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Green Intellectual Capital and Institutional Pressures as Antecedents of Green Practices: Consequences for Environmental and Financial Performance in Italian Hotels

Masood Shah[1], Minhaj Ud Din[2], Nadeem Ul Haq[3]

1. Graduate Student of MA Management (Accounting & Finance), Ca' Foscari University of Venice, Italy.
2. Assistant Professor, Department of Economics, Faculty of Business and Economics, Abdul Wali Khan University Mardan, KP-Pakistan.
3. Lecturer, Institute of Business & Leadership, Faculty of Business and Economics, Abdul Wali Khan University Mardan, KP-Pakistan.

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Corresponding Author:
Minhaj Ud Din
Email: minhaj_din@awkum.edu.pk

Abstract: *In the contemporary landscape marked by heightened environmental awareness, businesses face escalating expectations to embrace environmental sustainability. While prior studies have explored several antecedents of green practices (GPs) implementation, a critical study gap exists in understanding the empirical impact of green intellectual capital (GIC) and institutional pressures (IPs), as well as the subsequent impact of these practices on environmental and financial performance. This study aims to empirically investigate the role of each pillar of GIC and IPs in influencing organizations to implement GPs, and to unlock the subsequent impact of these practices on environmental performance (EP) and financial performance (FP). Deploying intellectual capital-based view theory and institutional theory, and using primary survey data from 203 Italy-based hotels, Partial Least Square Structural Equation Modelling (PLS-SEM) analysis shows that all pillars of GIC and IPs except for green human capital positively impact GPs adoption. The study also shows a positive contribution of these practices in enhancing EP and FP. The study contributes to the literature on GIC management, institutionalization, and GPs management. It offers managerial insights for managers to implement GPs through the development of GIC for improving EP and FP. The study also provides useful implications for policymakers to formulate stringent environmental regulations, improve legal prosecution, and provide financial incentives for sustainable initiatives.*

Introduction

Several business organizations have been polluting the environment through their environmentally unfriendly practices. The fast environmentally unsustainable growth of business organizations has fostered stakeholders to force companies to implement green practices (GPs) (Li, Kim & Kim, 2018). GPs are defined as all those actions that preserve the natural environment (Kim et al., 2016). In the hotel sector, GPs encompass initiatives undertaken by hoteliers that lower solid waste, conserve water and energy, minimize operational expenses, and preserve the natural environment (Teng et al., 2012).

Several studies have tried to investigate the antecedents of GPs implementation, including employees and managerial support (Lee et al., 2016), collaboration with green partners (Islam, Perry & Gill, 2021), resources and capabilities (Hamdoun, 2020), and organizational culture (Ghazilla et al., 2015).

Green intellectual capital (GIC) has strong potential to address environmental challenges faced by companies and facilitate their shift towards sustainable development (Xu & Wang, 2018; Toniai et al., 2019). However, its role as an antecedent of GPs implementation has not been studied by researchers in hotels in Italy (Shehzad et al., 2023). In addition, according to institutional theory, institutions define both acceptable and unacceptable boundaries and exert pressure on companies to be inside the acceptable ones (DiMaggio & Powell, 1983). Institutional pressures (IPs) have been noted as prime antecedents of GPs implementation (Hamdoun, 2020). However, Greenwood and Hinings (1996) and Delmas and Toffel (2008) have argued that certain enterprises opt for change while others do not, even when faced with similar IPs. Berrone et al. (2013) have argued that the influence of each IP is context-dependent.

The aim of this study is two-fold. First, to investigate the impact of each element of GIC and IPs on the implementation of GPs in the hotel sector in Italy. Second, to examine the subsequent impact of such practices on the financial and environmental performance of the sector.

Literature Review and Hypotheses Development

Theoretical Underpinning

This study draws upon two complementary theoretical frameworks to explain the mechanisms through which green intellectual capital (GIC) and institutional pressures (IPs) influence the implementation of green practices (GPs), and subsequently affect environmental and financial performance.

According to Grant (1997) and Sveiby (2001), the knowledge-based view (KBV) thesis asserts that businesses are diverse organizations that possess important knowledge and information assets. KBV views knowledge as the most important strategic resource and a key factor in using other organizational resources, in contrast to the conventional resource-based view (RBV), which focuses mostly on material resources (De Carolis, 2002). According to KBV, a company's ability to adopt successful green practices in the context of environmental sustainability is determined by its capability to produce and implement green knowledge, whether that information is ingrained in workers' abilities, operational routines, or collaborative networks. For example, hotels are better positioned to effectively adopt waste reduction strategies or energy-efficient technology. The second framework results from KBV's silence about the precise ways in which intangible resources generate value.

