



THE ASIAN BULLETIN OF GREEN MANAGEMENT AND CIRCULAR ECONOMY

ISSN (online): 2959-0035

<http://abgmce.com/> 10.62019/abgmce.v5i1.133

ISSN (Print): 2959-0027

Coercive Pressures and Sustainable Project Management in Construction: A PLS Approach

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Chronicle

Article history

Received: Jan 13, 2024

Received in the revised format: Feb 22, 2025

Accepted: March 28, 2025

Available online: April 7, 2025

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Keywords: sustainable project management, coercive pressures, green transformational leadership, green institutional theory

Abstract

Project management is experiencing a significant transformation in how it incorporates sustainability goals into its core processes. A key focus for researchers and practitioners is understanding the factors that facilitate the comprehensive integration of sustainability criteria in construction projects. Given the substantial environmental and social impacts of construction activities, there is an increasing demand to prioritize sustainability considerations in the management of these projects. This study investigates the roles of imposition-based coercion (IMPC), inducement-based coercion (INDC), and green transformational leadership (GTFL) as essential determinants for implementing sustainable project management (SPM) in construction projects. Data were gathered from large construction companies in Pakistan and examined using the PLS-SEM technique. The results show that both IMPC and INDC have a notable positive impact on SPM. Additionally, the results show that GTFL positively moderates these relationships, enabling construction firms to shift from a reactive to a proactive approach in applying sustainability criteria to their projects. These research findings provide valuable insights into the factors that influence the implementation of SPM in developing countries.

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INTRODUCTION

Developing countries in the new millennium are increasingly motivated to enhance construction activities amid the influx of infrastructure-focused investments from both local and international investors. These investments aim to drive socio-economic growth. However, the rapid and widespread development of construction projects, if not balanced with sustainability considerations, can lead to significant environmental degradation and worsen related social issues (Fathalizadeh et al., 2021; Moshood et al., 2024). Therefore, the management of construction projects must adopt the sustainability doctrine as plans for economic improvement are developed. As discussed by Stanitsas and Kirytopoulos (2021), a sustainability-conscious approach towards economic growth will ultimately leverage the preservation of biodiversity and natural ecology. Despite its importance, incorporating sustainability into construction project management practices presents a considerable challenge that hasn't been fully tackled. This issue is especially critical given that the construction sector is responsible for a significant share of global energy consumption (around 41%) and CO₂ emissions (about 40%). This scenario highlights the necessity for dedicated

research aimed at integrating sustainability into the management of construction projects, especially in developing nations (Udomsap & Hallinger, 2020). As we move into the implementation stage, existing literature offers various perspectives on integrating sustainability into construction projects. It highlights several critical factors and mechanisms that can encourage or compel construction firms to adopt sustainable project management practices. A common and recurring perspective in the literature is that of the firm's internal processes and resources, such as its capabilities, innovative technologies, and leadership style (Shaukat et al., 2022), which can be leveraged to achieve sustainability goals in construction projects. Furthermore, researchers often emphasize the role of coercion in influencing a firm's decision to adopt sustainability practices. However, the coercive approach, which relied on a punishment-rewards logic, was criticized by scholars due to its inability to involve multiple actors, i.e., people and organizations, across various levels (Caputo et al., 2020).

Besides, the literature shows that the research examining the connection between coercion and corporate sustainability often places too much emphasis on the regulatory component of institutional theory (Bamgbade et al., 2019) while neglecting the holistic concept of coercion which postulates that coercive pressure are multidimensional and may stem from a range of resource-dominant organizations like customers and suppliers (Teo et al., 2003). Research studies have shown that the mere regulatory-dependent transition towards sustainable practices yields perfunctory responses, particularly in developing countries. Secondly, the debate on corporate sustainability frequently features environmental performance or environmental management strategies of the firms as a proxy for the concept of sustainable development (Hoffman, 1999; Juárez-Luis et al., 2018; Sun et al., 2019) while undermining economic and social aspects (Huq & Stevenson, 2020; Rentizelas et al., 2020). Therefore, there is a need to further explore the corporate sustainability behaviour of the firms with a holistic approach that incorporates the broad concept of sustainable development. In this context, and by reflecting on past literature on managing sustainability in projects (Sabini & Alderman, 2021a; G. Silvius & Schipper, 2020), this study aims to explore the impact of multidimensional coercive pressures on SPM adoption by construction firms. The two dimensions of coercive pressures are identified as imposition-based coercion and inducement-based coercion (Teo et al., 2003).

