

## Why do construction firms adopt/implement sustainable project management? Evidence from a developing country

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### ABSTRACT

Presently, attaining sustainability in construction activities by integrating environmental, social, and financial viewpoints, is one of the most difficult objectives for firms, so adopting and implementing sustainable project management (SPM) is fundamental in countering this challenge. Therefore, this present study uses institutional theory to analyze how external factors such as isomorphic pressures contribute to the adoption and implementation of SPM in a developing country. Using a survey research strategy with self-administered questionnaires, data were obtained from 641 construction firms in Ghana. Partial Least Squares Structural Equation Modeling (PLS-SEM) approach was utilized to analyze the measurement and structural model. The outcomes suggest that isomorphic pressures are positively related to SPM with mimetic pressures asserting more impact and coercive pressures with the least influence. These findings offer construction professionals and policymakers important new perspectives that will help them to promote SPM so as to accomplish the Sustainable Development Goals.

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## 1. Introduction

For the past years, even though the construction industry holds an immersed importance, it has been under extreme scrutiny for dissatisfying stakeholders through poor performance (Ebekozi et al., 2024; Mahmoud et al., 2020). As stated by Lamprou and Vagiona (2022) schedule, budget and quality are the main criteria that stakeholders use to measure the success of projects, however, are continually below expectations. In addition, Momeet et al. (2022) resolved that stakeholders of the construction sector seem displeased with the products. They clarified that normally construction projects cost more than budgeted, take longer time to complete, their needs for undertaking them do not materialize and the products do not last longer as expected. These hitches have an intolerable influence on the stakeholders and usually result in unfriendly relationships, disbelief, cash-flow problems, lawsuits and uneasiness (Illankoon et al., 2022; Momeet et al., 2022). However, several researchers have been working on identifying various probable solutions to resolve these kinds of project management difficulties (Guo & Zhang, 2022; Lalmi et al., 2021). Therefore, Silvius and de Graaf (2019) and Stanitsas et al. (2021) stated that the key driver to sustainability integration in project management is for successful completion of projects. This validates an earlier affirmation in a 2016 article by Martens and Carvalho that, sustainable project management (SPM) directly affects the success of a project. Nevertheless, Lima et al. (2021) also observed that, the influence of the construction industry on humanity in terms of the three themes of sustainability is very substantial. In lieu of this, the adoption and implementation of strategies that encourage a sustainable way of designing and managing projects and the resources of the earth has turned out to be very important. Better still, in emerging countries like Ghana, there is a little academic audience on the application of sustainability concept and practice to project management as not many scholars have been working on its introduction into the organizations and administration of construction projects (Afari et al., 2025; Ayarkwa et al., 2022; Silvius & de Graaf, 2019). This prominent deficiency in scientific knowledge on the incorporation of sustainability is of great concern since the construction sector's contribution to landfill wastes is 50%, drinking water pollution is 40% and air pollution is 23% (Chen et al., 2022). Furthermore, it uses many resources, such as; consuming 25% of the world's timber, 12-16% of water available in the world and 40% of the world's raw materials (stones, gravels, and sand) (Khoukhi et al., 2022). Moreover, the construction industry is accountable for consuming over 40% of the total world's energy as well as discharging beyond 40% of energy-related greenhouse gases in the world (Khoukhi et al., 2022). Research suggests that greenhouse gas emissions are the biggest contributing factor to climate change (Mikhaylov et al., 2020) and it has been

