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ANALYZING NEW VENTURES' INNOVATION GENERATION AND ADOPTION: A CONFIGURATIONAL ANALYSIS FROM THE OPTIMAL DISTINCTIVENESS PERSPECTIVE

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Abstract. The institutional theory literature focuses on the legitimization of new ventures' innovative behaviors, while the entrepreneurial orientation literature emphasizes differentiation of the pursuit of innovation by new ventures. We apply the optimal distinctiveness perspective to examine how the institutional environment and entrepreneurial orientation jointly influence two modes of innovation – innovation generation and innovation adoption – in new ventures. We employ fuzzy-set qualitative comparative analysis (fsQCA) based on country-level data obtained from the Global Entrepreneurship Monitor (GEM) project. Our findings reveal that there are five equifinal optima of distinctiveness rather than a one-size-fits-all optimal distinctiveness for high innovation generation and high innovation adoption, respectively. Moreover, the orchestrating mechanisms of the two modes of innovation are different: that of innovation generation is threshold orchestration and that of innovation adoption is compensatory orchestration. Furthermore, except for the difference, we also identify something similar shared by mechanisms of innovation generation and innovation adoption. These results extend the optimal distinctiveness theory by empirically verifying equifinality in optimal distinctiveness and articulating different practices of threshold orchestration and compensatory orchestration, and also contribute to the innovation literature by examining the differences and similarities of the mechanisms of innovation generation and innovation adoption.

Keywords: innovation generation, innovation adoption, institutional environment, entrepreneurial orientation, optimal distinctiveness perspective, fuzzy-set qualitative comparative analysis.

JEL Classification: L26, O3.

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1. Introduction

Innovation, acknowledged as the primary driver for competitiveness (Yang et al., 2023) and sustainable development (Li et al., 2023), remains a central focus in entrepreneurship research (Mohsen et al., 2021). As the importance of the impact of new ventures' innovation on regional development and job creation, the research focus has shifted from understanding the success of new ventures to exploring their innovation capabilities (Mohsen et al., 2021). Innovation in products or services may originate within a new venture or be adopted from external sources (Pérez-Luno et al., 2011, 2014). Scholars have expressed considerable interest

in identifying factors that influence innovation in new ventures (Shi et al., 2023; Williams et al., 2022). The perspective of new institutionalism emphasizes the importance of legitimacy for new ventures to access resources and garner government and customer support (Fisher et al., 2017). Legitimacy refers to stakeholders' perception that a new venture aligns with socially constructed norms, values, beliefs, and definitions (Suchman, 1995). Due to the absence of performance history, new ventures encounter the "liability of newness", affecting their survival, success, and innovative behaviors (McKnight & Zietsma, 2018). To overcome innovation barriers and access scarce resources, new ventures must adhere to the rules, norms, and values of the institutional environment to gain legitimacy (Ma et al., 2019).

Meanwhile, the literature on strategic management emphasizes the significance of entrepreneurial orientation (EO) in driving innovation within enterprises, especially for new ventures (Ma et al., 2019; Wang et al., 2017). For new ventures, differentiating themselves from competitors and showcasing the novelty and value of their offerings is essential (McKnight & Zietsma, 2018). EO involves strategic processes and decision-making practices that encourage new ventures or individuals to boldly explore new opportunities (Du & Kim, 2021). New ventures with high EO actively seek growth opportunities (Du & Kim, 2021) and are dedicated to gaining competitive advantages by introducing innovative products or services despite market uncertainties (Wiklund & Shepherd, 2011). Adhering to the institutional environment legitimizes a new venture (McKnight & Zietsma, 2018), while EO reflects its pursuit of competitive differentiation (Ma et al., 2019). Despite studies linking the institutional environment or EO to new ventures' innovation, there is limited understanding of their combined impact on new ventures' innovative behaviors.

The perspective of optimal distinctiveness suggests that new ventures should strike a balance between legitimization and differentiation (Zhao et al., 2017). Differentiation entails seizing new opportunities (Anderson & Eshima, 2013), while legitimization facilitates access to essential resources and capabilities (Wang et al., 2017). New ventures aim to achieve optimal distinctiveness by being as different as legitimately possible (Deepphouse, 1999) or finding a balance between legitimization and competitive differentiation (Deepphouse, 1999; McKnight & Zietsma, 2018). To examine new ventures' innovation generation and adoption, we must consider both the institutional environment, aiding in gaining legitimacy, and EO, reflecting the pursuit of differentiation. Thus, we concentrate on identifying configurations of the institutional environment and EO that result in high levels of innovation generation and adoption in new ventures, instead of assuming a singular point of optimal distinctiveness.