By describing how businesses use intangible assets to create value and gain a competitive edge, the intellectual capital-based view (ICV) hypothesis gets beyond this restriction (Khalique, Shaari, and Isa, 2013). ICV acknowledges that the main factor influencing organizational success in a knowledge-driven economy is intellectual capital, which is made up of human, social, and structural components. According to Nonaka and Takeuchi (1996), intellectual capital is the capacity of a business to produce new information, share it with its members, and turn it into systems, goods, and services. We use the green extension of ICV in this study, which defines green relational capital (external partnerships with stakeholders like suppliers, customers, and regulators), green structural capital (organizational systems, culture, and processes that support sustainability), and green human capital (employee skills and attitudes toward environmental protection). Together, these three components assist companies in transforming environmental information into useful green practices.

This study integrates KBV and ICV to examine how internal knowledge-based resources (GIC) and external institutional forces (coercive, normative, and mimetic pressures) jointly shape the adoption of

green practices and how such practices ultimately improve environmental and financial performance. By recognizing both the internal capability-building viewpoint and the external legitimacy-driven perspective, this dual-lens method offers a more thorough understanding of corporate environmental behavior.

Green Intellectual Capital (GIC)

GIC is the collection of intangible resources, such as relationships, information, and other intangible assets, that are used to promote environmental conservation (Chen, 2007). Three pillars support it:

1. Green human capital (GHC): Employees' combined environmental protection skills, knowledge, experience, talents, attitudes, and inventiveness (Delgado-Verde et al., 2014). Green human capital is shown, for instance, by a hotel's front desk employees who are taught to tell visitors about towel reuse programs, housekeepers who use eco-friendly cleaning supplies and properly sort trash, and chefs who inventively repurpose culinary leftovers into new recipes.
2. Green relational capital (GRC): The list of connections a business has for cooperation with other businesses, organizations, research facilities, and clients (Capello, 2002). For example, a hotel demonstrates strong green relational capital by working with nearby organic farms to source seasonal ingredients, conducting waste audits in conjunction with an environmental NGO, and keeping in close contact with visitors via digital channels to promote involvement in water conservation initiatives.
3. Green structural capital (GSC): Organizational capacities, knowledge management systems, incentive systems, and organizational culture are examples of organizational-level norms and practices that demonstrate a green orientation (Chen, 2007). A hotel, for example, establishes a centralized energy monitoring system, provides monthly bonuses to departments that meet waste reduction goals, keeps an internal knowledge base of green best practices, and encourages staff to propose eco-innovations—all of which demonstrate strong green structural capital.

Institutional Pressures (IPs)

According to DiMaggio and Powell (1983), institutional pressures are external factors that come from the institutional environment and drive organizations to follow certain norms, rules, and accepted behaviors. These forces, which fall under three isomorphic processes, influence corporate conduct by defining limits of legitimacy:

1. Coercive pressure (CP): Influence used to compel businesses to adhere to certain regulations or procedures, often from government authorities (Bansal, 2005). As an example of the coercive pressure driving green programs, local environmental rules require hotels to install water-efficient fixtures, separate recyclable waste, and submit to annual emissions inspections; disobedience carries severe fines or license revocation.
2. Normative pressure (NP): When companies socially integrate into their institutional settings, pressure from customers, employees, suppliers, the media, and trade associations arises (Colwell & Joshi, 2011). Consider a hotel that adopts biodegradable amenities and locally sourced organic food as a result of normative pressure from the local hotel association, staff members who support sustainable working practices and visitors who are asking for eco-friendly solutions.
3. Mimetic pressure (MP): There is pressure to imitate or replicate the strategies of other successful organizations within the same institutional sector when there is uncertainty (DiMaggio & Powell, 1983). When a significant competitor effectively reduces operational costs by installing solar panels and smart energy systems, this is a typical example of mimetic pressure. Similar solutions

are then implemented by a smaller hotel with similar energy difficulties without being aware of their long-term return on investment.

