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INSTITUTIONAL ENVIRONMENTS, HEADQUARTER CONTROL, AND SUBSIDIARIES' INNOVATIONS: FOCUSING ON DISRUPTIVE AND SOCIAL INNOVATION

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ABSTRACT

We examine how the institutional characteristics of a local market and the level of control exercised by MNE headquarters affect the development of disruptive innovation within subsidiaries. We also investigate the causal relationships between subsidiaries' disruptive and social innovation. The data were collected using a survey targeting MNE subsidiaries in China. We empirically test the model via ordinary least square (OLS) method. The results show that all institutional factors significantly impact subsidiaries' innovation activities. The findings also confirm that the extent of control and control mechanisms exercised by MNE headquarters over subsidiaries have a negative causal relationship with disruptive innovation within subsidiaries, and ultimately, their social innovation. This finding suggests that to achieve social innovation, subsidiaries must focus on enhancing disruptive innovation. It also offers invaluable theoretical contributions and economic implications to our current knowledge.

KEYWORDS: Institutional environments, headquarters' control, disruptive innovation, social innovation, China.

1. INTRODUCTION

Institutional factors, comprising a firm's external environment, significantly influence multinational enterprise (MNE) subsidiary operations in host countries. Previous studies on institutional theory have focused on several research areas, such as market entry strategy (Ang *et al.*, 2015; Donnelly *et al.*, 2024), and MNE performance (Li *et al.*, 2014; Saka-Helmhout *et al.*, 2016). In particular, the rapid expansion of firms' internationalization into emerging markets, often characterized by institutional voids, has attracted much attention in extant studies. MNEs' strategic choices rely on their capabilities and possession of firm-specific organizational resources (Peng *et al.*, 2008). These choices also depend on the formal and informal constraints of their institutional environments (i.e., regulative, normative, and cognitive pillars) (Scott, 2001; Scott and Meyer, 1994). Such effects are markedly noticeable in emerging markets, as institutions differ between emerging and developed economies.

Although research on institutions has received much attention, examining the relationship between institutions and innovation is in its infancy. Two concerns bolster the importance of our research. First, innovation is a crucial determinant of organizational success in foreign markets, and studies on the institutional factors of organizational innovation, specifically in emerging markets, are sparse (Aghion and Howitt, 1992; Grossman and Helpman, 1991). Moreover, the impact of institutional factors on MNE subsidiaries' disruptive innovation and the resulting social innovation in emerging markets has yet to be explored. *Prima facie*, we anticipate that higher levels of institutional pressure from the business environment will considerably influence the configuration of organizational innovation. Thus, this research seeks to identify the key institutional pressures affecting MNE subsidiaries' adoption of disruptive innovation and their contributions to social innovation in emerging markets. Obtaining a deep understanding of the different effects of institutional elements remains a central challenge. This understanding is important because of the unique role of each aspect of formal and informal institutions in mobilizing environmental muscle, resulting in innovations and changes within MNE subsidiaries (Aguilera and Grøgaard, 2019).

Control mechanisms concern MNEs' system wide governance dimensions. The control and coordination of activities between MNEs and their subsidiaries are crucial endogenous factors reflecting the subsidiaries' power and the MNEs' strategic

thrust. MNEs' ability to effectively and efficiently control and coordinate subsidiaries' operations is critical to their success in foreign markets. In this vein, Zeng *et al.* (2023) argue that the various configurations and interactions of MNE control and its mechanisms considerably affect the intended outcomes, such as knowledge management (Larkin, 2014; Park and Choi, 2014), non-market strategies (e.g., corporate social responsibility) (Napier *et al.*, 2023), and the subsequent performance (Driffield *et al.*, 2016; Ghauri *et al.*, 2013). Although MNEs' control issues and mechanisms have been extensively studied, investigations of the association between control and innovation within MNE networks are scarce. Furthermore, concurrent consideration of control and innovation in emerging markets, as well as the effects of control on specific innovation types (e.g., disruptive and social innovation), heighten the importance of our research.

