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A Structural Model for the Antecedents of Sustainable Project Management in Pakistan

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Abstract: Sustainable development is the core agenda item of the 21st century to be addressed simultaneously by societies, businesses, and academia. Likewise, sustainability research in the project context is fragmented and still at a nascent stage with less attention directed towards the key antecedents particularly in developing countries. Using institutional theory, this paper analyzes the role of normative and mimetic isomorphic pressures as external enablers for integrating sustainability in project processes. Additionally, it aims to empirically validate a structural model for predictors of sustainable project management (SPM). Data were collected from 146 large construction firms in Pakistan which were then analyzed using the partial least square structural equation modeling (PLS-SEM) technique. The results show that mimetic isomorphic pressures assert more influence than normative pressures in predicting the sustainability performance of construction projects. The inferred implications suggest that large construction firms will tend to improve their sustainable performance under isomorphic pressure from professional bodies and from those competitors who are early adopters of sustainable project practices. This paper contributes to the literature by explaining the role of non-coercive isomorphism as an important enabler of SPM in developing countries. The model presented will enrich our current understanding of SPM by studying its juxtaposition with institutional theory and sustainable development research.

Keywords: sustainable project management; institutional isomorphism; construction industry; developing countries; Pakistan

1. Introduction

Sustainable corporate practices are gaining ever-increasing attention in the contemporary business world. In addition, integrating sustainability aspects into strategy and operations is an emerging and widespread trend across mainstream industries. The identifiable reasons for this trend may include the growing concerns for a sustainable human existence on the planet [1]. These mounting concerns have given rise to the notion of sustainable development which no longer regards the economic performance of corporations as the only goal to be accomplished. Rather, it puts equal weight on socially and environmentally responsible behaviors [2]. However, despite the publicized strategies and commitments to sustainability, companies fail to thoroughly and practically operationalize the well-crafted plans into observable actions [3]. As we know that the projects are generally recognized as efficient routes adopted by organizations to execute long-term strategic plans, managing

projects sustainably will augment the overall transition of business firms towards sustainability [4]. This approach is often termed “sustainable project management” (SPM) which basically focuses on environmental, economic, and social aspects simultaneously while managing projects. This approach is finding traction in academic literature and, according to Silvius [5], is a new school of thought in the field of project management [6,7]. Additionally, SPM is being acknowledged as one of the new global trends today which is profoundly affecting the professional context and technical domain of project management. As the theme of SPM is addressed in a growing number of studies, the academic debate is predominantly focusing on the “drivers” or “enablers” that facilitate the integration of sustainability in projects. In a broader context, the discourse on enablers of SPM is pivotal around the external factors and internal factors—or intrinsic motivations and normative driven strategies [7,8]. The recently published studies have frequently highlighted the critical question: What are the external and internal enablers or critical factors that influence firms to adopt SPM practices [7,9–11]? Subsequently, some studies expounded the internal factors like a project manager’s abilities and leadership qualities [12–14] whereas others have elaborated the critical role of external enablers/stakeholders like government regulations, suppliers, and professional bodies [15–17]. In fact, the studies focusing on internal capabilities and managerial roles explicitly recognize that adopting SPM actually is a top-down phenomenon and external pressures play a critical role in shaping up the managerial intentions towards addressing sustainability in projects [12,16]. However, the overwhelming majority of these studies are systematic literature reviews and qualitative case studies, thus, lacking quantitative data to generalize the research findings and draw inferences for broader use [6,18].

Thus, these studies provide little insight into the stimuli and enablers that may facilitate the integration of all three sustainability dimensions together in managing projects [7,18,19]. The more recent academic discussions on SPM recurrently and explicitly refer to the role of project externalities like external stakeholders and institutional pressures as enablers of SPM [11,17,20–22]. Therefore, given the recognized academic value and influence, a central role in this integration process can be foreseen for institutional isomorphic pressures, as institutional theory explains the impact of external isomorphic pressures on a firm’s behavior [23], such as commitment towards managing sustainability in projects.

The previous studies have sporadically used institutional perspectives while investigating corporate sustainability practices. The focus of these studies remained mainly on areas such as environmental management strategies [24], green innovation [25,26], green practices [27], green supply chains [23], and sustainable manufacturing [28] but the impacts of institutional isomorphism on SPM or managing sustainability in project processes have not been exclusively studied. Moreover, the previous studies that linked institutional pressures with sustainability manifest three visible limitations. Firstly, they view the three isomorphic pressures as different aspects of a single phenomenon while minimizing the discreet nature and profound individual impact of each isomorphic pressure. Secondly, the studies which attempted to investigate isomorphism and sustainability from an external perspective tend to overvalue the regulative aspect of institutional theory [24,26,29,30] and little attention was paid to mimetic and normative isomorphism. Thirdly, the environmental component of sustainability surfaced as a point of prime focus in those studies [27,31–34] with economic and social aspects being undermined [35]. In sum, it is quite rare that sustainability, particularly the novel theme of SPM, has been studied as one single higher-order construct in relationship with non-coercive aspects of institutional isomorphism. The very recent studies of Li-Yao and Misopoulos [21] and Misopoulos et al. [16] have specifically highlighted the role of normative and mimetic isomorphism as enablers of SPM in the manufacturing industry. However, both of these studies are mere literature-based reviews and lack empirical validation using adequate data and robust techniques like partial least square structural equation modeling (PLS-SEM). Therefore, this study is providing novel insights by using normative and mimetic institutional isomorphism as a theoretical lens to investigate the adoption of SPM practices by construction industry firms in developing countries with a focus on the Pakistani construction industry [10,21].