Green Practices (GPs), Environmental Performance (EP), and Financial Performance (FP)

GPs urge companies to take part in initiatives that promote waste reduction (Yusof et al., 2016), lessen resource abuse (Baker, Davis & Weaver, 2014), and support sustainable resource consumption (Oliva et al., 2019). These techniques include energy-efficient lighting, water-saving fixtures, recycling food waste, and using renewable energy sources. Businesses may improve EP (Mahto et al., 2020), modify their working practices, and utilize less polluting products (Yang et al., 2011) by using such techniques. Prioritizing environmental sustainability practices gives organizations a competitive edge through enhanced corporate image (Yadav, Han & Rho, 2016), substantial cost savings through tax incentives and resource efficiency (Gatimbu et al., 2018), access to new market opportunities fueled by growing consumer demand for eco-friendly services (Stefan & Paul, 2008), and eventually superior FP (Danso et al., 2019). Figure 1 contains a hypothetical illustration of the conceptual framework for this investigation, as determined by the theoretical framework.

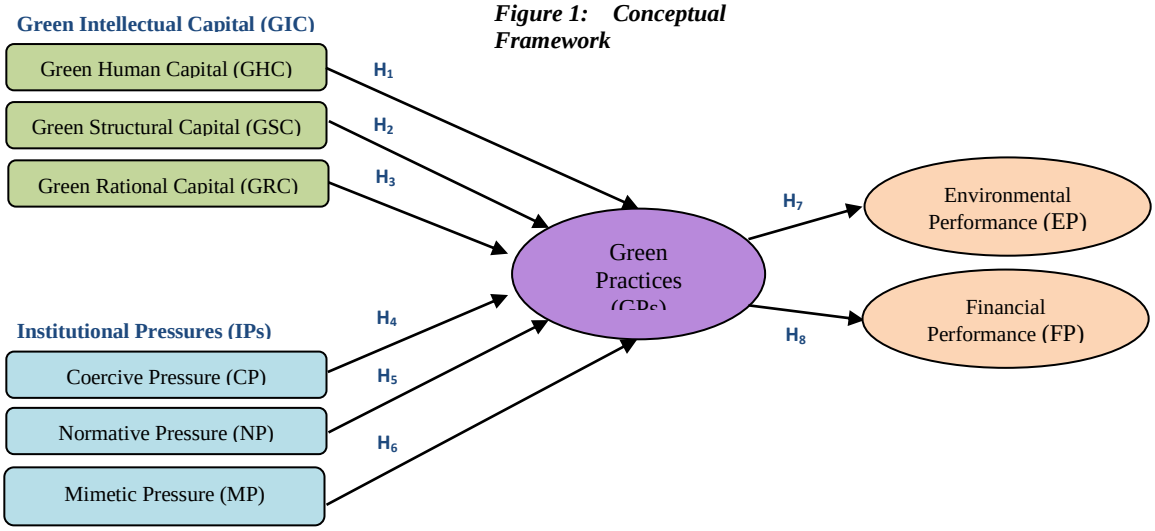

Figure 1: Conceptual Framework

Development of Hypotheses

The following eight hypotheses, which are outlined in Table 1, were developed using the theoretical underpinnings and empirical discoveries from the previous literature review:

Table 1: Study Hypothesis

Hypothesis	Statement
H1	GPs' implementation is positively correlated with GHC
H2	GPs' implementation is positively correlated with GSC
H3	GPs' implementation is positively correlated with GRC
H4	CP leads to GPs implementation
H5	NP leads to GPs implementation
H6	MP leads to GPs implementation
H7	GPs are positively related to EP
H8	GPs are positively related to FP

Using survey data gathered from Italian hotels, partial least squares structural equation modeling (PLS-SEM) will be used to experimentally examine these eight assumptions. The following sections present the findings.

Methodology

A positivist research philosophy was used in this study to guarantee impartiality and empirical rigor. According to positivism, reality is objective and free from researcher prejudice, as shown by facts (Crotty, 1998; Veal, 2005). This mindset allows for excellent statistical reliability and generalizability of results by adhering to the natural sciences' methodology (Johnson & Onwuegbuzie, 2004). According to positivism, theories—in this case, institutional theory and the intellectual capital-based view—provide the basis for hypotheses, which are then experimentally, evaluated using quantitative data (Cooper & Schindler, 2014). This method is especially useful for addressing research questions that seek to determine causal linkages, including whether institutional constraints and green intellectual capital influence the adoption of green practices in the Italian hotel industry.