Accordingly, our study addresses several voids in the literature. First, in the context of MNEs' innovation achievement in emerging markets, institutional and resource dependence theories offer valuable perspectives on the influence of institutional environments and headquarters' control. For instance, government policies and regulations (i.e., the quality of institutions) can externally pressure MNEs to comply with new requirements (e.g., regulative pressures) and may also impose normative expectations on MNE actions. Moreover, institutional influences, such as rules and regulations, business norms, and cultural-cognitive expectations, may shape MNE behavior. Compliance with these institutional pressures can impact firms' innovation trajectories.

Meanwhile, MNEs must control and coordinate global subsidiary management functions. Resource dependence theory argues that internal control becomes more accessible when a subsidiary unit depends on MNE headquarters for critical resources (Rao *et al.*, 2007). As mentioned, these endogenous functions in MNE networks have yet to be examined in the context of innovation in emerging markets.

Second, the relationships among disruptive innovation and institutional environments and control factors have not been explored. Several scholars have concluded that the current state of research regarding the antecedents and dynamics for identifying disruptive innovation needs further clarification (Danneels, 2004). Thus, our empirical results provide a concrete foundation for addressing these gaps.

Third, innovation and innovative capabilities are imperative for MNEs seeking to enhance their

performance in international markets. The association between innovation and financial performance is well-established in the literature (Crossan and Apaydin, 2010). Thus, the consensus is that firm-level engagement in innovative activities increases overall financial performance. However, the link between innovation and corporate social performance is equivocal. Social innovation, which refers to new social practices that aim to meet social needs more effectively than extant solutions, should be a critical part of MNEs' social contributions to local markets. Our study will empirically address this ambiguity.

2. BACKGROUND

Firms face the challenge of managing radical strategic and organizational changes to traditional economic development, such as the transition from an agricultural to an industrialized economy (Meyer and Peng, 2005). To overcome this, firms must aim for strategic flexibility to adapt their strategies in response to external threats and achieve corporate performance (Zahoor and Lew, 2023). Thus, firms must foster innovations that allow them to approach and address the challenges caused by new environments (Romber, 1990). For instance, COVID-19 resulted in new laws and regulations and caused lifestyle shifts, such as travel restrictions, social distancing, wearing masks in public, and regional lockdowns, constraining businesses' decision-making flexibility and operational freedom in various markets (Brown and Rocha, 2020).

Digital technologies have revolutionized how firms conduct business activities internationally, significantly impacting their ability to search and eventually influencing economic development in their local economy, and communicate with buyers globally (Glavas and Mathews, 2014). Li *et al.* (2021) note that digitalization, accelerated by the global pandemic crisis, led firms to respond to rapid market changes and enhance corporate capabilities based on innovation through adopting new technologies. Firms can adopt disruptive innovation by identifying the technology characteristics associated with market disruption (Nagy *et al.*, 2016). Accordingly, firms can overcome challenges in turbulent environments by rapidly developing their corporate strategies regarding innovation.

When firms prioritize social innovation, they become more socially and economically engaged. Social innovation refers to new approaches that address social challenges more effectively than existing solutions (Khan *et al.*, 2024). Firms strive to attain social innovation by emphasizing the creation

of social value in addition to generating revenue to increase innovation (Oeij *et al.*, 2019). Social entrepreneurs' innovative activities can be defined as social innovation. These activities involve developing and implementing new ideas for products and services to meet social needs and create new social relationships or collaborations (European Commission, 2013). Through social innovation, organizations can develop ideas to solve the social problems faced by individuals, groups, and communities (Gupta *et al.*, 2020). Consequently, given the potential of disruptive and social innovation to assist firms in overcoming challenges and optimizing their activities, examining the factors encouraging firms to adopt such strategies is timely and relevant.

3. DATA, SPECIFICATION AND MODEL

This section describes the data collection process, the specification of the variables, and the econometric model used in the study.