This study further examines the moderating role of GTFL qualities of top managers, i.e., portfolio managers, on the relationship between multidimensional coercive pressures and SPM. This approach differs from that adopted by past SPM studies, which primarily emphasized the direct impact of project managers' leadership qualities (Silvius & Schipper, 2020) on the adoption of SPM practices. Previous literature has rarely explored the moderating role of GTFL qualities of portfolio managers in SPM research. To the best of our understanding, no prior study has investigated the empirical relationships presented in this research model. Finally, this study presents a scenario from developing countries, where the state of SPM implementation faces an entirely different set of problems. These countries face challenges in striking a balance between sustainable development and economic development (Fathalizadeh et al., 2021). Literature frequently discusses the status of SPM implementation in developed regions of the world, where institutional mechanisms are relatively strong and assertive. This may not be relevant for developing countries due to their weak institutional mechanisms (Masocha & Fatoki, 2018; Shubham et al., 2018). Therefore, it becomes essential to investigate the SPM practices of companies operating in these

settings, as it will facilitate researchers and practitioners in devising pragmatic strategies for incorporating sustainability into projects. The rest of the study is structured as follows. The next section outlines the research context, followed by the development of the research hypothesis. Afterwards, the specific research methods and the design are described. Next comes the presentation of the findings along with a discussion on these findings. The final section of the study outlines the significant contributions and limitations, while also suggesting future research potential.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Sustainable Project Management

The report from the Brundtland Commission established the definitional framework for sustainable development, adopting the triple-bottom-line approach (Cai et al., 2009). SPM is a derivative concept that utilizes triple bottom-line criteria, encompassing environmental, economic, and social aspects, in project management (Silvius & Schipper, 2014). Thus, SPM corresponds to delivering a project in a way that fulfils the sustainability criteria (Sabini & Alderman, 2021b). Projects play a pivotal role in shaping the future of the corporate world, and thereby, SPM is essential for achieving broader, sustainable development goals (Chofreh et al., 2019). However, project activities can have adverse social and environmental impacts, and integrating sustainability criteria into project management processes can place additional strain on system boundaries. The triple-bottom-line constraints influence project specifications and fundamental requirements as they set additional criteria for assessing project quality (Sabini & Alderman, 2021a). While research on SPM is gaining momentum, embedding sustainability into project processes remains a significant challenge, particularly in the construction industry of developing countries. The scarcity of research on the key determinants of SPM underscores the need for increased scholarly attention to enhance its implementation in the construction sectors of developing nations (Banihashemi et al., 2017). There is a limited amount of research on the determinants of SPM, highlighting the need for increased scholarly attention to improve our understanding of SPM implementation in the construction sector of developing countries (Banihashemi et al., 2017).

Coercive Pressures

Coercive pressures arise from external mechanisms or organizations that a firm relies on to obtain resources and gain legitimacy (DiMaggio & Powell, 1983). The resource-dependency perspective emphasizes that these coercive pressures result from the exchanges between external environmental forces and the firm. This includes various mechanisms such as regulatory frameworks, funding agencies, and resource-dominant organizations. These mechanisms create an institutionalized pattern of dependency that pressures resource-dependent firms to comply to maintain their exchange relationships and ultimately secure their survival in the market (Sukoco et al., 2022).

Imposition-Based Coercion

A firm's transition towards adoption of sustainability practices may occur in response to government regulations, or it may be imposed by other resource-dominant bodies through industrial standards (Teo et al., 2003). IPMC primarily originates from regulatory institutions, which frequently employ coercive power to establish institutional mechanisms, such as market regulations and sanctions. They become functional under the perception that a firm's business operations are undermining societal well-

being (Drori, 2019). Thus, imposition-based coercion provides powerful tools to influence a firm's behaviour, as the result of noncompliance might cost them a monetary penalty or cancellation of their operating license.

Inducement-Based Coercion

INDC occurs when essential clients and key supply chain partners induce specific green criteria as an eligibility requirement for partnership. A firm's reliance on particular clients and essential suppliers increases when they play a vital role in the firm's business transactions, and their substitution is either impossible or too costly (Teo et al., 2003). While important clients and supply chain partners cannot yet impose regulations, they may offer inducements to the partnering firm, which ultimately results in the firm's compliance with specific demands (Rashid et al., 2025). This inducement forces conformity to particular standards and emerges as a source of coercion by posing incentives or penalties. For instance, they may insist on certain conditions for receiving future contracts or continuing the partnership.

Multidimensional Coercion and SPM

The existing literature on the relationship between coercive pressure and sustainable corporate practices exhibits certain limitations. Firstly, it views various dimensions of coercive pressures as features of a single, generic phenomenon, which overshadows the discrete nature and distinctive individual impact of INDC and IPMC. Secondly, it tends to overemphasize the regulative aspect of coercive pressures (Dai et al., 2021; Okeke, 2025) while overlooking other sources of coercion, such as suppliers and clients. Although SPM is an emerging area of research, there is a notable lack of studies that comprehensively address this innovative theme using the Triple Bottom Line framework of sustainable development. Most existing research tends to focus excessively on the ecological aspect, as noted by M. Ullah et al. (2024). Additionally, the literature on corporate sustainability lacks dedicated studies that treat SPM as a singular higher-order construct within the context of multidimensional coercion.