This approach aligns with the viewpoints of Deepphouse (1999) and Zhao et al. (2017), highlighting the significance of considering various conditions related to enterprises in formulating a general theory of strategic balance (McKnight & Zietsma, 2018). The study seeks to address the following inquiries: What are the configurational effects of institutional environment and EO on new ventures' innovation generation and adoption? Are there legitimacy thresholds, representing the minimum legitimacy levels required for new ventures to fully benefit from differentiation in achieving high innovation generation or adoption? Considering the likelihood of equifinality in the path to optimal distinctiveness (McKnight & Zietsma, 2018), this study employs a fuzzy-set qualitative comparative analysis (fsQCA) approach, apt for examining the configurational impact of various conditions on the outcome (Ragin, 2008), and identifying multiple equally effective configurations (Douglas et al., 2020). Our findings provide valuable insights for entrepreneurs, unveiling multiple distinctiveness optima that result in high innovation generation and adoption.

This paper is organized as follows. Section 2 is theoretical background. Section 3 illustrates the method, data, and measures. Section 4 presents primary and supplemental analyses. Section 5 provides discussion of the findings. The last part is the conclusions and limits.

2. Theoretical background

Attaining legitimacy poses a challenge for new ventures and innovations (Zimmerman & Zeitz, 2002). The new institutionalism perspective focuses on legitimization, arguing that new ventures should conform to the rules, norms and values to obtain legitimacy (Ma et al., 2019). It emphasizes the importance of institutional environment for enterprises (Ionescu et al., 2022) and posits that enterprises exist due to adherence to institutional expectations (Ma et al., 2019). Based on insights from Stenholm et al. (2013) and Busenitz et al. (2000), the research investigates four dimensions of the institutional environment influencing new ventures' innovation generation and adoption: regulatory, conducive, normative, and cognitive environments. These four dimensions of the institutional environment are widely acknowledged in the institutional theory literature (e.g., Schillo et al., 2016; Mohsen et al., 2021; Bogatyreva et al., 2022).

Scholars in strategic management underscore the importance of differentiation, proposing that new ventures must distinguish themselves from competitors to attract customers (McKnight & Zietsma, 2018). In this literature, the strategic orientation of innovativeness is closely linked to proactiveness and risk-taking, constituting an enterprise's entrepreneurial orientation (EO) in conjunction with the other two orientations (Pérez-Luño et al., 2011). The dimensions of EO can be fruitfully explored as hierarchically related rather than co-vary (Tang et al., 2008). Therefore, in accordance with Pérez-Luño et al. (2011), rather than conceptualizing EO as consisting of three separate or combined dimensions, we concentrate on how two dimensions – proactiveness and risk-taking – affect the third dimension, innovation generation and innovation adoption, reflecting distinct scopes of innovativeness. These three dimensions of EO are well-established in EO literature (e.g., Wang et al., 2017; Reyes, 2017; Bernoster et al., 2020).

Researchers have extensively investigated both the legitimization and differentiation aspects in new ventures (McKnight & Zietsma, 2018; Zhao et al., 2017). Complying with the institutional environment enables a new venture to gain legitimacy, overcoming the "liability of newness" and garnering support from governments and customers (Fisher et al., 2017). Conversely, EO nurtures uniqueness, assisting the venture in distinguishing itself from competitors through the provision of distinct products or services (Ma et al., 2019). Deephouse (1999) advocates integrating both legitimization pressure and differentiation pressure to achieve strategic balance and suggests being as different as legitimately possible. This idea aligns with the viewpoint of Navis and Glynn (2010), who encourage enterprises to pursue legitimate distinctiveness. Zhao et al. (2017) collectively labels these concepts as "optimal distinctiveness". All these works aim to help enterprises achieve optimal distinctiveness by balancing legitimization and differentiation pressures. Expanding on the concept of "legitimacy thresholds" proposed by Zimmerman and Zeitz (2002), McKnight and Zietsma (2018) contend that enterprises should surpass a threshold level of legitimacy and subsequently differentiate themselves to the maximum extent. Our study concentrates on balancing legitimization and differentiation pressures regarding new ventures' innovative behaviors, investigating the configurational impact of the institutional environment and EO on innovation generation and adoption. Additionally, we aim to determine the existence of legitimacy thresholds for both innovation generation and adoption in new ventures to achieve optimal distinctiveness.

The configurational theorizing process, as discussed by Furnari et al. (2020), offers valuable guidelines for employing a configurational approach. We have conducted our analysis through the three iterative stages – scoping, linking, and naming (Furnari et al., 2020). This section primarily covers the initial stage of configurational theorizing – scoping. We identify six conditions that can form configurations and formulate an overarching framework for our research (Furnari et al., 2020). Section 3 conducts the analyses following the stages of linking and naming.