3.1. Data collection

The data were collected through a survey targeting subsidiaries of MNEs operating in China. To administer a formal survey, we randomly selected 600 MNE foreign-invested subsidiaries in China, obtained from the Directory of Foreign-Invested Firms in China published by the MOC and the Chinese National Bureau of Statistics' Annual Industrial Survey Database. We carefully designed the survey process by initially developing an English-language version of the survey instrument, which was then translated into Chinese by two professional bilingual translators. To avoid any bias arising from language errors and ensure conceptual equivalence, two additional independent bilingual translators back-translated the Chinese language version of the questionnaire into English (Brislin, 1986). To better achieve construct validity and understand the focal phenomenon, we conducted five in-depth interviews with senior managers, comprising CEOs, presidents, vice presidents, and directors of MNE subsidiaries, before formally conducting the survey process. Based on their feedback, we slightly modified some questions to further enhance their relevance and completeness. We also chose senior managers from each sample firm as key respondents because we believed they were more familiar with our research context of subsidiary innovation strategies.

Prior studies (Peng and Luo, 2000; Xiao *et al.*, 2020) have repeatedly pointed out the potential challenges of collecting firm data in China and have emphasized the particular importance of utilizing *guanxi* (i.e., close relationships and connections) to facilitate responses and collect high-quality data from firms.

Accordingly, we administered the formal survey by hiring a professional research institute with extensive experience in the local Chinese market. Owing to these survey procedures, this researcher obtained 286 questionnaires and employed 271 usable responses for final data analysis after excluding 15 responses with extensive missing information on some key variables of interest. Of the 271 MNE foreign subsidiaries, approximately 70% had fewer than 500 employees, and 9.6% had more than 1000 employees. Regarding duration of operation in the Chinese market, 28.4% of the sample firms had been operating for less than ten years, 39.1% had been operating for ten to twenty years, and 32.5% had been in China for over twenty years. In terms of entry mode choices, 55.4% were established as wholly-owned subsidiaries, and 48.3% were industrial firms in sectors such as communication, chemicals, electric machinery, electronics, and transportation equipment.

3.2. Variables Specification

The key variables in the study include disruptive innovation (DI), social innovation (SI), the regulative pillar (RE), the normative pillar (NO), the cognitive pillar (CO), control extent (CE), control focus (CF), and control mechanism (CM). Unless specifically noted in this study, we measured all key dependent and independent variables using multiple-item, seven-point Likert scales (1 = "strongly disagree" and 7 = "strongly agree").

To measure the MNE subsidiary's social innovation, this study adopted the six-item scale developed by Nguyen *et al.* (2023) and asked the respondents to assess their subsidiaries' ability to help achieve progress by addressing social problems. Following Abadie *et al.* (2023), it measured an MNE subsidiary's degree of disruptive innovation adoption using a six-item scale by asking the respondents to evaluate their subsidiary's adoption of various digital technologies, including AI, machine learning, and big data. Following prior studies (Busenitz *et al.*, 2000; Manolova *et al.*, 2008; Spencer and Gómez, 2004), this study measured all three institutional factors (i.e., the regulative, normative, and cognitive pillars) using a four-item scale. This researcher asked the respondents to assess the different aspects of their institutional environment and specify the specific institutional conditions in the host market under which their subsidiaries pursue disruptive innovation. To measure the three dimensions of parent MNE control over foreign subsidiaries, this study adopted scales developed in the existing literature and modified them for the specific context of our research. Specifically, it

adopted a five-item scale from O'Donnell (2000) to measure the extent of a parent MNE's control over subsidiaries by asking the respondents to evaluate the extent to which the parent MNE firm strongly controls subsidiaries' strategic and operational activities, including strategic planning, production processes, technology use, commercial ends, and product development.

To assess the focus of a parent MNE's control over subsidiaries, this study utilized a four-item scale derived from extant research (Pangarkar and Klein, 2004; Wang *et al.*, 2014). It asked respondents to evaluate the degree to which the parent MNE firm controls a wide range of subsidiaries' major strategic and operational activities across various sectors and functions, including strategic planning, resource allocation, and operational activities in different divisions.

Regarding the mechanism of a parent MNE's control over subsidiaries, this study adopted a five-item scale used by Ghauri *et al.* (2013) by asking respondents to assess the degree to which a parent MNE uses specific mechanisms. These mechanisms for controlling foreign subsidiaries include staffing subsidiaries' top management team (TMT) positions, deploying expatriates, actively communicating with subsidiaries, supplying subsidiaries' policy and planning processes, and providing training opportunities to subsidiary employees.