A deductive research approach was used, moving from general theoretical assertions to specific empirical studies. Establishing a theoretical framework, developing eight testable hypotheses, gathering quantitative data through a structured questionnaire, and analyzing the data using descriptive and inferential statistical techniques (PLS SEM) to accept or reject the hypotheses were the four steps of the process (Saunders et al., 2009).

Since the study topics needed first-hand, context-specific knowledge not found in secondary sources, primary data were collected. In order to solve a particular issue, primary data are gathered in real time (Mesly, 2015); in this case, the goal is to comprehend the motivations behind and results of green activities in Italian hotels. Primary data provide better validity, dependability, authenticity, and impartiality than secondary data, while being more expensive and time-consuming (Taherdoost, 2021; Zikmund et al., 2012).

The suggested theories were examined and tested using a quantitative research methodology. In order to verify hypotheses, quantitative research uses numerical data using both descriptive and inferential statistics (Trochim, 2001). It uses a suitably enough sample for statistical power (Cooper & Schindler, 2006) and tests theory deductively (Creswell & Plano Clark, 2017). The results retain a high level of impartiality and may be applied to a larger population (Carr, 1994; Rahman, 2016).

The data gathering instrument was an online survey form sent to hotel staff. A questionnaire is a series of questions intended to gather information in a methodical manner (Taherdoost, 2021), allowing for the gathering of data from a large number of respondents across several factors (Hox & Boeije, 2005). For all perceptual assessments, a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) was used. Measurement scales were modified for the particular setting of Italian hotels from earlier, verified investigations.

The study collected data all at once using a cross-sectional design (Zangirolami Raimundo, Echeimberg, & Leone, 2018). This method requires no long-term follow-up with respondents, is less expensive and time-consuming, and is useful for assessing several aspects at once (Allen, 2017; Wang & Cheng, 2020). Even though it cannot prove long-term causality, a cross-sectional approach is appropriate for the first exploratory phase of study.

The target sample, which included hotels in Italy, was selected using non-probability convenience sampling, a well-liked and economical technique in exploratory business research. The study aimed for a sample size of 200 in compliance with recognized guidelines for PLS SEM analysis (Hair et al., 2021). The final valid sample consisted of 203 hotels.

Green human capital, green relational capital, green structural capital, coercive pressure, normative pressure, and mimetic pressure were the independent variables used to investigate the suggested linkages. Green practices, financial performance, and environmental performance were the dependent variables. Since bigger and older hotels usually have more resources to support the adoption of green practices, two control variables were included: hotel size (measured by total revenue) and hotel age (measured by years since inception) (Annunziata et al., 2018). Green practices as a function of all independent variables and controls, environmental performance as a function of green practices and controls, and financial performance as a function of green practices and controls were the three equations that were estimated.

Every measurement item was modified from reputable sources. Chen's (2007) scales were used to assess the GIC components. Items from Ng and Sia (2023), Zailani et al. (2012), Colwell and Joshi (2013), Campbell (2007), and Wang et al. (2018) were used to quantify IPs. GPs were measured using Merli et al. (2019), EP using Kim et al. (2019), and FP using Khan, Daddi, and Iraldo (2020). Hotel age and size were collected as objective data.

To ensure content and face validity before data collection, the literature was reviewed, scales were checked by experts in environmental management and intellectual capital, and a pilot study was conducted with 15 hotel managers. Their feedback was incorporated. To reduce common method bias, the questionnaire was designed for clarity and completeness, and respondents were assured of confidentiality. A post-hoc Harman's single-factor test was conducted; the first factor explained 28.4% of the variance, below the 50% threshold, indicating that common method bias is not a serious concern.

Structural equation modeling was used to test the hypotheses, proceeding in two stages: measurement model and structural model. Partial least squares SEM was employed using Smart-PLS (Hair et al., 2016). In the measurement model, convergent validity was assessed using composite reliability (threshold 0.6--0.7), average variance extracted (threshold >0.5), and factor loadings (threshold >0.4). The structural model evaluated path coefficients (range -1 to +1), significance using t-values and p-values (5% level), and explanatory power using R^2 values for endogenous constructs (Shmueli & Koppius, 2011).