2.1. Innovation generation and adoption

Innovation is commonly defined as the creation and application of something novel within an enterprise, encompassing new products, services, production methods, market expansions, and even novel organizational structures or administrative systems (Damanpour & Wischnevsky, 2006; Pérez-Luño et al., 2011). Our focus is on product and service innovation. Newness is a crucial aspect of innovation, resulting in the classification of innovation into two categories: innovation generation and innovation adoption (Damanpour & Wischnevsky, 2006). The former relates to an enterprise introducing a product or service that is entirely new to the world, while the latter involves assimilating existing knowledge and technologies developed elsewhere to create products or services that are only new to the organization or the specific area (Zheng et al., 2021). Innovation generation requires new ventures to invest substantial resources in exploring potentially uncertain opportunities (Hoskisson et al., 2017). The probability of success is uncertain and relatively low (March, 1991). In contrast, innovation adoption involves assimilating external knowledge and practices, integrating them with internal knowledge, resembling a more planned process, and resembling the exploitation of innovation (March, 1991). Hence, innovation generation involves higher risk and a greater likelihood of failure compared to innovation adoption (Zheng et al., 2021).

2.2. Regulatory environment

The regulatory environment consists of regulations, government policies, and rules that influence the behaviors of individuals and organizations (Stenholm et al., 2013). Compliance with these regulations helps new ventures gain legitimacy (Fisher et al., 2017). Regulatory conditions can either facilitate or impede innovation generation and adoption. Favorable conditions create a supportive business environment that fosters innovation (Mohsen et al., 2021). Conversely, heavily regulated conditions may create entry barriers, elevating the risk associated with innovation (Stenholm et al., 2013). Such conditions can result in intricate processes with high compliance costs (Hechavarría & Ingram, 2019), deterring entrepreneurs from investing in the generation or adoption of new technologies (Mohsen et al., 2021).

2.3. Conducive environment

A conducive environment refers to institutional arrangements required for innovation-oriented entrepreneurship (Stenholm et al., 2013). It emphasizes the conditions that foster new ventures pursuing innovation and knowledge-driven growth (Mohsen et al., 2021), facilitating their legitimization and creating a supportive environment for innovation. These conditions include investments in research and development, the presence of sci-

entific research institutions, scientists, and engineers (Stenholm et al., 2013). A conducive environment fosters a context rich in new ideas and advanced knowledge, serving as an incentive for innovation generation and adoption. This environment facilitates innovation generation and adoption by providing access to resources and motivating entrepreneurs to pursue innovation-driven entrepreneurship (Mohsen et al., 2021; Stenholm et al., 2013).

2.4. Normative environment

The normative environment encompasses social norms, values, and beliefs influencing human behavior (Busenitz et al., 2000). Adherence to these norms helps new ventures gain legitimacy and shapes their orientation towards innovation (Mohsen et al., 2021). Both innovation generation and adoption entail risk-taking, with uncertain outcomes and typically low probabilities of success (Pérez-Luño et al., 2011). Socially shared values and norms encouraging entrepreneurial risk-taking and innovation create an environment that tolerates new ideas and failure (Audretsch & Belitski, 2017), prompting new ventures to embrace innovation without excessive concern about the success of new products or services.

2.5. Cognitive environment

The cognitive environment of entrepreneurship relates to a country's initiatives in enhancing formal training within its educational system for entrepreneurial skills and knowledge (De Clercq et al., 2013). It includes the knowledge structures related to evaluating entrepreneurial opportunities, establishing and operating new ventures, and influences the mental models guiding the interpretation of information for market opportunity evaluation and new product creation (Mitchell et al., 2002). Entrepreneurs' cognitive abilities support their understanding and adoption of new knowledge and technologies, influencing decisions regarding their utilization (Garud & Rappa, 1994). Therefore, the cognitive environment significantly influences innovation generation and adoption in new ventures, either facilitating or hindering entrepreneurs in understanding the potential of new knowledge and technologies and their application in innovation.

2.6. Proactiveness

Proactiveness in entrepreneurship refers to proactive behaviors involving engagement in emerging industries, a continuous pursuit of new opportunities, and experimentation with potential responses to environmental changes (Miles & Snow, 1978). Concerning innovation generation, proactiveness may involve dynamic experimentation in the early stages of the product life cycle, implementing consistent research and development policies to introduce new products, or designing innovative production processes (Slater & Narver, 1993). Therefore, proactiveness facilitates new ventures' internal generation of knowledge and technologies to offer new products tailored to customer preferences (Pérez-Luño et al., 2011). Concerning innovation adoption, it involves using existing knowledge and technologies, leading to limited internal learning and being less convincing to potential customers compared to launching entirely new products (Schmalensee, 1982). Proactive new ventures are likely to adopt externally generated innovations, as it enables rapid introduction of new products to the market (Morgan, 1995).

2.7. Risk-taking

Risk-taking in entrepreneurship refers to the degree of risk considered when making decisions (Pérez-Luño et al., 2011). The process of generating innovation inherently involves risks, and the success probabilities for ventures committed to innovation generation are uncertain and generally low. However, if successful, the returns can be substantial (McGrath, 1995). Hence, ventures with a risk-taking orientation are more aggressive in pursuing potential benefits of innovation generation compared to risk-averse ventures (Pérez-Luño et al., 2011). Risk-taking is more closely linked to innovation generation than innovation adoption, although it does not necessarily have a negative association with innovation adoption. New ventures without a risk-taking orientation or with a risk-averse orientation may avoid innovation altogether, refraining from developing any new products (Pérez-Luño et al., 2011). Thus, risk-taking also correlates with innovation adoption, but perhaps to a lesser extent than its relationship with innovation generation.