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acknowledged by Abbass et al. (2022) as the leading problem of the world. Additionally, greenhouse gas emissions and energy consumption within the construction industry are projected to increase beyond 50% by 2050 unless the efficiency of construction facilities' energy is increased (Mikhaylov et al., 2020). With respect to the project goal, procedures, and practices used to manage it, Okereke (2020) concluded that the application of SPM would always challenge the delivery process and deliverables, which will help to reduce these problems associated with the construction industry. However, many external factors influence the adoption and implementation of SPM by firms or individuals; one of these with a substantial influence is the isomorphism concept from the institutional theory (DiMaggio & Powell, 1983; Ullah et al., 2020; Wu et al., 2023). In the words of Risi et al. (2023), the institutional theory makes available the understanding of ways in which institutional factors in a society can legitimize business practices using social norms, regulations and culture in an institutional setting. The theory explains the external factors that empower any firm or professional to adopt and implement new processes, methods or practices (Risi et al., 2023). The scholars also explained that, whenever any institutional practice like SPM becomes prevalent and socially valuable, firms adopt and implement them as a path towards legitimacy. Along these lines, those institutional pressures that influence the adoption of SPM are isomorphic pressures (DiMaggio & Powell, 1983). Based on the above, Kostova et al. (2020) pointed out that decisions made in businesses are not only based on economic gains, but also on what is conventional in the institutional environment. However, Misopoulos et al. (2018) and Sabini et al. (2019) recognized that there are limited studies that investigate SPM by comparing it with well-recognized theories from other domains by means of a framework-based design. Subsequent to this pattern of reasoning, the literary works show that, not up to 1% of academic papers placed their research in a particular theoretical framework (Misopoulos et al., 2018; Sabini et al., 2019). Subsequently, on the basis of this significant limitation, Goel et al. (2019) recommended that future research focus on this area, especially to clarify the antecedents of SPM. In addition, the little investigations carried out on isomorphic pressures based on SPM adoption and implementation on construction projects is still inconclusive (Miterev et al., 2017; Ullah et al., 2020; Wu et al., 2023). For illustration, Tunji-Olayeni et al. (2023) resolved that coercive and normative pressures exerted no appreciable impact on the application of sustainable construction practices. Moreover, Li et al. (2019) questioned the usefulness of coercive force, or laws, for regulating environmental sustainability. Likewise, Willar et al.'s (2021) study draws attention to the discrepancies that exist between national laws and sustainability standards for building projects in emerging nations. Consequently, by employing the institutional theory as the theoretical foundation to assess the effect of mimetic, normative, and coercive forces on the adoption and implementation of SPM by Ghanaian construction companies, this investigation offers fresh insights.

Therefore, the research question posed by the authors is; why do construction firms adopt/implement sustainable project management? To the greatest extent of our comprehension, no study has, as of yet, particularly examined the theoretical basis provided here or offered empirical information from the setting of Ghana. Moreover, as detailed by Urbano et al. (2020), most developing economies have weak institutional structures; hence, there is little or no consideration of sustainability issues in terms of firm performance and strategy. In addition, with over 80% of humanity, living in UN categorized developing countries and with the projection of it increasing to 86% by 2050, examining the sustainability policies of firms that operate in developing nations is crucial (Siegel, 2021). Once more, there is now a huge need for sustainable projects due to the rising trend of rapid economic growth and depletion of resources in emerging economies (Anzagira et al., 2022).

Furthermore, the conclusions of this paper augment the current corpus of information by providing support for isomorphic pressures as important antecedents of SPM. Once more, Partial Least Squares Structural Equation Modeling (PLS-SEM) is applied to evaluate the data of this investigation to further the discussion on SPM adoption and implementation by construction firms. In addition, the results provide significant theoretical and managerial insights that are helpful to policymakers and construction industry experts alike.

This is how the rest of the paper is structured. A summary of earlier research on SPM, coercive, mimetic and normative isomorphic pressures is provided in the theoretical underpinning and development of hypotheses section. This section ends with the research model and hypotheses of the study drawn from the institutional theory. The next section outlines the research methodology and respondents' characteristics. The results of the data analysis is presented at the next section. Discussions of the results follows and the last section conclude the research with a summary of the key findings, theoretical and practical implications together with limitations and suggestions for further research.

## **2. Theoretical Underpinning and Development of Hypotheses**

### *2.1. Institutional theory*

The open systems perspective, which holds that a firm's surroundings affect it and that these surroundings are partially social constructions with deep historical sedimentation, serves as a model for institutional theory (Clegg et al., 2022). As said by Peters (2022), institutions are the set of rules that govern the social interactions that individuals and businesses have with one another. Regarding Burdon and Sorour (2020), institutional theory addresses the question of social legitimacy in regard to how businesses adjust to their surroundings and maintain their reputation. Several authors have discussed institutional theory, primarily for scholarly audiences (Glynn & D'anno, 2023; Peters, 2022). Normative, cultural, and regulatory elements make up institutional pillars, which provide social life stability and direction when paired with relevant resources

and activities. Normative aspects take into account both descriptive and mandatory dimensions; cultural-cognitive factors depend on shared views and have an impact on one's cognition; and regulatory components employ specific rules and supervisory operations. When the institutions and their consequences were first conceptualized, the writers described why institutional pressures imposed behavioral conformity in social contexts. In their groundbreaking study from 1983, DiMaggio and Powell, for example, explained why firms in a field are under pressure from coercive, normative, and mimetic forces to adopt similar forms to compete in their environment. They called this phenomenon isomorphism. Even though these forms might not be the best in terms of output or productivity, people still view them as acceptable, which makes them necessary. As a result, initial institutional research highlighted how organizations enforce compliance and stressed the idea that disobedience to institutions could result in severe consequences, including legal and social sanctions (Jupille et al., 2022). These viewpoints, when combined with ideas of institutional persistence (Zucker, 1977), produced a rigid understanding of institutions as unchangeable entities that upheld and controlled social behavior and authority. Scholars have diverged from this subject in their contemporary work on institutions, focusing instead on observing and explaining social context change. Conventional perspectives on institutional theory proposed a limited perspective of an environment-influenced firm.