Pakistan, like other developing countries, is struggling with issues of sustainable development. Particularly, the increasing CO₂ emissions and associated climate change issues are adversely affecting its communities inhabiting the world-famous mountainous regions of Himalaya and Karakorum. In addition, these regions are the starting point of mega construction activities under the grand economic revival program of the Pakistan China Economic Corridor (CPEC). This is a program of strategic importance for Pakistan and plans show that numerous medium- to large-sized infrastructure and energy projects are being built under the CPEC. These construction projects are regarded as the harbinger of economic prosperity in Pakistan but, on the other hand, reports show serious concerns about their negative environmental and social effects, as well. Contrary to the captivating narratives asserted by certain reports [36], sustainability researchers are blowing the whistle for appropriate remedial actions to reduce the environmental and social risks triggered by CPEC construction projects. A failure on this front would render Pakistan among the major contributors to CO₂ emissions and worsen Pakistan's rank in the global climate risk index, once the mega CPEC projects are completed [37]. Although certain government departments, for instance, the Environmental Protection Agency (EPA), are operating with regulations put in place to monitor environmental aspects of project sustainability, but with little significance [38]. It is because of the inbuilt deficiencies found in the existing regulatory frameworks coupled with the political patronage available for high-status industry players which grease their wheels to manipulate or deviate from the domain-specific regulatory pressures due to their strong reputational capital [39]. According to Saeed et al. [38], a project's environmental impact assessment by the regulatory authorities bears little significance due to the "corruption or biased approvals owing to the monopoly and maneuvering on behalf of few firms". Other studies have also shown concerns over the dormant nature of government regulations regarding environmental protection as well as ensuring the social wellbeing of the communities during the project execution [37,40–42]. Therefore, there emerges a need to explore other important enablers or external factors, besides regulatory mechanisms, which may influence the construction industry firms and make them consider the fragile environment and vulnerable communities while earning good returns on investments.

The significance of institutional isomorphism in the project context is still questionable [43] as the literature reports little or no impact of certain institutional pressures in project settings [44]. Moreover, the study of Li et al. [45] doubts the significance of coercive isomorphism (government regulations) in managing environmental sustainability in construction projects. Likewise, the study of Willar et al. [30] highlights the gaps between government regulations and the implementation of sustainability criteria in construction projects in developing countries. In such a context, this study at hand offers a novel perspective on the relationship between normative and mimetic isomorphic pressures and SPM. Using institutional isomorphism [46] as a theoretical point of departure, this study aims to analyze as to what extent these two isomorphic pressures may predict the implementation of sustainability criteria in construction projects. The literature lacks generalizable empirical studies with a quantitative approach towards SPM. Therefore, studies of this kind will augment the academic discourse and support the advancement of this new school of thought in project management [6,47,48]. For achieving the aforesaid research objectives, the basic research question posed by this study is:

RQ1: Do mimetic and normative isomorphism predict the sustainability performance of projects?

To the best of our knowledge, no research study till date has specifically explored the theoretical framework presented herein or provided empirical evidence from Pakistan's context. The data from large construction firms and the structural equation modeling technique used in this study can contribute to overcoming the scarcity of quantitative studies on SPM. Moreover, the literature on corporate sustainability practices primarily focuses on developed countries [49] where the institutional structures have evolved over time. Within this strong institutional framework, the sustainability issues are mostly considered at strategic levels and organizational performance generally goes beyond the economic and regulative requirement. However, this is not the case with developing economies which are generally characterized by weak institutional structures [28]. Therefore, it is important to study

the sustainability practices of firms operating in developing countries, which are accommodating, according to a UN report on human development, approximately 85% of the world's population [50]. In addition, the evolving trend towards rapid economic growth in the developing countries has given rise to a massive demand for delivering construction projects [51] which in turn have undermined sustainability concerns [10]. Therefore, given the critical need for analyzing sustainability issues in these demographics and to serve the purpose of this study, the relationships presented in this study are discussed with a primary focus on developing countries.

2. Theoretical Foundations and Hypothesis Development

2.1. Sustainable Project Management

In a broader context, the term sustainability corresponds to the popular theme of sustainable development (SD). This concept is complex and multifaceted but in its generic definition, it refers to the development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” [52] (p. 15). A multifaceted, albeit assimilated concept, sustainability encompasses the otherwise individually unique dimensions of economy, society, and environment as a whole distinguished construct. These three dimensions are also known as the “three pillars” of sustainability or sustainable development [53,54]. In organizational settings, sustainability usually denotes those different approaches which corporate managers may consider while dealing with various social and environmental issues [55]. For that reason, the definitions and related explanations of sustainability in the field of management tend to show diversity. Yet all of these definitions, according to Sabini et al. [6], predominantly share the same basic features by appraising environmental problems in conjunction with the economy and the society, paying due attention to intergenerational equity, and encouraging scrupulous working attitudes that go beyond mere compliance with coercive externalities. Other than these essential features, there is little agreement on what fits in the definitions of sustainable development [54].