In addition, this study included several control variables which may influence its dependent variables. In doing so, it controlled for the effect of firm size using the logarithm of the total number of employees in the subsidiary and firm age using the number of years since the subsidiary's establishment. To control for the effect of entry mode choice, it created a dummy variable with a value of 1 for a wholly-owned subsidiary (WOS) and 0 for an international joint venture (IJV). This study also controlled for the effects of industry-level factors by creating a dummy variable equal to 1 if the subsidiary's domain is in industrial-goods sectors and 0 if it is in consumer-goods industries. In addition, it controlled for the effect of market growth by asking respondents to evaluate the average annual growth rate of their total sales in their focal market segment over the past three years using a 7-point Likert scale (1 = "very low," 7 = "very high"). Finally, this study controlled for the effect of competitive intensity using a 7-point Likert scale (1 = "not competitive," 7 = "extremely competitive") adapted from previous literature by asking respondents to assess the degree of competition in their market environment.

3.3. Econometric Model

The econometric model analyzes the impact of institutions and headquarter control on the subsidiary's disruptive innovation and its subsequent effect on social innovation. The first part of the model specifies the impact of institutions and headquarter control on disruptive innovation using the equation: $DI = \beta_0 + \beta_1 RE + \beta_2 NO + \beta_3 CO + \beta_4 CE + \beta_5 CF + \beta_6 CM + \epsilon$

In contrast, the second part of the model analyzes the impact of disruptive innovation on social innovation with the equation: $SI = \gamma_0 + \gamma_1 DI + \epsilon$. The results are analyzed using ordinary least square (OLS) to understand the relationships among the key variables.

4. EMPIRICAL ANALYSES AND RESULTS

4.1. Construct Reliability and Validity

We performed a measurement model estimation to verify the reliability and validity of the constructs used in the study before testing the relationships. This study presents the construct reliability and validity assessment results in Table 1. The factor loading values of all constructs are highly statistically significant at $p < 0.001$ and greater than 0.70, providing strong evidence for the reliability and validity of the measurement model (Hulland, 1999). Furthermore, its constructs' Cronbach's alpha coefficients (ranging from 0.815 to 0.890) and composite reliability (CR) values (ranging from 0.818 to 0.894) are all greater than the benchmark of 0.70 for assessing reliability, presenting evidence of the strong reliability of its construct measures (Fornell and Larcker, 1981; Nunnally, 1978). This study also

calculated the average variances extracted (AVE) for all multi-item constructs to assess the convergent validity of their measures. As shown in Table 2, the AVE values (ranging from 0.620 to 0.735) for all multi-item constructs exceed the benchmark of 0.50 for achieving adequate convergent validity, offering evidence of adequate convergent validity (Fornell and Larcker, 1981).

To assess the discriminant validity of the measures, this study compared the square root of each construct's AVE value and the absolute value of the correlation between each construct and all other constructs in the model. It presents the results of this assessment in Table 2. The square root of each construct's AVE is greater than the absolute correlation value between the construct and all other constructs, yielding strong evidence of the measures' adequate discriminant validity (Fornell and Larcker, 1981). To further ensure the discriminant validity of the measures, this researcher compared the factor loading values of each indicator with the other indicators' factor loadings. Each indicator's loading value exceeds the respective cross-loading values, providing additional evidence of the measures' discriminant validity. Following Henseler *et al.*'s (2015) recommendation to use the heterotrait-monotrait ratio (HTMT) of the correlations as another approach for examining discriminant validity, this study analyzed the HTMT correlation values and found that all the HTMT correlations are below 0.85, offering further evidence of the satisfactory discriminant validity of its construct measures (Henseler *et al.*, 2015).

Table 1: Results of construct reliability and validity assessments

Construct and indicators	SFL
Regulative pillar (RP) (AVE = 0.671, alpha = 0.837, CR = 0.841)	
RP1	0.846
RP2	0.798
RP3	0.822
RP4	0.809
Normative pillar (NP) (AVE = 0.677, alpha = 0.841, CR = 0.842)	
NP1	0.811
NP2	0.822
NP3	0.836
NP4	0.821
Cognitive pillar (CP) (AVE = 0.735, alpha = 0.880, CR = 0.880)	
CP1	0.857
CP2	0.862
CP3	0.865
CP4	0.846
MNE HQ control extent (HQCE) (AVE = 0.694, alpha = 0.890, CR = 0.894)	
HQCE1	0.858
HQCE2	0.836
HQCE3	0.808
HQCE4	0.83
HQCE5	0.832
MNE HQ control focus (HQCF) (AVE = 0.643, alpha = 0.815, CR = 0.818)	