This study employs the green institutional theory as a theoretical point of departure to explore the coercive pressures as enablers of SPM. Green institutional theory is considered an extension of institutional theory, which posits that institutional forces influence firms' decision-making processes regarding green issues (Jennings & Zandbergen, 1995; Zou et al., 2024). Government regulations, professional bodies, key suppliers, and essential clients apply pressure on firms to improve their sustainability performance. Researchers advocate for the extended application of institutional theory in exploring the green aspects of research, aiming to develop further and expand the green theory (Huang & Huang, 2024). This study focuses on the IPMC and INDC as key factors influencing the implementation of SPM in developing countries. The role of multidimensional coercion in project management is not well-explored, and the model proposed in this study has received relatively little attention in the SPM literature. Consequently, this study puts forth the following hypothesis:

H1. Imposition-based coercion has a significant positive relationship with sustainable project management

H2. Inducement-based coercion has a significant positive relationship with sustainable project management

Moderating Role of Green Transformational Leadership

GTFL refers to the behaviour of leaders who articulate their green vision in a holistic and organized pattern (Bano et al., 2022). They develop strategies and plans to achieve the organization's green goals, with a primary focus on green deliverables. Their followers are aligned with the leader's green vision. The organization's green norms are established through mutual consensus, and leaders effectively facilitate the achievement of green objectives by providing essential resources to their followers (Luo et al., 2025). GTFL is a novel theme in the context of SPM, particularly in project management. Past studies have predominantly explored the relationship between GTFL and a firm's environmental performance (Awan et al., 2023; Niazi et al., 2023) and related themes, such as green innovation and green knowledge sharing (X. Chen et al., 2025). But the literature lacks dedicated research studies on the interaction between SPM and GTFL, which has received limited scholarly attention. Notably, existing literature on SPM lacks specific studies that emphasize the role of portfolio managers in the sustainable management of construction projects. This study addresses this research gap by examining the GTFL qualities of portfolio managers. This study primarily examines the bypass and cascading effects of transformational leadership (Yang et al., 2010), where the bypass effect refers to instances where the transformational leaders directly influence followers in a given organisational hierarchy. On the other hand, the cascading effect occurs when leaders indirectly influence frontline employees by shaping the behavior of next-level managers, who, in turn, influence the behavior and performance of their subordinates (Almas et al., 2020; Kissi et al., 2013). In this context, this study examines how the qualities of GTFL in portfolio managers moderate the relationship between IMPC, INDC, and SPM. The following hypotheses are proposed regarding GTFL as a moderator:

H3. GTFL positively moderates the relationship between IMPC & SPM

H4. GFL positively moderates the relationship between INDC & SPM

The research model for this study is illustrated in Figure 1 below.