The concept of SPM is encountering similar understanding problems as it accommodates multiple aspects from the domains of project management and sustainable development. Although the concept of project management is well-established and understood in theory as well as in practice, the definitions of SPM are in a budding phase and yet to be deciphered from operational perspectives [18,19,56]. The existing SPM definitions are fragmented in their approach and tend to reproduce the key dimensions with varying degrees of attention towards environmental concerns, cross-generational equity, and “compliance beyond regulations” as highlighted by different studies [6]. Additionally, in construction industry settings, some of the ubiquitous definitions of SPM keep their focus on decreasing resource utilization [57], reckoning for influential project externalities [58], and safeguarding human and ecological resources [59,60].

While projects are known to play a central role in the sustainable management of organizations and human society [8,61], the academic discourse on managing sustainability in projects is still at a nascent stage [6]. The discussions on SPM have rapidly moved from whether SPM should be made a part of the strategy to how it can be integrated into project management practices [8]. This emerging research theme is gaining considerable attention from the academic project management professional bodies [7,8] but there are very few studies that have quantitatively investigated how the sustainability perspective is influencing the domain of project management [19,62] and what the critical factors are that facilitate the integration of sustainability in managing project processes [10,21]. According to Peenstra and Silvius [20], there are several enablers and barriers that facilitate or impede the integration of sustainability in projects which range from policy issues to inner organizational factors. However, these factors have yet to demonstrate their practical significance through empirical evidence which is so far elusive with little or no support from the literature. The most recent studies on SPM [5,6,11,12,15,16,62–67] identify some basic limitations of the existing SPM literature, i.e., lack of theorization, limited use of robust quantitative techniques (predominantly qualitative with case

studies and/or framework proposition), and homogenous contexts of research (dominated by generic studies from the developed part of the world). Additionally, these studies provide little insight into the stimuli and enablers that may facilitate the integration of all three sustainability dimensions together in managing construction projects [9]. The very recent studies of Li-Yao and Misopoulos [21], and Misopoulos et al. [16] specifically highlight the role of normative and mimetic isomorphism as enablers of SPM. However, both of these studies are just literature-based reviews and lack empirical validation using adequate data and robust techniques like partial least square structural equation modeling (PLS-SEM).

Sustainability in Construction Projects

Undeniably, the construction industry has a profound impact on our economy, society, and the environment and, therefore, the sustainable performance of the construction industry is of critical importance for achieving the overall goal of sustainable development. Due to these reasons, sustainable business practices are emerging as a core agenda item for the construction industry and its associated enterprises [68]. From the economic perspective, the construction industry significantly contributes on a large scale and with a vast scope while absorbing a bigger chunk of the workforce [69]. At the same time, the construction industry is characterized as inherently irresponsible due to the excessive utilization of resources and energy in its operational activities [70] which ultimately leads to the degradation of the environment and ecological damage. Some of the key environmental impacts include disturbing the biodiversity, greenhouse and carbon emissions, generating waste, and discharging contaminated water [11]. The social consequences are even bleaker as the construction firms tend to ignore the welfare of communities where they operate. As discussed by Karji et al. [35], the social sustainability agendas are particularly under-fulfilled, if not compromised, in construction projects. The construction working environment is criticized for frequent health and safety incidents and, in certain cases, construction firms may tend to engage in child labor, corruption, and gender discrimination, thus, delivering the projects at the cost of social wellbeing [11].

While developed countries are considering sustainability concerns in the design and delivery of construction projects, developing countries are lagging behind in fulfilling sustainability requirements. The prevailing trend towards economic performance in developing countries has created a massive demand for delivering construction projects which in return has undermined the sustainability agenda [10]. Pakistan, being a developing country, shares almost the same background characteristics as exhibited by fellow developing countries. Reports show that the Pakistani construction industry is negligent towards adopting socially and environmentally sustainable practices with contractor firms paying little or no attention towards managing sustainability in construction projects. In addition, the existing literature lacks dedicated and context-specific sustainability studies from Pakistan. Thus, there emerges a gap that needs to be fulfilled with generalizable empirical studies with an explicit focus on critical factors and enablers that would facilitate the integration of sustainability criteria in the Pakistani construction industry, in particular, and in developing countries, in general [71–73].

In summary, SPM is a “new school of thought” in project management which is profoundly affecting the professional context and technical domain of project management globally. For this study, or to recap the essence of SPM in the construction industry, environmental sustainability is deemed to constrain the resource utilization in projects and not letting them strain the bearing capacity of the surrounding ecosystem (e.g., land utilization, energy consumption, climate, material, and water). The economic aspect of sustainability focuses on maximizing project value and return on investments while optimizing costs. Lastly, social sustainability highlights the efforts of the project delivering firms for the welfare of the surrounding communities, fair work policies, and indiscriminate labor practices with the aim of harmonizing stakeholder needs with that of broader societal wellbeing [69,74].