HQCF1	0.815
HQCF2	0.784
HQCF3	0.802
HQCF4	0.807
MNE HQ control mechanism (HQCM) (AVE = 0.620, alpha = 0.847, CR = 0.850)	
HQCM1	0.765
HQCM2	0.797
HQCM3	0.793
HQCM4	0.79
HQCM5	0.791
International marketing capability (IMC) (AVE = 0.720, alpha = 0.871, CR = 0.873)	
IMC1	0.862
IMC2	0.862
IMC3	0.821
IMC4	0.848
Disruptive innovation adoption (DIA) (AVE = 0.642, alpha = 0.888, CR = 0.889)	
DIA1	0.806
DIA2	0.806
DIA3	0.816
DIA4	0.788
DIA5	0.783
DIA6	0.808
MNE subsidiary social innovation (SI) (AVE = 0.626, alpha = 0.880, CR = 0.882)	
SI1	0.804
SI2	0.829
SI3	0.82
SI4	0.778
SI5	0.763
SI6	0.751

Note: N = 271. SFL = standardized factor loading, alpha = Cronbach's alpha, CR = composite reliability, AVE = average variance extracted.

Table 2: Descriptive statistics and correlations

Variables	Me an	ST D	1	2	3	4	5	6	7	8	9	10	11	12	13	1 4
1. Firm size	5.56 1	0.8 41	1													
2. Firm age	15.9 85	9.3 3	0.18 5*	1												
3. Industry category	0.48 3	0.5 01	- 0.05 4	0.01 7	1											
4. WOS (vs. IJVs)	0.55 4	0.4 98	- 0.36 8*	- 0.07 7	0.06 7	1										
5. Competitive intensity	4.01 1	1.2 72	0.21 7*	- 0.01 5	- 0.10 2	- 0.09 2	1									
6. Market growth	4.35 1	1.3 66	0.13 2*	- 0.19 0*	- 0.15 1*	0.00 2	0.36 4*	1								
7. Regulative pillar	5.38 2	0.7 39	0.14 1*	0.02 2	- 0.06 3	- 0.10 4	0.27 1*	0.10 7	1							
8. Normative pillar	5.45	0.8 18	0.21 4*	- 0.01 4	- 0.11 1	- 0.09 1	0.20 7*	0.18 2*	0.39 3*	1						
9. Cognitive pillar	5.31 1	0.9 57	0.08 4	- 0.09 3	- 0.03 3	- 0.10 8	0.24 8*	0.15 7*	0.48 5*	0.55 1*	1					
10. MNE HQ control extent	2.66 1	0.7 47	- 0.09 6	0.09	0.09 2	0.15 1*	- 0.26 8*	- 0.16 4*	- 0.44 0*	- 0.45 5*	- 0.54 3*	1				
11. MNE HQ control focus	2.52 7	0.7 49	- 0.08	0.08 5	0.10 9	0.07 2	- 0.24 1*	- 0.16 9*	- 0.41 8*	- 0.39 7*	- 0.40 3*	0.34 3*	1			

12. MNE HQ control mechanism	2.57 4	0.7 8	- 0.17 2*	0.03 7	0.02 8	0.07 7	- 0.29 6*	- 0.17 0*	- 0.47 1*	- 0.47 6*	- 0.51 4*	0.50 1*	0.47 0*	1		
13. Disruptive innovation adoption	5.43 7	0.7 95	0.17 5*	- 0.08 9	- 0.13 4*	- 0.16 8*	0.24 9*	0.25 4*	0.53 2*	0.60 1*	0.62 6*	- 0.46 7*	- 0.50 4*	- 0.58 4*	1	
14. MNE subsidiary social innovation	5.63 1	0.6 95	0.14 3*	- 0.14 3*	- 0.22 9*	- 0.21 0*	0.32 9*	0.16 2*	0.46 6*	0.52 2*	0.60 7*	- 0.57 1*	- 0.41 4*	- 0.49 2*	0.65 3*	1

Note: N= 271. *p<0.05.