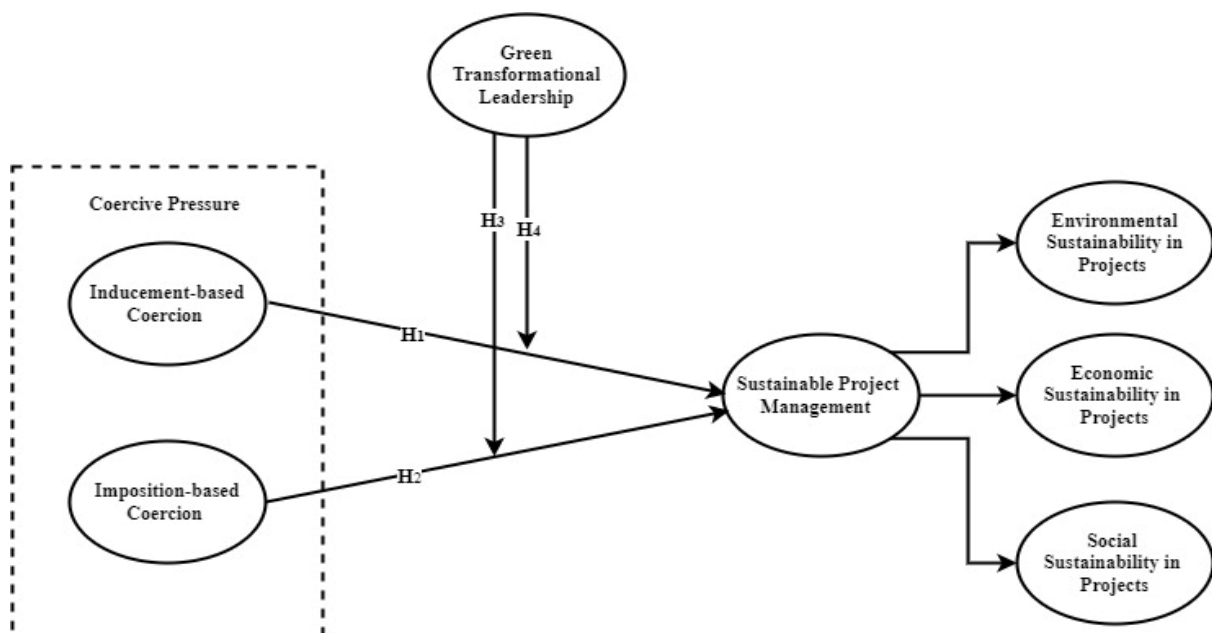


Figure 1.
Research Model

METHODOLOGY

Measures

All the measures for this study were adapted from the published literature. The research instrument consisted of three parts, in addition to the demographics section. SPM was measured as second-order reflective-reflective construct, adapted from Ullah et al. (2020) which has three latent constructs i.e. Environmental sustainability in projects (7 items), Social sustainability in projects (6 items) and Economic sustainability in projects (4 items), .2). the construct of GTFL has six items. It was adapted from (Y.-S. Chen & Chang, 2013). Finally, IMPC & INDC were adapted from Teo et al. (2003) and Masocha and Fatoki (2018).

Population & Sampling

This study focused on SPM practices among Pakistani construction firms, collecting data from those firms registered with the Pakistan Engineering Council. A statistically significant sample size was calculated using G*Power 3.1.9.2. The power level was set at 90% with a 5% significance level and an effect size of 0.15 (Cohen, 1992). The resultant sample size was 99, indicating that a minimum of 99 responses were required. Before that, the pilot study's results predicted a low response rate of 32%. Therefore, to mitigate the consequences of the low response rate, 400 construction firms were contacted. The survey questionnaire was designed using Google Forms. Random numbers were generated in SPSS 21.0 version to ensure an equal chance of selection, and participants were then contacted via email that included a link to the online survey. A request was made to share the link with project managers and directors only. Responses were received from 146 construction firms, representing a response rate of 36%. PLS-SEM technique was applied using SmartPLS 4 to test the study's hypotheses.

Table 1
Demographics

Characteristics	Categories	(N)	(%)
Company Type	C2	66	45.2
	C1	42	28.8
	CB	17	11.6
	CA	21	14.4
Gender	Male	144	98.6
	Female	2	1.4
Age	< 30	0	
	30-45	62	42.6
	45-60	84	57.5
Job Title/Designation	Project Manager	91	62.3
	Project Director	47	32.2
	Manager Planning	8	5.5
Education	Bachelors	106	72.6
	Masters	38	26

		MS/MPhil	3	1.2
Experience with Current Company		1 to 5 years	53	36.3
		6 to 10 years	60	41.1
		More than 10 Years	33	22.6
		<10	0	
No of Employees		10-50	23	15.7
		50-100	78	53.42
		100-200	36	24.6
		Above 200	09	6.1

RESULTS

Demographics

The received responses show a relatively irregular division between male (98.6 %) and female (1.4%) respondents. Regarding the job titles, 62.3% of the respondents were project managers, followed by 32.2% project directors, and 5.5% were associated with project planning. The average project-based experience of all respondents was 13.4 years, with a range of 5 to 23 years.

Measurement Model

This study used PLS-SEM to examine the hypothesized relationships. The PLS approach is best suited for this study, as the sample size received was smaller, and the study was testing a theoretical model from a predictive perspective with an exploratory approach. Before model estimation, a full collinearity assessment test was run (Kock & Lynn, 2012) to check for common method bias. The resultant variance inflation factor (VIF) values were 1.404 and 1.802 for each hypothesized effect of exogenous (INDC and IPMC) to endogenous (SPM) variables. This rejected the possible occurrence of collinearity and common method bias in the model.

The validity and reliability of the constituent constructs were ascertained by evaluating the measurement model. Referring to the standard techniques outlined by J. F. Hair et al. (2019), four assessments were undertaken to validate the reflective constructs. i.e., “*indicator reliability, internal consistency reliability, convergent validity, and discriminant validity*”.