3. Methodology

3.1. Method

In this study, we employ fsQCA, which is underpinned by three assumptions that elucidate its suitability for our research focus.

1. FsQCA posits that antecedents synergistically influence outcomes (Rihoux & Ragin, 2009), making it particularly suitable for examining interactions among three or more antecedents. Therefore, it is well-suited for investigating the configurational effects of six institutional and EO dimensions on new ventures' innovation generation and innovation adoption;
2. FsQCA recognizes equifinality, signifying that the same final state can be attained through various combinations of distinct initial conditions (Du & Kim, 2021). Therefore, it is well-suited for discerning equifinality in the path to optimal distinctiveness (McKnight & Zietsma, 2018);
3. FsQCA explores the asymmetrical relationships among antecedents and outcomes. Our research demonstrates the presence of conditional asymmetry (Misangyi et al., 2017) and causal asymmetry (Rihoux & Ragin, 2009) in the connections between institutional and EO conditions and the two outcomes.

FsQCA views the conditions and the outcomes as sets, and each case has memberships on the sets. The archival measures of the cases should be converted into fuzzy membership scores from 0 to 1 (Ragin, 2008). We calibrate it for set membership using the 75th, 50th, and 25th percentiles as the threshold values for fully out, fully in, and cross-over points of the conditions and outcomes (Fiss, 2011; Xie et al., 2021), respectively. To avoid cases from being dropped due to ambiguity in the 0.5 membership score, we add a constant of 0.001 to membership scores less than 1 (Fiss, 2011).

FsQCA aims to identify necessary and sufficient subset relationships that associate with the focal outcome (Douglas et al., 2020). For necessity analysis, the consistency threshold of necessity analysis in this study is set at 0.9 (Schneider & Wagemann, 2012). The analysis shows that no condition's consistency reaches 0.9, so no single condition is necessary for high innovation generation (IG) or high innovation adoption (IA), which indicates that a single institutional or EO dimension cannot be a bottleneck for high IG or

high IA. Subsequently, we conduct sufficiency analysis with the raw consistency threshold of 0.8 (Fiss, 2011), the proportional reduction in inconsistency (PRI) measure threshold of 0.75 (Misangyi & Acharya, 2014) and the frequency threshold of one case (Ragin, 2008). Following the principle of asymmetric causality, we also investigate configurations sufficient for the absence of high IG and high IA (Greckhamer et al., 2018) using the same consistency thresholds as for high IG and high IA. We perform a comparative analysis of configurations between the presence and absence of the outcomes to assess the asymmetry. All analyses were conducted using fs/QCA 3.0 software.

3.2. Data and measures

The data source is the Global Entrepreneurship Monitor 2021/2022 Global Report (GEM, 2022). The GEM project comprises two main cross-national surveys: the Adult Population Survey (APS), which includes a representative sample of at least 2,000 randomly selected adults in each economy, and the National Expert Survey (NES), which collects the opinions of at least 36 identified and GEM-approved national experts on entrepreneurial environment conditions in their economy. Despite the limitations of the GEM survey, such as its subjectivity, its contributions are generally recognized, and its datasets are widely used in transnational entrepreneurship research (Beynon et al., 2020; Xie et al., 2021). The data regarding institutional dimensions (regulatory, conducive, normative, and cognitive environment) are from NES. The data regarding EO dimensions (proactiveness and risk-taking) and the two outcomes (new ventures' innovation generation and innovation adoption) are from APS. After matching available data for each economy in the two surveys, our sample included 47 cases out of the 50 economies covered in GEM 2022. Table 1 presents the variables and measures used in our study, and Table 2 provides the descriptive statistics and calibration thresholds for variables.

Table 1. Variables, abbreviation and measures

Variables	Abbreviation	Measures
innovation generation	IG	new to the world
innovation adoption	IA	new to the area or the country
regulatory environment	Reg	the average of two indicators: (a) government policy: support and relevance; (b) government policy: taxes and bureaucracy
conductive environment	Con	the average of two indicators: (a) research and development transfer; (b) commercial and professional infrastructure
normative environment	Nor	social and cultural norms
cognitive environment	Cog	the average of two indicators: (a) entrepreneurship education at school; (b) entrepreneurship education post-school
proactiveness	Pro	perceived opportunity
risk-taking	Ris	undeterred by fear of failure