4.2. Results

As the possible presence of multicollinearity may influence the data, this study first examined its presence in the analysis by checking for the inter-factor correlations and calculating the variables' variance inflation factor (VIF) values. Table 2 shows no evidence of extremely high correlations between coefficients that could lead to serious multicollinearity in the analysis (Anderson *et al.*, 2016). We report that all VIF values (with a maximum value of 2.384) are below the commonly acceptable benchmark of 10 (Hair *et al.*, 1998). Therefore, multicollinearity is less likely to be a serious issue in the data (Burns and Bush, 2000).

This study examined key factors affecting MNE subsidiaries' disruptive innovation. The regression results reported in Table 3 show that all three external factors on institutional environments are positively and significantly associated with their disruptive innovation adoption (all regulative, normative, and cognitive dimensions are significant at $p < 0.001$) (Howitt, 1999; Jones, 1995). In contrast, two of the three internal control-related factors (MNE HQs' control focus ($p < 0.001$) and the control mechanism dimension ($p < 0.001$)) are negatively and significantly associated with disruptive innovation adoption. However, contrary to our expectations, the coefficient estimation for the control extent is not statistically significant. An explanation for this insignificant finding may be that an MNE subsidiary

may have access to unique technological capabilities or domain expertise that enables it to autonomously adopt disruptive innovation. In other words, if the subsidiary possesses specialized knowledge or the necessary resources for adopting disruptive innovation but is not directly controlled by its MNE parent firm, the subsidiary can pursue disruptive innovation independently regardless of the MNE parent firm's extent of control. nother plausible explanation is that MNE subsidiaries tend to operate in foreign markets (e.g., China) with unique challenges, dynamic business opportunities, and specific institutional environments. The three external institutional forces discussed in the study may have a stronger influence on the subsidiary's adoption of disruptive innovation than the extent of the control exerted by the MNE parent firm. Furthermore, the extent of this control may not directly translate into reduced autonomy in allocating resources and exploiting capabilities to pursue disruptive innovation at the subsidiary level. Therefore, even if the subsidiary is controlled by its parent MNE, it can still independently explore and adopt disruptive technologies.

We also examined the relationship between an MNE subsidiary's disruptive innovation adoption and its social innovation. Table 3 exhibits a strong positive and statistically significant effect of an MNE subsidiary's disruptive innovation adoption on its social innovation ($p < 0.001$) (Aghion and Howitt, 1992; Romer, 1986).

Table 3: Results for regression analyses with potential mediating effects

Variables	Adoption of disruptive innovation		MNE subsidiary social innovation		
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	4.483***	2.900***	5.278***	4.491***	3.719***
	-0.377	-0.575	-0.317	-0.529	-0.532
Firm size	0.081	0.007	0.032	-0.005	-0.007
	-0.061	-0.043	-0.051	-0.039	-0.038
Firm age	-0.007	-0.003	-0.012***	-0.008**	-0.007**
	-0.005	-0.004	-0.004	-0.003	-0.003
Industry category	-0.128	-0.087	-0.256***	-0.222***	-0.199***
	-0.092	-0.064	-0.078	-0.059	-0.057
WOS (vs. IJVs)	-0.197**	-0.129*	-0.237***	-0.150**	-0.116*
	-0.099	-0.069	-0.083	-0.063	-0.061
Competitive intensity	0.095**	-0.027	0.156***	0.062**	0.069***
	-0.039	-0.028	-0.033	-0.026	-0.025
Market growth	0.093**	0.059**	-0.002	-0.028	-0.044*

	-0.037	-0.026	-0.031	-0.024	-0.023
Regulative pillar		0.180***		0.082*	0.034
		-0.053		-0.049	-0.048
Normative pillar		0.228***		0.128***	0.067
		-0.05		-0.046	-0.046
Cognitive pillar		0.210***		0.193***	0.137***
		-0.045		-0.042	-0.042
MNE HQ control extent		0.023		-0.188***	-0.194***
		-0.055		-0.05	-0.048
MNE HQ control focus		-0.139***		-0.05	-0.013
		-0.051		-0.046	-0.045
MNE HQ control mechanism		-0.201***		-0.068	-0.015
		-0.054		-0.049	-0.049
Disruptive innovation adoption					0.266***
					-0.055
R ²	0.132	0.6	0.199	0.558	0.595
Model F-statistics	6.697***	32.25***	10.93***	27.09***	29.00***

Note: N= 271. Unstandardized coefficients reported with standard errors in parentheses; *p<0.05, **p<0.01, ***p<0.001.