Table 2
Measurement model results

Sr. No	Constructs	Item Loadings	Cronbach Alpha	CR	AVE
1	Sustainable Project Management (2nd Order)				
	a) Economic Sustainability in Projects				
	ECSP1	0.892			
	ECSP2	0.850			
	ECSP3	0.886	0.905	0.934	0.779
	ECSP4	0.901			
	b) Environmental Sustainability in Projects				
	ENSP1	0.840			

	ENSP2	0.770			
	ENSP3	0.802	0.888	0.915	0.641
	ENSP4	0.819			
	ENSP5	0.796			
	ENSP6	0.776			
	c) Social Sustainability in Projects				
	SOSP1	0.811	0.877	0.907	0.619
	SOSP2	0.784			
	SOSP3	0.800			
	SOSP4	0.802			
	SOSP5	0.783			
	SOSP6	0.739			
2	Imposition-Based Coercion				
	IMPC1	0.891			
	IMPC2	0.852			
	IMPC3	0.810	0.888	0.918	0.692
	IMPC4	0.859			
	IMPC5	0.739			
3	Inducement-Based Coercion				
	INDC1	0.848			
	INDC2	0.832	0.856	0.902	0.698
	INDC3	0.857			
	INDC4	0.805			

Indicator reliability was assessed through factor loadings, which were within the acceptable range, except for one item, namely Regular Environmental Audits (ENSP7), with a loading of 0.465; this item was excluded from the construct before running the bootstrapping procedure. "Internal consistency reliability" was assessed using Cronbach's Alpha and composite reliability (CR) values, all of which were above 0.70. The average variance extracted (AVE) values for all constructs were found to be above the threshold criteria of 0.50, as shown in Table 2.

Table 3
Discriminant validity: HTMT results.

	ECSP	ENSP	INDC	IPMC	SOSP
ECSP					
ENSP	0.833				
INDC	0.531	0.426			
IPMC	0.646	0.559	0.609		
SOSP	0.429	0.650	0.610	0.616	

Table 3 shows that the HTMT values are less than 0.90, confirming that the criteria for discriminant validity are fulfilled. The model included a second-order construct, i.e., SPM, which was tested using a repeated indicators approach. Table 4 presents the results of the measurement model evaluation for SPM.

Table 4

SPM: 2nd-order construct evaluation

Construct	Item Loadings	CR	AVE
ENSP	0.931	0.890	0.724
ECSP	0.782		
SOSP	0.835		

Structural Model

The next step in PLS-SEM involves evaluating the structural model to estimate the hypothesized paths within the model. According to Hair et al. (2017), R^2 values, path coefficients, t-values, and p-values should be used to assess the structural model. Table 5 shows the results for the parameters as mentioned earlier, reported using nonparametric bootstrapping (resample of 5000). It can be seen that the constructs of IMPC and INDC explain 46% of the variation in the endogenous construct. SPM is significantly influenced by IMPC ($\beta=0.493$, $t=7.405$, $p<0.001$), and INDC ($\beta=0.276$, $t=3.876$, $p<0.001$). Moreover, INDC shows the strongest influence on SPM. Hence, H1 and H2 were supported. Figure 2 depicts the PLS-SEM output for the structural model.

Table 5

Hypothesis testing for the basic model

		Std. Beta	Std. Error	t-value*	R ²	Decision
H1	IMPC-> SPM	0.493	0.083	7.405	0.456	Supported
H2	INDC-> SPM	0.276	0.071	3.876		Supported