Table 2. Fuzzy-set membership calibrations and descriptive statistics

Variables	Fuzzy set calibrations			Descriptive statistics			
	Fully in	Crossover	Fully out	Mean	SD	Max	Min
IG	0.700	0.400	0.200	0.536	0.516	2.400	0.000
IA	4.500	2.690	1.750	3.468	2.751	13.100	0.300
Reg	5.255	4.600	3.745	4.507	1.074	7.250	2.240
Con	5.418	4.821	4.125	4.751	0.897	6.470	3.090
Nor	5.500	5.229	3.955	4.926	1.157	7.940	2.960
Cog	4.275	3.855	3.195	3.817	0.960	6.075	1.920
Pro	69.520	58.015	44.910	54.763	17.752	95.380	11.740
Ris	61.785	56.052	50.790	57.183	9.774	87.920	43.990

3.2.1. Innovation generation and adoption

In the GEM survey, information on products or services that are either new to the world, new to the area or new to the country is collected. Following the literature (Pérez-Luño et al., 2011; Zheng et al., 2021), we measure innovation generation (IG) by using the proportion of products or services that are new to the world and measure innovation adoption (IA) using the proportion of products or services that are either new to the area or new to the country.

3.2.2. Regulatory environment

In line with Xie et al. (2021), we measure the regulatory environment (Reg) by averaging two GEM indicators, support and relevance, reflecting whether government policies support entrepreneurship, and taxes and bureaucracy, gauging the affordability of taxes and fees, and the friendliness of rules and regulations to entrepreneurship.

3.2.3. Conducive environment

A conducive environment (Con) reflects supportive institutional arrangements for entrepreneurship and innovation (e.g., investment in research and development and the availability of professional infrastructure) (Mohsen et al., 2021; Stenholm et al., 2013). Consistent with the literature, we measure Con by averaging specific GEM indicators: research and development transfer, gauging the ease with which research can be translated into new business, and commercial and professional infrastructure, assessing the sufficiency and affordability of related facilities.

3.2.4. Normative environment

Consistent with Xie et al. (2021), we measure Nor by using the social and cultural norms investigated in the GEM survey, reflecting the cultural encouragement and celebration of entrepreneurship.

3.2.5. Cognitive environment

According to the literature (De Clercq et al., 2013; Lim et al., 2016), we measure Cog by averaging the following GEM indicators: entrepreneurship education at school, indicating whether schools introduce entrepreneurship and entrepreneurial values to students, and entrepreneurship education post-school, reflecting whether colleges and business schools offer entrepreneurial subjects and training courses.

3.2.6. Proactiveness

Following Reyes (2017), we assess Pro using an indirect indicator of perceived opportunity. This indicator reflects the percentage of people who perceive good opportunities to initiate a new business.

3.2.7. Risk-taking

In the GEM survey, the proportion of people who would not start a business for fear of failure is collected. Consistent with Reyes (2017), we employ this information to measure Ris. Following common practice (Beynon et al., 2018; Xie et al., 2022), we reverse-code the fear of failure by subtracting its original value from 100, thereby obtaining the percentage of individuals unaffected by the fear of failure.

4. Results

4.1. Primary analysis

4.1.1. Configurations sufficient for high innovation generation

Table 3 displays configurations associated with new ventures achieving high IG and high IA. There are 5 such configurations, and among them, IG1a, IG2, and IG4 are the balanced differentiators. For example, in configuration IG1a, regardless of the absence of Pro, the presence of Reg, Con, Cog and Ris promotes high IG for new ventures, where Nor is irrelevant to the outcome. France is a typical economy. The country benefits from favorable governmental policies, supportive services, institutions, and post-school entrepreneurial education and training, contributing to legitimacy (Mohsen et al., 2021). Furthermore, an orientation towards seizing opportunities rather than fearing failure distinguishes new ventures from competitors (Pérez-Luño et al., 2011), resulting in the differentiation of new ventures' innovation generation. Thus, the combination of institutional environment and EO dimension leads to new ventures' high IG in France.

Table 3. Configurations sufficient for high IG and high IA

	High-IG solution					High-IA solution				
	IG1a	IG1b	IG2	IG3	IG4	IA1a	IA1b	IA2a	IA2b	IA3
Reg	●	●	⊗	⊗	•	⊗	⊗	•	⊗	⊗
Con	●	●		⊗	●	⊗	⊗		⊗	•
Nor		•	●	•	•	•	•	•	⊗	⊗
Cog	●	●	●	●	⊗	●	●	⊗	⊗	•
Pro	⊗	⊗	•	⊗	●	⊗	•	●	●	●
Ris	•		●	⊗	⊗	⊗	•	⊗	⊗	⊗
Consistency	0.967	0.922	0.938	0.953	0.857	0.917	0.987	0.927	0.868	0.972
Raw coverage	0.184	0.181	0.093	0.071	0.058	0.075	0.060	0.108	0.181	0.057
Unique coverage	0.051	0.020	0.060	0.017	0.011	0.031	0.030	0.048	0.105	0.005
Overall consistency	0.916					0.900				
Overall coverage	0.328					0.310				

Note: Large, full black circles "●" denote the presence of core conditions; small, full black circles "•" denote the presence of peripheral conditions; large, crossed open circles "⊗" denote the absence of core conditions; small, crossed open circles "⊗" denote the absence of peripheral conditions; blank spaces denote the irrelevant conditions.