2.2. Institutional Isomorphism and Sustainable Project Management

Institutional theory responds to the critical question of why all firms in a particular industry tend to exhibit similar behavior and act alike [46]. Principally, it views the organizations operating in a particular

industry as open systems that encounter the influences of external unavoidable environments. It also emphasizes that the organizational decision making should be contingent upon the institutional context and that organizations modify their conduct according to their institutional environment for securing legitimacy [75]. However, this phenomenon is in sheer contrast with the popular efficiency-seeking rationality asserted by transaction cost economics [23]. Generally, institutions exercise three types of pressures on organizations which are termed as coercive, normative, and mimetic isomorphism [46].

Coercive isomorphic pressures relate to the constraints from legal or other bodies that control the resources considered imperative for the continual existence of an individual firm. Coercive pressures principally originate from the structured government legislations and explicit regulations like guidelines, assessment rubrics, and general codes of conduct [29]. Other sources of coercive isomorphism include key stakeholders such as customers, suppliers, and other interest groups in a particular context. However, the scholarly opinion about the effectiveness of coercion is diversified as some previous studies have argued that coercive pressures could be perceived by businesses as persuasion or incitement to enter into collusion [76]. Furthermore, there exist certain institutional seductions and incentives that might be considered as coercive isomorphism [77]. In such instances, organizations may not be hard-pressed towards embracing desired behaviors unless there is a significant incentive to do so. Likewise, researchers also assert that coercive frameworks rarely lead to efficiency [29,78].

Normative isomorphism denotes the professional norms and professional codes of practices vested through formal education and training methods, professional networks, and the movement of employees among firms. Normative pressures originate mainly from professional networks, professional associations, and industry associations. According to DiMaggio and Powell [46], the groups associated with certain professions work as a major source of normative pressures. For instance, educational platforms encouraging rational conduct, industry associations, or professional networks with an interest in a particular industry serve to generate normative isomorphic pressures [79]. The role of industry association and professional bodies is critical as they chalk-out their own mechanisms aimed at promulgating desired behaviors by administering formal standards to which the individual members are expected to adhere. This kind of self-regulation by industry is duly encouraged and supported by governments worldwide [23,28].

Mimetic isomorphism corresponds to the imitation or copying of the actions of others when an organization is unable to decide its course of action in a particular situation [80]. Mimicry isomorphism appears as a viable solution when ambiguities and uncertainties surround the organizational decision making. Mimetic pressures, thus, coax organizations into imitating the prudent and successful actions of the leading organizations in the industry. According to DiMaggio and Powell [46], mimetic isomorphism occurs when an organization imitates or copies other successful organizations while that organization is indeterminate about its reaction to certain externalities or contextual exigencies. Thus, mimetic pressures stem from uncertainty in the external environment and organizations respond to it by benchmarking the successful behaviors of peer organizations that are deemed as legitimate and acceptable [81].

A plethora of studies to date have used institutional theory to explain certain organizational behaviors but institutional isomorphism has shown inconsistent results in project contexts [43]. In addition, the most recent discourses in the literature consistently highlight the need for using grounded theory in project management research [82]. However, the application of a well-grounded theory in SPM research is again an area that needs dedicated attention. Generally, the triple-bottom-line approach is the predominant theoretical setting for the construct of SPM [19,83] and it is the most widely used approach available in the literature so far. However, there is a scarcity of studies that explored SPM by studying its juxtaposition with established theories from other fields using a framework-based design. Following this line of argumentation, the literature reveals that less than 1% of the articles set their work in a specific theoretical context [6]. This aspect has been highlighted as a key limitation and is subsequently being suggested as an important direction for future studies [64], particularly to explain

the integration of sustainability in PM. However, researchers have highlighted the need for dedicated research studies on SPM that are using empirically designed frameworks with theoretical support from diverse academic and practitioner literature [6,16]. In this setting, our study is using institutional theory as a theoretical point of departure to explore the antecedents of SPM, particularly in developing countries whose institutional environments are different from those of developed economies [28,84].

The evolution of sustainability practices in developing economies is less understood and there exists a gap in the literature particularly about the factors and mechanisms that serve as enablers of SPM in those settings [74]. The study at hand is designed to address this research gap. Furthermore, this study is unique in terms of keeping a predominant focus on normative [26] and memetic isomorphic pressures [21] as enablers of SPM in developing countries. Dwelling on this line of arguments, we posit the following two hypotheses to be tested empirically.

Hypothesis 1 (H1). *There is a significant positive relationship between perceived mimetic isomorphism and sustainable project management.*

Hypothesis 2 (H2). *There is a significant positive relationship between perceived normative isomorphism and sustainable project management.*

3. Research Settings and Participants

For the empirical validation, a survey-based approach was adopted for the collection of data and hypothesis testing following the guidelines from the literature [85]. PLS-SEM was then applied to determine the relationships hypothesized in the research model. The sampling procedure included a firm-level analysis where an individual construction firm was taken as a unit of analysis. The respondents were project managers/project directors and the study accommodated only one respondent per firm. This research obtained data from Pakistan, which is a developing country in the Asia subcontinent. Firms were selected using stratified random sampling as the details of all contractor firms were available on the official website of the Pakistan Engineering Council (PEC) which can be easily accessed using the web link <https://verification.pec.org.pk/COFirmList>. Four strata were formed that included only those firms which were bound by regulation to have a minimum of two or more professional project managers with sound project-related work experience. The survey questionnaire was prepared on Google Forms and sent to the selected firms via email that contained a link to the survey. The project manager/director was requested to record his/her response with reference to the recently completed construction project(s).