* p-value <0.001

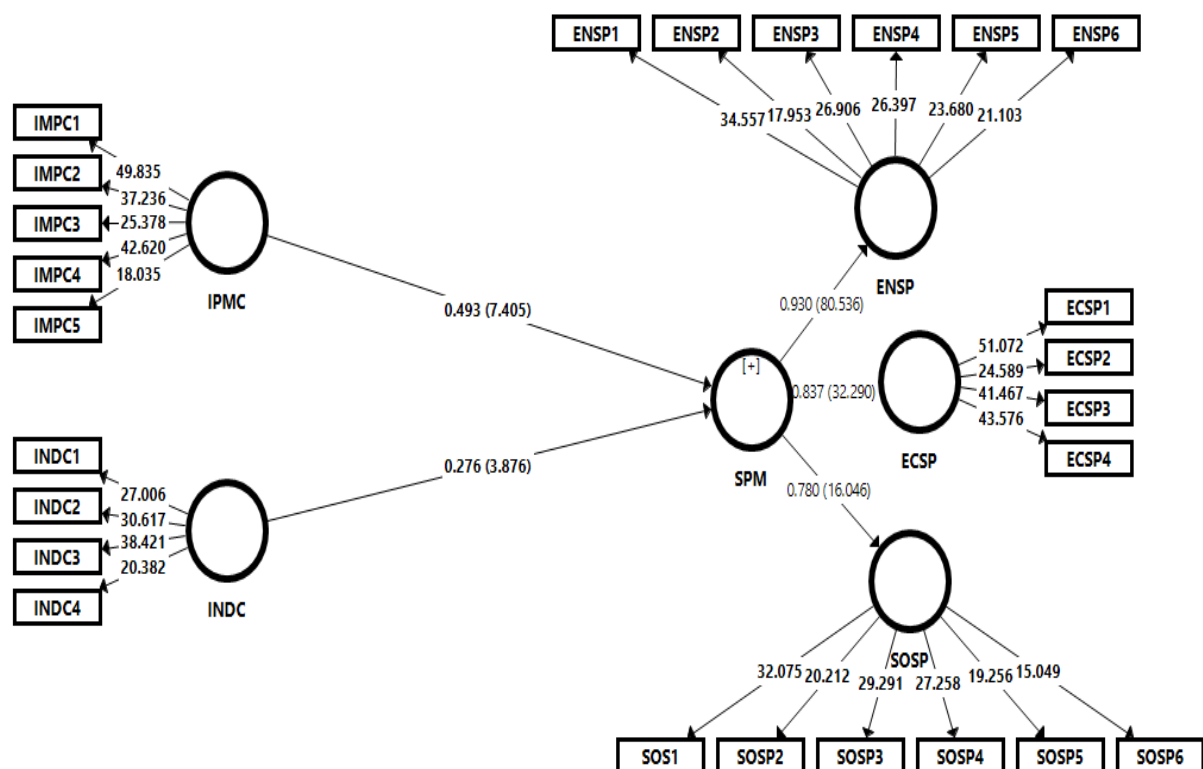


Figure 2.
PLS-SEM results for the structural model

Testing Moderation

Baron and Kenny (1986) define a moderator as a specific construct that influences the relationship between an exogenous variable and an endogenous variable in a given model. This study examined the moderating effect of GTFL by generating interaction terms for both exogenous variables individually (Memon et al., 2019).

Measurement model evaluation criteria also apply to the moderating variable, where it must fulfill the standard parameters. For the interaction term, there is no such requirement.

Table 6

Measurement model for the moderating variable.

Construct	Loadings	Cronbach Alpha	CR	AVE
GTFL2	0.614			
GTFL3	0.598			
GTFL4	0.633			
GTFL5	0.863			
GTFL6	0.822			

For a moderating effect to be present, R^2 must increase with a significant t-value for the interaction term. Therefore, to analyze the moderation effect of GTFL, interaction terms were created, and the R^2 value of the model with the moderating variable was noted, which turned out to be 0.410 for IMPC and 0.292 for INDC (R^2 without interaction term: IMPC = 0.410, INDC = 0.292). The R^2 value achieved with the inclusion of the interaction term GTFL*IMPC was 0.447, and GTFL*INDC increased to 0.333, indicating that after the addition of the interaction term GTFL*IMPC, the R^2 changed by approximately 4%, which is considered an additional variation due to the inclusion of the moderating variable.

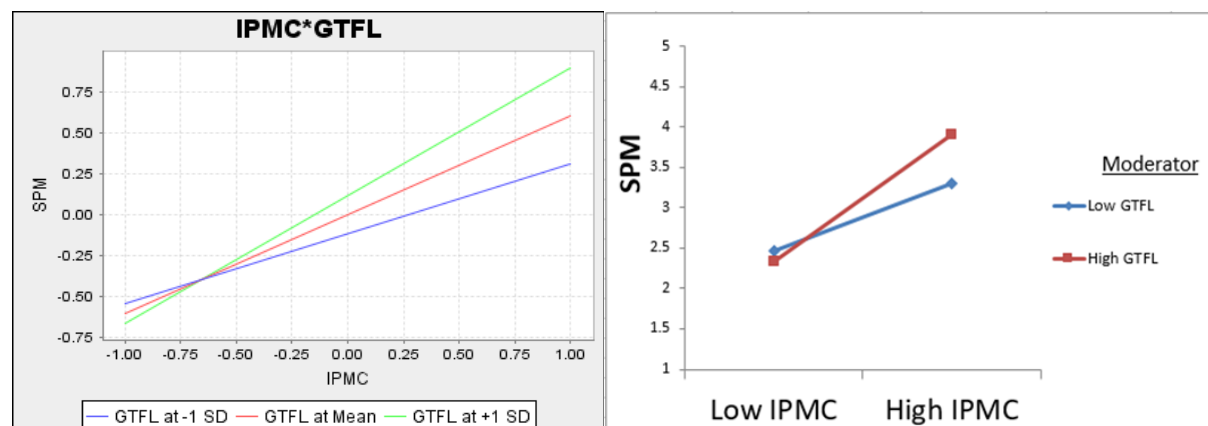


Figure 3.