Configurations IG1b and IG3 are institutional-dominant paths with or without supportive EO. Consider configuration IG1b, where, regardless of the absence of Pro, the presence of Reg, Con, Nor and Cog generates new ventures' high IG, and Ris is irrelevant to the outcome. Spain is a typical economy. The country benefits from public policies supporting entrepreneurship, conducive and available services and institutions, and social and cultural norms fostering entrepreneurship, encouraging new ventures to establish legitimacy and drive innovation (Mohsen et al., 2021). The combination of institutional dimensions contributes to new ventures' high IG in Spain.

4.1.2. Configurations sufficient for high innovation adoption

Table 3 illustrates 5 configurations that are sufficient for achieving high IA in new ventures. Configurations IA1b, IA2a and IA3 are balanced differentiators. The presence of two institutional dimensions (Nor and Cog for IA1b, Reg and Nor for IA2a, and Con and Cog for IA3), combined with one or two EO dimensions (Pro and Ris for IA1b, Pro for IA2a and IA3), results in new ventures achieving high IA. The typical economies of configurations IA1b, IA2a and IA3 are Guatemala, Ireland and Uruguay, respectively. The equilibrium between legitimacy gained through the institutional environment and differentiation generated by EO contributes to the high IA of new ventures in these economies (McKnight & Zietsma, 2018). Additionally, it is noteworthy that Guatemala, the typical economy for IA1b, is also associated with IG2, while Ireland is the typical economy shared by IA2a and IG4. This indicates that new ventures in a given economy can simultaneously pursue both innovation generation and innovation adoption, suggesting that the choice between the two may not be binary.

Configuration IA1a represents an institutional-dominant path for achieving high IA without supportive EO. Colombia exemplifies this configuration. Notably, we observe that configuration IA1a aligns with configuration IG3. The identical combination, characterized by the presence of Nor and Cog along with the absence of Reg, Con, Pro, and Ris, results in both new ventures achieving high IG and high IA. This suggests that the mechanisms leading to high innovation generation and innovation adoption in new ventures may be shared, implying a similarity in the decision-making process between the two, rather than necessitating contradictory mechanisms (Pérez-Luño et al., 2011).

Configuration IA2b represents an EO-dominant path for new ventures' high IA without a supportive institutional environment. In this configuration, the presence of Pro generates new ventures' high IA, regardless of the absence of all institutional dimensions, coupled with the absence of Ris. South Africa is a typical economy. The inclination of new ventures to capitalize on opportunities in South Africa sets them apart from competitors, contributing to high innovation adoption (Sciascia et al., 2006).

4.2. Supplemental analyses

4.2.1. Configurations sufficient for the absence of high innovation generation and the absence of high innovation adoption

Table 4 illustrates the configurations associated with new ventures' absence of high IG and high IA. While our primary focus is not on paths involving the absence of high IG and high IA in this study, an examination of configurations that fail to generate high IG and high IA yields valuable insights. Only one configuration is identified as sufficient for the absence of high IG, and its overall coverage, indicating the degree to which the configuration explains cases of the absence of high IG, is quite low (0.06). Consequently, the explanatory power of

configuration AIG1 is inadequate for cases of the absence of high IG, and other configurations lack sufficient consistency in leading to the absence of high IG. We interpret this as indicative of numerous potential but inconsistent paths contributing to the absence of high IG, aligning with similar findings by Fiss (2011) and Du and Kim (2021).

Table 4. Configurations sufficient for the absence of high IG and high IA

	Absence of high-IG solution	Absence of high-IA solution		
	AIG1	AIA1	AIA2	AIA3
Reg	●	⊗		•
Con	⊗	●	•	●
Nor	⊗	•	⊗	⊗
Cog	⊗	•	●	⊗
Pro	●	•	⊗	⊗
Ris	•	●	•	⊗
Consistency	0.842	0.897	0.888	0.876
Raw coverage	0.060	0.058	0.145	0.093
Unique coverage	0.060	0.044	0.104	0.056
Overall consistency	0.842	0.905		
Overall coverage	0.060	0.246		

Note: Large, full black circles "●" denote the presence of core conditions; small, full black circles "•" denote the presence of peripheral conditions; large, crossed open circles "⊗" denote the absence of core conditions; small, crossed open circles "⊗" denote the absence of peripheral conditions; blank spaces denote the irrelevant conditions.

For the absence of high IA, there are 3 sufficient configurations. Those configurations are not simply the negation of those for the presence of high IA, indicating that the causes for the absence of high IA differ from those for the presence of high IA (Du & Kim, 2021). Configurations AIA1 and AIA2 involve the presence of different institutional and EO dimensions, potentially achieving a strategic balance. Why are they sufficient for the absence rather than the presence of high IA? Let's delve deeper. Sweden and France are typical economies of configuration AIA1 and AIA2, respectively. Interestingly, as revealed in analyses of configurations sufficient for high IG, we find that Sweden and France are also typical economies of configurations IG2 and IG1a, respectively. Therefore, even when the institutional environment and EO achieve a strategic balance in economies, if new ventures prioritize innovation generation, simultaneously pursuing innovation adoption becomes challenging. Some literature argues that contradictory organizational mechanisms are required for the successful execution of both innovation generation and adoption (Pérez-Luño et al., 2011), and our research may offer evidence supporting this observation.