The analysis was chosen which implies that the respondents were replying to the questions based on their experiences with recently completed projects. This approach was chosen because the perception of institutional isomorphism as well as the sustainability-related practices may vary over time and from project to project given the specific project needs. G*Power 3.1.9.2 was used to calculate the minimum sample size by considering a statistical significance level of 5%, a power level of 90% [86], number of predictors at 02, and an effect size of 15% [87]. This resulted in a sample size of 88 firms. However, the results of a pilot study showed low response rates (i.e., 32%). Therefore, to get the required sample size, 400 construction firms were contacted; 146 participated by filling in the survey form, which makes up a response rate of 36.6%. As the sampling frame of the study consisted of 1262 PEC-registered firms, the estimated sample size of 146 firms was randomly selected (in proportion to the total number of firms registered in each category) through random numbers generated in SPSS 21.0 version.

Measures

A research questionnaire was developed using the guidelines available in the literature and the measurement items were adapted from previously published studies. The first version of the questionnaire was put through the procedure of face validation for clarity and representativeness of

the constructs researched [88,89]. Two project managers and three persons from academia checked face validity. Appendix A illustrates all the items used in the questionnaire.

SPM was taken as a second-order (reflective-reflective) multidimensional construct [83,90] represented by a set of first-order complementary latent variables, i.e., environmental sustainability (ENS), economic sustainability (ECS), and social sustainability (SOS). The design of the model posits that all first-order latent variables are important yet complementary manifestations of SPM which is theoretically consistent with our previous discussions. To measure perceived normative isomorphism (NRP) and mimetic isomorphism (MMP), a first-order reflective measurement model was adapted from previous studies [23,81]. The research instrument included only 5-point Likert scale questions for all constructs.

4. Data Analysis and Results

The collected data were submitted to a multivariate normality test using the web-based software, "<https://webpower.psychstat.org/models/kurtosis/>" as suggested by Cain et al. [91] and used in a recent publication by Yusliza et al. [92]. The Mardia's coefficient of multivariate skewness was 1.570 ($t = 38.219, p < 0.01$) and kurtosis was 14.956 ($t = -0.0418, p = 0.096$), indicating that data were not normal. Therefore, SmartPLS 3.2.8 [93], which is a second-generation software for using PLS-SEM, was selected to evaluate the proposed model. In addition, PLS-SEM is the most suitable approach when the structural model tends to be complex having many constructs with multiple indicators. SmartPLS software simultaneously evaluates both models known as measurement and structural models [94] while eliminating basic concerns about the multi-collinearity [95]. For estimating the significance of the structural model, the bootstrapping technique, which is a robust technique for non-normal data, was used with running 5000 subsamples as suggested in the literature [78].

Since the data were obtained from a single source, it might have given rise to issues like common method bias. Therefore, a full collinearity assessment was run which indicated that there were no serious concerns of common method variance as all the variance inflation factor (VIF) values were below the threshold of 3.3, i.e., 1.522 and 2.082.

Our sample, as shown in Table 1, was comprised of 146 large construction firms operating in Pakistan. All the firms were registered in top categories, i.e., C-2 (45.2%), C-1 (28.8%), C-B (11.6%), and C-A (14.4%), which implies that the firms were mainly engaged in medium- to large-sized construction projects. Regarding the respondents, a great majority of them were project managers (62.3%), followed by project directors that constituted 32.2 % of the sample. Only 5.5% of the people who participated in the survey were program managers. In terms of educational background, the majority of (72.6 %) respondents possessed a bachelor's degree, followed by master's and Master of Philosophy being 26% and 1.2%, respectively. This less diverse educational background corresponds to the fact that the basic qualification required for a project manager in construction firms is a four-year bachelor's degree in civil engineering (BS). The higher degrees like master's and Master of Philosophy are additional degrees received after a four-year BS which are not mandatory. Lastly, the average project-related work experience of the respondents was 13.4 years.

4.1. Measurement Model

The measurement model, also called the outer model, assesses the reliability and validity criteria for all the individual constructs included in a research model. Since this model entailed a second-order construct, i.e., SPM, all the first-order constructs were evaluated in the initial stage, and then second-order constructs were tested for reliability and validity. For reliability to be acceptable, Cronbach's alpha values and composite reliability (CR) [96] should both be above the threshold value of 0.70 which were ascertained as shown in Table 2. In addition, all the items had loadings of 0.708 and higher while only one item had loading less than the threshold value (ENS7: 0.493). This particular item was deleted following the procedures outlined by Hair et al. [87]. Further, the average variance extracted (AVE) values were checked to determine convergent validity which was found acceptable

except for the latent variable ENS where a value below the threshold of 0.50 was obtained. However, after deleting the item ENS7, the re-assessment of the model obtained an AVE value above 0.50 [87,96].

Table 1. Sample characteristics.

Variables	Categories	Frequency	Percentage %
Company type	C.2	66	45.2
	C.1	42	28.8
	C.B	17	11.6
	C.A	21	14.4
Gender	Male	144	98.6
	Female	2	1.4
Job Title/Designation	Project Manager	91	62.3
	Project Director	47	32.2
	Program Manager	8	5.5
Education	Bachelor's	106	72.6
	Master's	38	26
	MS/MPhil	3	1.2
Experience with the company	1–5 years	53	36.3
	6–10 years	60	41.1
	More than 10 Years	33	22.6

Table 2. Results of the measurement model.