Slope plots & interactive graphs for moderating effect of IPMC*GTFL

The most important criterion for interpreting and understanding the outcomes of a moderation analysis is to examine the significance of the interaction term. This step was conducted through a bootstrapping procedure, and the corresponding t-values for IMPC*GTFL (t-value = 2.979) and INDC*GTF (t-value = 1.725) indicated that the moderation effect was statistically significant. This shows that the moderator GTFL has a significant positive impact on the relationships between the exogenous and endogenous variables.

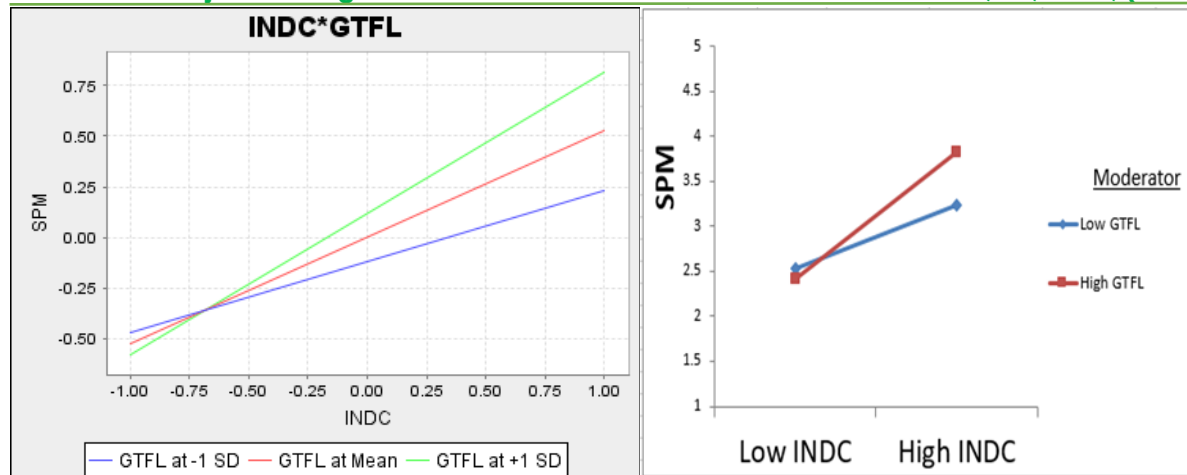


Figure 4.

Slope plots & interactive graphs for moderating effect of INDC*GTFL

Figures 3 and 4 illustrate the moderation analysis graphically, using slope plots automatically generated by SmartPLS, and two-way interactive graphs drawn from the data. Table 7 below shows the effect sizes and predictive relevance for all the relationships present in the model.

Determining Effect Size and Predictive Relevance

Table 7 presents the results of predictive relevance Q^2 for the endogenous latent construct, commonly referred to as Stone-Geisser's Q^2 value (Geisser, 1974; Stone, 1974). In any structural model, a Q^2 value greater than 0 indicates that the path model has predictive relevance for a specific endogenous construct. For this study, the Q^2 value obtained was 0.18, which indicates that the research model of this study has adequate predictive relevance. Effect size f^2 determines whether or not an exogenous construct shows a significant and meaningful effect on an endogenous construct in a particular model. The f^2 values obtained for this study for the two exogenous variables were 0.104 (IMPC • SPM) and 0.050 (INDC • SPM), respectively, which were found to be above the threshold values, resembling moderate effect size values according to Cohen (1988). This standard criterion also includes an assessment of the f^2 value for the moderator. Likewise, for the interactions effect INDC*GTFL, the corresponding f^2 for the interaction term was 0.048, and for IMPC*GTFL, 0.054, which are considered to be small effects. The f^2 values of the two exogenous constructs are shown in Table 7. According to Aguinis et al. (2005), the moderation tests tend to show the average effect size of 0.009 only. In contrast, Kenny (2016) proposed more realistic standards for effect sizes as "0.005 (small), 0.01 (medium), and 0.025 (large)," respectively. Finally, the corresponding effect size (q^2) values calculated for the two exogenous constructs were 0.040 (IPMC • SPM) and 0.020 (INDC • SPM), respectively.

Table 7.