5. DISCUSSION

This study empirically examines the effects of (1) institutional changes and environments (which occur regardless of a subsidiary's capabilities or strategies) and (2) the various controls exercised by headquarters (which possess the resources needed by the subsidiary) on a subsidiary's disruptive innovation. This study provides the following theoretical contributions and practical implications.

5.1. Theoretical Contributions

This study empirically examines the impact of the key components of institutional theory – regulative, normative, and cognitive pillars – on MNE subsidiaries' disruptive innovation (Grossman and Helpman, 1991; Lucas, 1988). The results provide several theoretical contributions to institutional theory. First, the analysis of the regulative pillar's impact demonstrates whether regulations and laws in an institutional environment positively or negatively influence subsidiaries' innovation activities. Although existing research has generally discussed that the regulative pillar restricts or promotes corporate behavior, this study clarifies the specific impacts of such regulations on disruptive innovation, thereby clearly elucidating the role of the regulative pillar.

Second, by analyzing the normative pillar's effect, this study expands the understanding of whether the norms and values within a subsidiary's host country affect its innovation performance. Specifically, this study empirically examines whether the normative pillar shapes the social support for the subsidiary's innovation activities, providing a more detailed explanation of its impact on disruptive innovation. This offers valuable insights into the importance of the normative elements of the subsidiary's environment and exposes whether it promotes or inhibits innovation.

Third, this study sheds light on the cognitive pillar's effect by underscoring the role of cognition in subsidiaries' innovation activities. It empirically examines whether the cognitive barriers or facilitators faced by subsidiaries influence disruptive innovation. This deeper understanding of the impact of cognitive pillars on subsidiaries' innovation activities highlights the cognitive support experienced by subsidiaries in their pursuit of innovation, significantly contributing to the field.

This study also empirically documents the negative impact of the focus of control and control mechanisms exercised by MNE headquarters, which possess the resources needed by subsidiaries, on subsidiaries' disruptive innovation. The findings offer several theoretical contributions to the resource dependence theory by revealing how excessive control can stifle innovation and emphasizing the importance of balancing control and autonomy (Barro and Sala-i-Martin, 1992). First, the results reveal that MNEs' focus on control, defined as the extent to which headquarters monitor and direct subsidiaries' activities, can directly harm disruptive innovation. This insight extends the resource dependence theory by illustrating that excessive control by the resource-holding entity can create a rigid environment that hampers the subsidiary's ability to explore and implement innovative ideas. It highlights the need to balance control and autonomy, suggesting that subsidiaries require a certain degree of freedom to leverage their unique insights and capabilities for disruptive innovation.

Second, this study provides evidence on headquarters' specific control mechanisms, such as financial oversight, strategic directives, and performance monitoring, negatively affecting subsidiaries' innovation outcomes. By implying that the accelerating function of these mechanisms constrains the subsidiary's decision-making

processes and limits its strategic flexibility, potentially minimizing its disruptive innovation, this study enhances the resource dependence theory by demonstrating the excessive mechanisms through which resource holders can inadvertently stifle innovation. This contribution underscores the importance of allowing subsidiaries more freedom in their operations, fostering an environment more conducive to disruptive innovation.

Third, the findings suggest that depending on headquarters for critical resources may lead to a power imbalance restricting a subsidiary's innovative potential. This aspect of the study enriches the resource dependence theory by emphasizing the potential drawbacks of resource dependency in the context of innovation. The findings suggest that while resource provision is essential, the accompanying power dynamics must be managed carefully to avoid inhibiting a subsidiary's innovative capabilities. This indicates that the interactions between power and dependency influence organizational behavior and outcomes.