Constructs	Items	Loadings	Cronbach's Alpha	CR	AVE
ECS	ECS1	0.892	0.905	0.934	0.779
	ECS2	0.850			
	ECS3	0.886			
	ECS4	0.901			
ENS*	ENS1	0.840	0.888	0.915	0.641
	ENS2	0.770			
	ENS3	0.802			
	ENS4	0.819			
	ENS5	0.796			
	ENS6	0.776			
MMP	MMP1	0.830	0.864	0.902	0.648
	MMP2	0.813			
	MMP3	0.767			
	MMP4	0.812			
	MMP5	0.801			
NRP	NRP1	0.834	0.83	0.887	0.662
	NRP2	0.799			
	NRP3	0.839			
	NRP4	0.782			
SOS	SOS1	0.811	0.877	0.907	0.619
	SOS2	0.784			
	SOS3	0.8			
	SOS4	0.802			
	SOS5	0.783			
	SOS6	0.739			

* ENS7: deleted due to lower loadings. CR—composite reliability, AVE—average variance extracted, ECS—economic sustainability, ENS—environmental sustainability, MMP—mimetic isomorphism, NRP—perceived normative isomorphism, SOS—social sustainability.

This study used two basic approaches to assess the discriminant validity of constructs included. Firstly, all the individual items were scrutinized for cross-loadings. The cross-loading values indicated that none of the items were loading higher on the other constructs. Secondly, the comparatively novel measure of heterotrait–monotrait ratio (HTMT) for discriminant validity gets fulfilled when the obtained HTMT values are lower than 0.85 [97]. Accordingly, Franke and Sarstedt [98] put forward that if a value of 1 does not appear in the upper limit of the HTMT bootstrapping values then it means that the constructs are discriminant. As shown in Table 3, all the ratios are lower than the threshold value of 0.85 which indicates that measures are different. The model for this study conceptualized SPM as a second-order construct characterized by three latent reflective constructs of ECS, ENS, and SOS.

Table 3. Heterotrait–monotrait ratio (HTMT) results.

	ECS	ENS	MMP	NRP	SOS
ECS					
ENS	0.833				
MMP	0.619	0.629			
NRP	0.511	0.462	0.62		
SOS	0.429	0.65	0.591	0.61	

A repeated indicator approach was used to set up the second-order construct (reflective-reflective). This technique assigns all the items from first-order constructs to the second-order construct [99]. Table 4 shows the measurement model for SPM where it can be observed that the validity and reliability are well-established.

Table 4. Measurement of second-order construct.

Construct	Items Loading	CR	AVE
Sustainable Project Management (SPM)	0.93	0.89	0.724
	0.782		
	0.835		

4.2. Structural Model

The structural model, as shown in Figure 1, was assessed subsequent to the validation of the measurement model. The relationships of the structural model were estimated using Smart PLS. As per the guidelines provided by Hair et al. [100], R^2 values, path coefficients t -values, p -values and effect size f^2 , were reported using the bootstrapping technique. Results suggested that the model is capable of explaining 46.5% (i.e., $R^2 = 0.465$) of the variance in the endogenous variable. In addition, the powerful indicator of predictive relevance Q^2 (Stone–Geisser criterion) obtained using blindfolding procedure, showed a value of 0.206. This implies that the model has an acceptable fit and high predictive relevance. Furthermore, the strength of the effect of the institutional isomorphic pressures was explored through the effect size f^2 . A noteworthy detail is that MMP has the highest effect on the sustainability performance of the projects ($f^2 = 0.321$). Nonparametric bootstrapping with a resample of 5000 was generated to assess the corresponding t -values, p -values, and path coefficients for hypotheses validation. Table 4 illustrates the results from the PLS path analysis for the structural model evaluation.

The analysis of the structural model results as shown in Table 5, indicates that SPM is influenced directly by NRP ($\beta = 0.276$, $t = 4.185$, $f^2 = 0.101$, $p < 0.01$). The MMP ($\beta = 4.92$, $t = 7.7001$, $f^2 = 0.321$, $p < 0.01$) exhibited more relevancy and predictive power in terms of managing sustainability in construction projects. Thus, both hypotheses, H1 and H2, were supported by the empirical examination.