Effect sizes and predictive relevance

SPM (Dependent Variable)	f^2	Q^2	q^2
INDC	0.050		0.020
INDC*GTFL	0.048		
IPMC*GTFL	0.054		

FINDINGS & DISCUSSIONS

The findings of this study show that multidimensional coercion drives the adoption of sustainable practices by construction firms. The results provide evidence that

managers of construction projects perceive coercive pressures as influential enablers in integrating sustainability criteria into project management processes. Taking into account the resource-dependence view of the firms, this study operationalized coercive pressures as inducement-based and imposition-based, which comprehensively covers the concept of coercion stemming not only from regulatory bodies but also from suppliers and clients. The findings of this study also signify the operationalization of coercive pressures in the form of a multidimensional construct, incorporating suppliers and clients within construction industry settings. The significant relationship between coercion and SPM aligns with previous research, reinforcing that coercive pressures serve as effective mechanisms for driving firms toward improved sustainability performance.. While the extant literature highlights the role of regulatory frameworks in promoting sustainable corporate practices (Tyler et al., 2024), this study's findings suggest that the role of clients and essential suppliers can also be critical in strengthening the business case for adopting sustainable practices (Clemens & Douglas, 2006). However, the significance of intuitional pressures in the project context remains debatable, with studies suggesting that regulatory coercion has a minimal or no impact on managing sustainability in construction projects (Li et al., 2019; Willar et al., 2021).

Another key contribution of this study is testing the moderating effect of GTFL under the hypothesis that coercive pressures can be more effective in the presence of green-oriented visionary leadership at the top levels. The role of GTFL as a moderator suggests that the sustainability performance of firms improves when firm leadership prioritizes sustainability, as this can initiate a holistic internal change process that leads to the long-term adoption of sustainability (Le et al., 2024). In the absence of such intrinsically driven and proactively designed sustainability strategies, firms may tend to craft merely a 'suitable response' to imminent regulatory pressures (Daddi et al., 2016). Furthermore, these findings suggest that portfolio managers with green transformational leadership qualities can better understand the complex interconnections among a firm's various stakeholders and the pressures they exert. They view the firm's long-term survival as dependent on its institutional environment, rather than being isolated from its context, and that various stakeholders pose challenges. This is in stark contrast to the efficiency-seeking behavior of transactional leaders, who view sustainability conformance as a distraction from the firm's core aim (Al-Hakimi et al., 2024).

CONCLUSION

The integration of sustainability criteria into project management has significantly influenced this important profession and is expected to transform the established approach to project management in the future. Yet introducing sustainability concepts in project management is not a straightforward process. Indeed, an array of influential factors pushes in different directions, thus exacerbating existing paradoxes or, in some cases, creating new contradictions, rather than resolving them. Against this backdrop, the theoretical implications of this study emphasize how INDC and IMPC contribute to the adoption of sustainable project management practices in construction projects. The findings reinforce that no single actor can drive SPM in isolation; instead, an integrative approach is essential. The study also highlights that, beyond regulatory requirements, supply chain partners and clients also play an essential role in encouraging construction firms to adopt SPM practices. In terms of managerial implications, it is again quite challenging to propose a win-win solution that balances the business case with sustainability criteria. Therefore, the study

suggests that adopting SPM can be understood as a top-down phenomenon, where firms transition from a reactive to a proactive approach. This approach transition is most expected in the presence of GTFL, suggesting that adopting a green approach will not only improve the firm's legitimacy but also shift the competitive balance in its favour.

LIMITATIONS & FUTURE RESEARCH

This research study has several limitations that future research should address. The first limitation arises from the ex-post-facto research design, which does not encompass all phases of a project's life cycle; instead, it provides a broader perspective on managing sustainability within a project. This could be taken as a new direction in future SPM research, where sustainability practices may be examined at different life cycle stages of the project. Secondly, institutional mechanisms, particularly the concept of institutional voids, require more scholarly attention in the context of developing countries. More specifically, linking institutional voids to the integration of sustainability in project processes. This peculiarity in differentiating sustainability determinants in projects can add novel perspectives, both in theory and practice.

The third limitation is the relatively small sample size of the study. However, literature reports the frequent use of small sample sizes in studies where the unit of analysis is the firm level. However, future research studies may extend this study to a larger sample size, which could also include other countries (preferably developing countries), to achieve wide-ranging generalizability of the findings and identify potential country effects. Last but not least, the literature on sustainable project management continues to be published, as this is one of the fastest-growing themes in both project management and sustainable development literature. The study's findings, as well as the research model presented, are based on the existing literature available at the time the study design was finalized. Thus, there may be research studies available that have been published and bear relevance to the findings and model of this study.

DECLARATIONS

Acknowledgement: We appreciate the generous support from all the contributor of research and their different affiliations.

Funding: No funding body in the public, private, or nonprofit sectors provided a particular grant for this research.

Availability of data and material: In the approach, the data sources for the variables are stated.

Authors' contributions: Each author participated equally to the creation of this work.

Conflicts of Interests: The authors declare no conflict of interest.

Consent to Participate: Yes

Consent for publication and Ethical approval: Because this study does not include human or animal data, ethical approval is not required for publication. All authors have given their consent.

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