4.2.2. Sensitivity analysis

We perform additional robustness checks on the results by altering the crossover point for conditions and outcomes (Schneider & Wagemann, 2012). We establish an alternative crossover point for calibrations at the 55th percentile for all conditions and outcomes to assess whether a shift in calibration is accompanied by a substantial in the results (Xie et al., 2021). We observe minor alterations in the specific number of solutions; neverthe-

less, there are no substantial changes in the interpretation of the results. The interpretation of the results still holds.

5. Discussion

5.1. Theoretical implications

5.1.1. *Multiple recipes for new ventures' high IG and high IA*

Our analysis identified five equifinal configurations sufficient for high IG and high IA, respectively. These configurations show that there are multiple optima of distinctiveness to achieve high IG or high IA. Previous literature suggests that optimal distinctiveness likely exhibits equifinality (Zhao et al., 2017). Our research extends this by revealing that equifinality in optimal distinctiveness may arise from the configurational effects of diverse contexts and strategies. Within distinct institutional contexts, diverse EO strategies prove effective in attaining either high IG or high IA.

5.1.2. *Something similar shared by mechanisms of high IG and high IA*

Some literature suggests that achieving high IG and high IA may require contradictory mechanisms (Pérez-Luño et al., 2011), and our findings appear to corroborate this notion. Sweden and France exemplify cases with high IG configurations (IG2 and IG1a, respectively) but lacking high IA configurations (AIA1 and AIA2, respectively). This suggests that, although these cases achieve a strategic balance of the institutional environment and EO for high IG, simultaneously pursuing high IA becomes challenging. However, our comparative analysis between configurations sufficient for high IG and high IA reveals shared typical cases (Guatemala for IG2 and IA1b, and Ireland for IG4 and IA2a) or even identical recipes (configuration IG3 and configuration IA1a). Thus, in addition to the previously discussed different or contradictory mechanisms, we also identify a similarity: high IG and high IA can share the same mechanism, allowing new ventures to pursue both concurrently in specific circumstances. Hence, the choice between IG and IA might not be a binary decision but rather a matter of degree.

5.1.3. *Asymmetric configurational theoretical explanations of IG and IA*

Common approaches in the literature to analyze the joint effects of institutional conditions and EO dimensions on new ventures' behavior are traditional statistical methods, which are symmetric and address contingency effects (e.g., Wales et al., 2021; Wang et al., 2017). However, these approaches oversimplify the interactions between multiple conditions (Douglas et al., 2020). Our research employs an asymmetric approach that acknowledges the asymmetric effect of each condition on the outcome under different circumstances (Misangyi et al., 2017), essential for exploring optimal combinations of institutional conditions and EO dimensions for achieving high IG and high IA. Additionally, configurations for the presence and absence of high IG (high IA) are asymmetric (Ragin, 2008). Our findings demonstrate that configurations for the absence are distinct from those for the presence, suggesting different underlying causes for the absence of high IG (high IA).

5.2. A legitimacy threshold

To examine the legitimacy thresholds of new ventures' high innovation generation and adoption, we apply a heuristic approach introduced by McKnight and Zietsma (2018) to score the

legitimization and differentiation effects of configurations sufficient for high IG and high IA by assigning a positive or negative point to each condition as it enhances or challenges legitimization or differentiation. The four dimensions of the institutional environment (Reg, Con, Nor, and Cog) exhibit asymmetrical effects on legitimization and differentiation in new ventures. They facilitate legitimacy acquisition without necessarily challenging differentiation, and may also encourage risk-taking and innovativeness (Xie et al., 2021), thereby promoting differentiation. Each institutional dimension contributes one point to legitimization (+1 for legitimization). Conversely, the two dimensions of EO (Pro and Ris) have symmetrical effects, enabling new ventures to differentiate from incumbents while making legitimacy attainment challenging. Each EO dimension adds one point to differentiation and deducts one point from legitimization (+1 for differentiation and -1 for legitimization).

For configurations sufficient for high IG, IG1a, IG2, and IG4 emphasize balanced differentiation by adopting one or two dimensions of EO (+1 for differentiation and -1 for legitimization with each EO dimension) and mitigating the legitimization challenge with two or three legitimacy-enhancing institutional dimensions (+1 for legitimization with each institutional dimension). IG1b and IG3 emphasize the importance of legitimization by relying on two or four institutional dimensions (+1 for legitimization with each institutional dimension). For configurations sufficient for high IA, IA1b, IA2a, and IA3 emphasize balanced differentiation by adopting one or two dimensions of EO (+1 for differentiation and -1 for legitimization with each EO dimension) and mitigating the legitimization challenge with two legitimacy-enhancing institutional dimensions (+1 for legitimization with each institutional dimension). IA1a emphasizes the importance of legitimization by relying on two dimensions of the institutional environment (+1 for legitimization with each institutional dimension). IA2b emphasizes the importance of differentiation by adopting one EO dimension to improve differentiation ability (+1 for differentiation and -1 for legitimization). The legitimization and differentiation scores for high IG configurations are presented in Table 5, while those for high IA configurations are presented in Table 6.