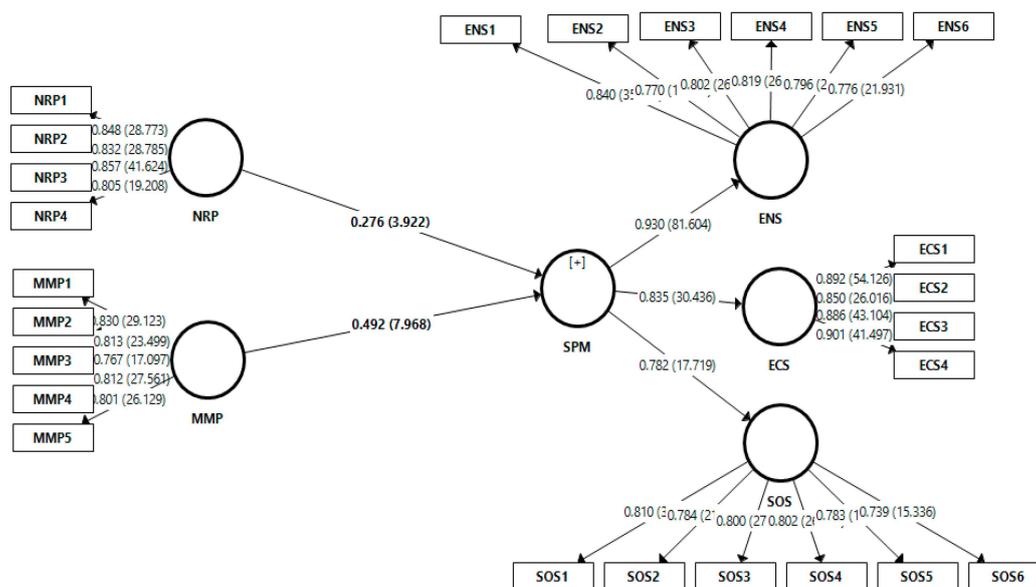


Figure 1. Results of structural model.

Table 5. Structural model results and hypothesis testing.

Relationship	Std. Beta	Std. Error	t-Value *	R ²	f ²	Q ²	Decision
H1 MMP—>SPM	0.492	0.0618	7.968	0.465	0.321	0.206	Supported
H2 NRP—>SPM	0.276	0.070	3.922	0.465	0.101	0.206	Supported

* p < 0.01.

5. Discussion and Conclusion

This study was conducted to explore the key influential external enablers of SPM. The research objectives, which stated that normative and mimetic isomorphic pressures are positively correlated with SPM, were statistically supported. The findings of the study also support the underlying premise that the institutional isomorphism works as a significant enabler of SPM in the context of developing countries. In fact, the mimetic isomorphism appeared as the most influential factor in terms of managing sustainability in project management. Although not much empirical evidence is available regarding this relationship in project contexts previously, there are some studies conducted in other contexts like manufacturing, which may be helpful in comparing the results and inferring meaningful insights. In this background, the results of our study contradict the findings of some of the previous studies [101–103] suggesting that mimetic isomorphism does not influence sustainability practices. However, these results are consistent with findings of studies conducted by Masocha and Fatoki [81] and Zhu et al. [104] which ascertained a significant relation between mimetic isomorphism and a firm’s adoption of sustainability practices [104]. On the other hand, our findings associate lesser predictive capability with normative isomorphism in terms of managing sustainability in projects, as compared to the mimicry isomorphism. As mentioned above, the role of normative pressures in project contexts has received little attention especially in relation to sustainability practices but a comparison of results with other studies reveals some dissimilarities. The findings of our study are, to some extent, different from the findings of Martínez-Ferrero and García-Sánchez [105] and Chen et al. [26] as the authors considered the normative component as more influential in terms of voluntary assurance of sustainability reports and adopting corporate green innovation. The findings, in general, show that the construction firms are more concerned about the “business case” while addressing sustainability dimensions in construction projects. They are market-driven in pursuing sustainability practices and prefer to follow the market leaders in order to be competitive. However, this approach towards sustainability, although not discouraging, may not stir a holistic internal change process to adopt sustainability-oriented strategic

decision making in the long run [7]. In the absence of intrinsically driven and proactively designed sustainability strategies, firms may tend to merely craft a “suitable response” to imminent external pressures [38,106]. This kind of firm behavior is visible in our findings, as well, where we can see that, although the construction firms are paying more attention to environmental sustainability compared to social sustainability, the observed variable that concerns the “regular environmental audits” by the firm (ENS7) scored low and had to be deleted from the model. This shows that construction firms predominantly maintain a reactive approach towards environmental sustainability without developing internal mechanisms to integrate sustainability goals in operational strategies. The results also reveal that the social sustainability aspects in construction projects are receiving less attention. This issue has been reported by some other studies conducted in Pakistan in sectors other than construction [107]. For instance, the study of Khokhar et al. [107] reported a lack of social sustainability practices in supply chain management in Pakistan. In general, from an external perspective, a holistic focus on social sustainability in construction projects becomes a daunting task owing to the presence of varying stakeholders’ demands in the communities where the projects are being executed. Likewise, internally, the wellbeing of the labor force, improving work-safety protocols, and fair wage policies press hard on to the budget and the firms find it difficult to fully comply with social sustainability attributes [11,35].

Regarding contribution, the structural model presented and tested is unique and novel from different perspectives. From a theoretical perspective, this study exclusively outlined the normative and mimetic isomorphism as enablers of SPM in developing countries with a particular focus on Pakistan, which is so far elusive in the literature. In general, empirical studies are scarce in the context of SPM that specifically expound the critical factors serving as enablers for SPM. Therefore, the validation of the research hypotheses will further our understanding of the individual role of different isomorphic pressures as enablers, when studied juxtaposed with managing the sustainability performance of the projects. In addition, our results support and subsequently confirm the generic premises outlined in some exploratory studies and systematic reviews on SPM [6,10,108]. From the methodological perspective, this study measured SPM as a second-order reflective-reflective construct with three latent constructs of environmental, economic, and social sustainability. Previously, an overwhelming majority of the studies on sustainability have taken into account only the environmental aspect [27,31–34] with economic and social being undermined [35]. It is quite rare that sustainability criteria have been studied as one single higher-order higher construct in relationship with institutional isomorphism. This study has attempted to fill this gap by presenting and subsequently validating the aforesaid research model.