Data Analysis

Sample Description

The sample comprised 203 Italy-based hotels. Regarding number of employees: 21.18% had 1-5 employees, 27.09% had 6-9 employees, 11.82% had 10-25 employees, and 13.30% had 26-49 employees. Annual revenues: 40.89% had less than €1,000,000, 53.69% had €1,000,000-€2,000,000, and 5.42% had more than €2,000,000. Company age: 6.40% less than 5 years, 29.06% 5-10 years, 48.77% 11-20 years, 9.85% 21-50 years, and 5.91% more than 50 years. Respondent designation: 35.96% owners, 57.14% managers, and 6.90% other.

Measurement Model Results

Some items were deleted to achieve AVE > 0.500. AVE values ranged from 0.509 to 0.788, all exceeding the minimum threshold of 0.5. Item loadings ranged from 0.517 to 0.946, surpassing the minimum acceptable threshold of 0.4. Composite reliability values ranged from 0.749 to 0.875, exceeding the minimum value of 0.7. Thus, convergent validity and internal consistency were established.

Table 2: Reliability and Validity of Measurement Model

Construct	CR	AVE
GHC	0.830	0.557
GSC	0.743	0.598
GRC	0.875	0.778

GPs	0.865	0.521
CP	0.825	0.703
NP	0.749	0.509
MP	0.867	0.766
EP	0.760	0.518
FP	0.777	0.541

Hypothesis Testing Results

The findings of the hypothesis testing are shown in Table 3. As shown, seven out of eight hypotheses were supported. Hypothesis H1, which proposed a positive relationship between green human capital (GHC) and green practices (GPs), was not supported (beta = 0.087, t = 1.777, p = 0.076). All remaining hypotheses were supported at either the $p < 0.01$ or $p < 0.001$ level. Specifically, green structural capital (GSC) showed a significant positive effect on GPs (beta = 0.117, $p < 0.01$), supporting H2. Green relational capital (GRC) also had a significant positive effect (beta = 0.152, $p < 0.001$), supporting H3. Among the three institutional pressures, coercive pressure (CP) demonstrated the strongest association with GPs (beta = 0.422, $p < 0.001$), supporting H4. Normative pressure (NP) was the second strongest predictor (beta = 0.337, $p < 0.001$), supporting H5, while mimetic pressure (MP) showed a weaker but still significant effect (beta = 0.175, $p < 0.01$), supporting H6. Finally, green practices had a significant positive impact on both environmental performance (EP) (beta = 0.658, $p < 0.001$) and financial performance (FP) (beta = 0.584, $p < 0.001$), supporting H7 and H8 respectively. The model explained a substantial amount of variance in GPs (R-squared = 0.816), while the R-squared values for EP and FP were 0.432 and 0.341 respectively. Control variables (hotel size and age) were not significant predictors in any of the three models ($p > 0.05$ for all).

Table 3: Hypotheses Testing Results

Hypothesis	Relationship	Std Beta	t-Value	p-Value	Decision
H1	GHC → GPs	0.087	1.777	0.076	Not Supported
H2	GSC → GPs	0.117	3.036**	0.002	Supported
H3	GRC → GPs	0.152	4.006***	0.000	Supported
H4	CP → GPs	0.422	10.438***	0.000	Supported
H5	NP → GPs	0.337	6.653***	0.000	Supported
H6	MP → GPs	0.175	3.038**	0.002	Supported
H7	GPs → EP	0.658	9.111***	0.000	Supported
H8	GPs → FP	0.584	11.947***	0.000	Supported

*p < 0.05, **p < 0.01, ***p < 0.001

R-square values: GPs = 0.816, EP = 0.432, FP = 0.341

Discussion

Several significant insights into the motivations for and results of green practices (GPs) in the Italian hotel sector are revealed by the investigation.

First, it is remarkable but not wholly unexpected that green human capital (GHC) has a negligible effect on GPs implementation (beta = 0.087, p = 0.076). Although Yusoff et al. (2019) found a similar null impact, the high turnover rates and presence of seasonal, low-skilled labor in the hotel industry may possibly be contributing factors to this conclusion. The temporary nature of the workforce may hinder the successful conversion of such human capital into long-term operational green practices, especially in hotels with environmentally conscious staff. Furthermore, most respondents (owners and managers) may exaggerate their own environmental commitment while failing to implement incentive schemes or

systematic training that would enable lower-level employees to act on green information. Therefore, having green skills (GHC) seems inadequate in the absence of additional organizational procedures or a culture of support.