The legitimacy threshold is set at zero, meaning legitimacy challenges from legitimacy-destroying conditions are balanced by legitimacy-enhancing conditions (McKnight & Zietsma, 2018). To achieve high IG, configurations with legitimization scores meeting or exceeding the threshold are required. A differentiation strategy should operate within an acceptable range (Deephouse, 1999). However, not all configurations sufficient for high IA reach the legitimacy threshold. For instance, IA2b has a lower legitimization score but a higher differentiation score. Thus, achieving high IA may benefit more from a strategic balance between legitimization and differentiation rather than being as different as legitimately possible.

Our research indicates that the orchestrating mechanisms for achieving high IG and high IA differ. Zhao et al. (2017) identified two orchestrating mechanisms for attaining optimal distinctiveness: compensatory orchestration, involving deviation from certain dimensions of firm behavior while conforming to others, and integrative orchestration, configuring conforming firm behaviors in unique and novel ways. Building on this, McKnight and Zietsma (2018) proposed a third mechanism called threshold orchestration, focusing on gaining sufficient legitimacy to overcome challenging conditions. Our research reveals that configurations for high IG reach the legitimacy threshold, indicating that the mechanism for high IG resembles threshold orchestration. However, configurations for achieving high IA are more aligned with compensatory orchestration, where there is an offset between the legitimization and differentiation scores, and not all configurations for high IA meet the legitimacy threshold. The difference between the mechanisms for high IG and high IA can be explained by the nature of

innovation generation behavior, which involves riskier and more disruptive products or services, posing greater legitimacy challenges for new ventures compared to innovation adoption (Hoskisson et al., 2017). Additionally, previous literature indicates that the path to legitimacy demonstrates equifinality (Suddaby et al., 2017). Our research extends this understanding by revealing that equifinality in legitimacy results from the combined impact of conditions that destroy or enhance legitimacy.

Table 5. Legitimacy and differentiation scores of high IG

	High-IG solution									
	IG1a		IG1b		IG2		IG3		IG4	
	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score
Reg	+1		+1						+1	
Con	+1		+1						+1	
Nor			+1		+1		+1		+1	
Cog	+1		+1		+1		+1			
Pro					−1	+1			−1	+1
Ris	−1	+1			−1	+1				
Total score	3	1	4	0	0	2	2	0	2	1

Table 6. Legitimacy and differentiation scores of high IA

	High-IA solution									
	IA1a		IA1b		IA2a		IA2b		IA3	
	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score	Legi- timi- zation score	Diffe- ren- tiation score
Reg					+1					
Con									+1	
Nor	+1		+1		+1					
Cog	+1		+1						+1	
Pro			−1	+1	−1	+1	−1	+1	−1	+1
Ris			−1	+1						
Total score	2	0	0	2	1	1	−1	1	1	1

6. Conclusions

From the perspective of optimal distinctiveness, we examine the configurational effects of the institutional environment and EO on new ventures' innovation generation and adop-

tion. Instead of a one-size-fits-all optimal distinctiveness, we identify five equifinal optima of distinctiveness for achieving high IG and high IA in new ventures. Additionally, we observe that the mechanism for high IG resembles threshold orchestration, while the mechanism for high IA aligns more with compensatory orchestration. Despite the differing orchestrating mechanisms of high IG and high IA, they can share some similarities, allowing new ventures to pursue both simultaneously in certain circumstances. Our findings provide valuable insights for entrepreneurs, uncovering multiple distinctiveness optima that contribute to high innovation generation and adoption. Furthermore, for high innovation generation, entrepreneurs should prioritize legitimacy thresholds, emphasizing the importance of being as different as legitimately possible over strategic balance.

Our research has certain limitations, providing avenues for future studies:

1. The data source mainly relies on the GEM project, so future research should validate the findings using alternative data sources;
2. Our study examines the static relationship between institutional and EO dimensions and new ventures' innovation generation and adoption. Subsequent research should delve into the influence of dynamism in the institutional environment, as well as the evolution of EO, on innovation.

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Author contributions

Zhimin Xie conceived the conceptualization, data curation, formal analysis, software, methodology, writing-original draft and project administration. Lingmin Xie was responsible for conceptualization, project administration, formal analysis, methodology, validation and writing-review & editing. Li Liu was responsible for data curation, resources, investigation, and writing-original draft.

Disclosure statement

The authors declare no conflict of interest

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