, and external factors, should also be explored to better understand the conditions under which these relationships are most effective. Cross-cultural studies could further investigate the generalizability of the findings across diverse geographical and cultural contexts, providing valuable insights for multinational organizations. Finally, incorporating objective performance measures and using multiple data sources could address common method bias and strengthen the reliability of the results, offering more robust evidence for the theoretical frameworks tested in this study.

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