Conversely, both green relational capital (GRC) and green social capital (GSC) have a major favorable influence on GPs. The larger impact of GRC (beta = 0.152) compared to GSC (beta = 0.117) is very illuminating for the Italian context. For Italy's tourism industry, reputation, regional branding (such "Green Region" certifications), and user-generated online reviews are essential. When hotels establish trusted relationships with external stakeholders, such as local environmental groups, eco-tourism-focused tour operators, and booking systems that value sustainability, they are likely more responsive to relational expectations. The marginal edge of GRC shows that external relational pressures (such customer requirements communicated via booking channels) now exceed internal social capital derived from staff networks and intra-organizational trust.

The three pillars of institutional pressures (i.e. coercive, normative, and mimetic) have a significant effect on GPs, indicating the relevance of institutional theory in this situation. Italy's membership in the European Union, which is subject to stringent environmental regulations including water conservation requirements, waste disposal guidelines, and building energy efficiency standards, is consistent with the main impact of coercive pressure (beta = 0.422). In addition to legal prosecution, financial incentives such as regional tax credits for eco-certifications (such as Ecolabel and Legambiente Turismo) likely augment coercive effects. Strong normative pressure (beta = 0.337) is brought about by media coverage of greenwashing disputes, close observation by regional environmental NGOs (such as Legambiente), and growing environmental consciousness among Italian and international tourists. It's interesting to note that, despite being positive, mimetic pressure is the weakest driver (beta = 0.175). This may be because Italian hotels, many of which are family-owned, small to medium-sized enterprises, use a range of strategies to compete in a fragmented market. In contrast to industries where early adopters set clear norms (like manufacturing), green efforts in the hospitality sector are often very context-specific (e.g., solar panels vs. linen reuse programs), which decreases the visibility and transferability of competitors' operations. Hotels may prioritize compliance and stakeholder requirements above simply copying rivals.

Furthermore, a substantial amount of variance is jointly explained by coercive and normative restrictions (R-squared = 0.816 for GPs), demonstrating that all three institutional pressure pillars directly and consistently enhance GPs implementation. our substantial explanatory power suggests that the adoption of green practices in our sample is mostly driven by external factors rather than internal voluntary efforts.

Finally, green practices (GPs) are a strong predictor of both financial success (FP) (beta = 0.584) and environmental performance (EP) (beta = 0.658). It seems sense that energy conservation, trash reduction, and water conservation have a greater influence on EP since they result in direct, quantifiable environmental benefits. The somewhat lower coefficient for FP could be due to the longer payback times associated with certain green projects (such upgrading HVAC systems) or the fact that initial certification and monitoring fees partly negate the cost benefits from eco-efficiency. However, the substantial positive FP relationship is operationally relevant since it dispels the industry's enduring misconception that sustainability is a net cost burden, implying that Italian hotels may achieve "win-win" results

Conclusion and Policy Implications

Summary of Findings

This research examined how GIC and IPs affected the adoption of GPs in the Italian hotel sector and the ensuing effects on financial and environmental performance. The empirical findings demonstrate that GSC and GRC play a crucial role in promoting GP adoption, but GHC had no discernible effect. The adoption of GPs is favorably impacted by all three IPs, with coercive pressure having the most effect. Both EP and FP are improved by GPs. Age and hotel size were not significant control factors.

Theoretical Contributions

The study contributes to literature by: (1) exploring the link between GIC and GPs implementation, (2) contextualizing IPs and demonstrating their context-dependent nature in a developed country setting, (3) empirically establishing a strong connection between GPs and EP in the Italian hotel sector, and (4) examining financial implications of GPs implementation.

Practical Implications

For managers, the study suggests investing in GSC (knowledge management systems, organizational culture, reward systems) and GRC (customer and supplier relationships) to enhance GPs implementation. For policymakers, the study recommends tightening existing regulations, improving monitoring mechanisms, providing financial incentives for green investments, and promoting stakeholder engagement and awareness campaigns.

Limitations and Future Research

The findings may not be generalizable to other organizational settings as IPs are context-dependent. Future research should: (1) repeat the study in other organizational settings and countries, (2) conduct comparative analysis between developing and developed countries, (3) explore the moderating impact of managerial commitment and resource availability, (4) investigate why mimetic pressure shows relatively weak impact, (5) conduct longitudinal studies to establish causality, (6) use larger sample sizes with larger hotels, and (7) include objective performance data to complement perceptual measures.

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