Finally, the results determine that the resource dependence theory accounts for the dynamic and sometimes detrimental effects of control on innovation. By highlighting the negative impacts of control on disruptive innovation and the subsequent social innovation, this research calls for reevaluating how control must be exercised in MNEs. The findings suggest that fostering a collaborative and less hierarchical relationship between headquarters and subsidiaries can mitigate the negative effects of control, thereby supporting subsidiaries' innovative efforts.

Overall, this study provides significant theoretical contributions to the resource dependence theory by demonstrating the complex interplay between control, resource dependency, and innovation. It signals and defines how MNEs can better manage subsidiaries to promote disruptive and social innovation while maintaining the necessary oversight. These contributions advance academic understanding and offer practical guidelines for enhancing innovation in resource-dependent subsidiaries.

5.2. Economic Implications

The economic implications of this study highlight several critical points for MNEs regarding subsidiary management and innovation strategies. First, the study suggests that excessive control by the headquarters can hinder disruptive innovation within subsidiaries. This implies that headquarters should consider granting more autonomy to subsidiaries, allowing them to innovate and respond

more effectively to the unique characteristics and demands of the local market. Second, the importance of understanding the institutional environment of the local market is emphasized. Regulatory, normative, and cognitive pillars all positively impact the disruptive innovation of subsidiaries, indicating that MNEs need to develop strategies that align with the institutional context of the host country. Third, promoting disruptive innovation is crucial for achieving social innovation. Therefore, MNEs should actively pursue disruptive innovation to address social issues more effectively.

5.3. Limitations and Future Research

While significant, the empirical findings of this study are subject to several research limitations that should be acknowledged. Thus, this study proposes specific future research directions to address these gaps and further enhance our understanding of the impact of headquarters' control and institutional environment on subsidiaries' innovation.

First, this study is limited by its reliance on a specific set of MNEs and their subsidiaries. The findings may not be generalizable to all multinational firms, especially those operating in different industries or regions with varying institutional environments. Therefore, future research should include a broader and more diverse sample of MNE subsidiaries from different industries and regions. By expanding the scope of the sample, researchers can ensure that the findings are more representative and generalizable across various contexts, identifying industry- or region-specific factors influencing the relationship between control mechanisms, institutional environments, and subsidiary innovation.

Second, the data used in this study were collected at a specific time, providing a snapshot of the relationships between headquarters' control, the institutional environment, and disruptive and social innovation. These relationships can evolve due to changes in environmental conditions, internal dynamics, and corporate strategies. Thus, longitudinal studies are needed to capture the temporal aspects of these interactions. Conducting longitudinal research can track changes over time and reveal how shifts in environmental conditions, corporate strategies, or internal dynamics affect the interactions between headquarters' control, institutional environments, and subsidiary innovation. This approach can provide a more dynamic understanding of the long-term effects and potential causal pathways.

Third, the study primarily relies on quantitative data and statistical analyses to examine the construct

relationships. Although this approach provides robust evidence of correlations and potential causal links, it may overlook the qualitative aspects of how control mechanisms and institutional environments impact innovation. In this vein, incorporating other research methods could complement quantitative findings and provide a richer understanding of the contextual factors influencing innovation. In addition, secondary data released by official international organizations can uncover the intricacies of managerial practices, subsidiary experiences, and the specific challenges faced in different institutional environments, offering a more holistic view of the phenomena under study.

Fourth, in the similar line, future research could benefit from triangulating these findings with multiple data sources. In other words, a triangulation method may mitigate any potential bias associated with survey data and strengthen the robustness of the conclusions. Integrating survey data with objective measures can further enhance the reliability of the findings and provide a more comprehensive picture of the impact of headquarters' control and the institutional environment on subsidiary innovation.

Finally, the study does not fully explore other

potential variables that could influence the relationships between headquarters' control, the institutional environment, and disruptive and social innovation. Factors such as subsidiary autonomy, organizational culture, or the specific nature of the resources provided by headquarters could significantly shape these relationships. By employing other theories, future studies should investigate these effects to provide a more comprehensive understanding of the factors enhancing or inhibiting subsidiaries' innovation. Examining the components (e.g., subsidiary autonomy, organizational culture, leadership styles, and the resources) provided by headquarters can offer deeper insights into the conditions under which control mechanisms facilitate or hinder innovation.

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