5.1. Theoretical and Managerial Implications

This study offers some significant insights to researchers and managers. This research study has added to the current body of knowledge by exploring the relationship between normative and mimetic isomorphism and SPM. Contextually, this research study has again meaningful contributions as, to the best of our knowledge, it can be regarded as the first study conducted in the construction industry of Pakistan to gauge the SPM practices of large construction firms. Reports show that Pakistan is experiencing a surge in CO₂ emissions and affiliated climate change issues and the onset of the CPEC will reportedly exacerbate the sustainability issues if the mega construction activities are not planned with due diligence. In this regard, the isomorphic pressure from competitors and the industry associations can play a major role by coaxing and cajoling the large construction firms into adopting SPM practices. The scarcity of academic literature on SPM also reflects the state of practice and organizations encountering substantial challenges in terms of implementing sustainability criteria in projects. Therefore, this study offers insights and implications for project managers and the top management of construction firms. Firstly, the results emphasize that sustainability practices should be treated as a strategic issue so that the external institutional pressures will be responded to proactively. Secondly, the study findings suggest that there should be an internal mechanism intact to monitor the real-time adherence to the sustainability aspects, whether or not the basic project documents set forth a framework for that. As discussed above, the observed variable on regular environmental audits scored low which points towards a lack of intrinsic motivation and commitment. An improvement on this

front would gradually enable the firms to proactively adopt SPM in construction projects. The third implication of findings emerges for social sustainability management in construction projects which needs special attention. As the findings revealed that the mimetic pressures are more influential on project-based firms, they imply that adopting sustainability practices in projects would help to gain a long-term competitive advantage. Additionally, this paper presents SPM as a multi-dimensional construct, with support from the corporate social responsibility literature, and offers a validated research instrument that can be implemented in the project process as a basic checklist or a diagnostic tool.

5.2. Limitations and Future Research Agenda

Although the findings of the study bear theoretical contributions and practical implications, this study is not without limitations. The first limitation comes from the country-specific institutional context which may limit the generalizability of the findings to other contexts. Therefore, a likely extension of this study would be a comparison of the results from diverse institutional contexts. The ex-post-facto kind of research design provides limited insight into examining the management of sustainability at different lifecycle phases. In future studies, this could be considered as an important SPM research aspect. Furthermore, sustainability aspects may vary if examined from the perspective of different project stakeholders. A future study may consider addressing these diverse aspects in a single research design. The SPM construct (second-order reflective-reflective) used in this study can also be tested empirically in contexts other than the construction industry as it will add valuable perspectives in terms of operationalization of the construct. Finally, it will be interesting to analyze the role of intra-organizational factors, e.g., resources and competencies of a firm in terms of implementing sustainability in projects [62]. The linkage between institutional isomorphism and SPM is yet to be explored from diverse aspects as the existing literature vaguely discusses the enablers for the “project process” and “project product”. The distinction between the enablers of SPM for these two areas can assist in linking several theoretical perspectives in the literature of corporate sustainability and corporate social responsibility. This will again be of much value in terms of improving this research model in future research endeavors.

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Appendix A

Table A1. Questionnaire items.

Construct	Items	References (Adapted)
Perceived Mimetic Pressures	MMP 1: Competitors benefited from sustainable practices (SPs)	[81,109]
	MMP2: Competitors using SPs are more competitive	
	MMP3: Competitors with SPs are perceived favorably by customers	
	MMP4: Hiring workers from competitor firms practicing SPs.	
	MMP5: Using same consultants as competitors do for implementing SPs.	

Table A1. Cont.

Construct	Items	References (Adapted)
Perceived Normative Pressures	NOP1: Professional associations encourage SPs.	[90]
	NOP2: Industry expected all firms to take greater responsibility for SPs.	
	NOP3: SPs was a requirement for firms to be part of this industry.	
	NOP4: Industry associations advocate our firm to adopt SPs.	
Economic Sustainability	ECS1: Achieving good profits.	[90]
	ECS2: Achieving long-term success.	
	ECS3: Improvement in economic performance.	
	ECS4: Survival and success in the long run.	
Social Sustainability	SOS1: Commitment towards the welfare of the communities.	[90,110]
	SOS 2: Health and safety of communities.	
	SOS 3: Fair treatment of employees (regardless of race, religion or gender).	
	SOS4: Improvement in occupational health and safety of employees.	
	SOS5: Protection of the claims and rights of people in the community served.	
	SOS6: A role in society that goes beyond mere profit generation.	
Environmental Sustainability	ENS1: Focus on environmental issues.	[81,90]
	ENS2: Efficient use of the resources available in the environment.	
	ENS3: Recycling and waste reduction.	
	ENS4: Complying with Environmental Protection Agency regulations.	
	ENS5: Using renewable energy.	
	ENS6: Reduction in usage of hazardous materials.	
	ENS7: Environmental audits.	

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