Along with Scott (2008), endogenous and exogenous factors can both cause changes in institutional systems. Changes may come from inside if there is disagreement over the macro elements mandated by the outside world, which influences the small-scale activities undertaken in local settings. In line with Oliver (1991), businesses use a range of strategic reactions, including manipulation, disobedience, and avoidance, to thwart institutional constraints rather than always complying with the norms, expectations or myths of their outside world. Because the rules of the game, or the order in a social context, are dynamic, scholars today envision enterprises or domains as coexisting by a range of institutional logic that are continually competing for dominance (Mountford & Cai, 2023; Quero & Mele, 2023). However, Pache and Santos (2021) have identified literature about organizational responses in complex institutional settings. Multiple dominant or coexisting logic (Alvehus & Hallonsten 2022) or interstitial spaces where logic overlaps (Egholm, 2023) are examples of situations where complexity can arise. In consort with this perspective, social environments are places where institutional conflict or concordance may arise. Given this, social order is grounds created and reconstructed in these environments as different logic take precedence over time, enlist and translate other logic to share sense making. Sometimes, as concluded by White et al. (2021), competing institutional forces will result in hybrid configurations that become the game's rules. Institutional entrepreneurs frequently decide how these institutional battles for order turn out (Opara et al., 2021).

In a 1988 study featured in Lynn Zucker's book where do institutional patterns come from; Paul DiMaggio defined institutional entrepreneurship as the mechanism that drives the formation of new institutions. As defined by Opara et al. (2021), institutional entrepreneurs are those who possess the ability to gather resources to pursue goals they find important. Institutional entrepreneurs can operate as individual or group agents and alter the rules of established games or create new ones. A comprehensive perspective on entrepreneurship emphasizes not just the formation of new organizations, but also the development of novel organizational structures and guidelines that alter the course and movement of organizational operations. The awareness of opportunities unites these various pursuits and fields. Moreover, not only must we pay attention to why groups and individuals try to reshape the context of institutions to support their preferred policies and initiatives, but we also need to pay attention to how the larger environment defines and produces opportunities for this kind of entrepreneurship. In agreement with the definition by DiMaggio and Powell (1983), institutional entrepreneurship considers players and agencies in the process of establishing new institutions or modernizing established ones. They argue that elucidating the traits of and circumstances surrounding institutional entrepreneurship has been the primary focus of institutional entrepreneurship study. Detailed descriptions of the activities carried out by institutional entrepreneurs are somewhat lacking in these accounts.

## 2.2. Organizational isomorphism

The notion is that the requirements of technical activities inevitably dictate the design of firms, for instance, formal structure. Meyer and Rowan (1977) argued that the institutional body of past research within the theory of organization has questioned this. By incorporating institutional rules into their formal structures, businesses seek to gain legitimacy in their respective organizational domains, rather than by the need for increased efficiency. Institutional pressure caused high levels of homogeneity in organizational forms and approaches in well-established organizational fields (DiMaggio & Powell, 1983). The term used to characterize this significant process is isomorphism, which pushes a population's unit look like other units subjected to a comparable collection of environmental variables (DiMaggio & Powell, 1983). The concept of institutional isomorphism seems to be frequently employed in studies to comprehend comparable characteristics, ranging from educational texts to profitable and non-profitable enterprises (Sakib, 2023). Institutional theory responds to the fundamental query of why construction companies generally behave and act similarly (DiMaggio & Powell, 1983). In essence, it sees firms operating in the construction sector as open systems that are affected by external forces. In other words, the theory stresses, as Scott (2008) put it, that construction firms base their decisions on the institutional environment, and they must adapt their comportment to make sure it is acceptable in accordance with the environment. Institutions primarily apply three kinds of pressures to businesses: normative, mimetic, and coercive isomorphism as described below.

### 2.2.1 *Coercive isomorphic pressure (CIP)*

As pointed out by DiMaggio and Powell (1983), CIP are those that come from informal and formal forces applied to firms by other organizations that they depend on and by the expectations of the society in which they operate. Consistent with Masocha and Fatoki (2018a), it originates from government legislations; structured professional and other bodies with clear protocols like codes of conduct, guidelines and policies, assessment criteria and others. In a given context, important stakeholders like suppliers, customers and other interest groups can also be sources of coercive isomorphism. Scholarly opinions regarding the efficacy of coercive isomorphism vary, though, with some contending that firms might interpret CIP as an instrument of persuasion, coercion or invitation to involve in collusion (Muriany & Ruhunlela, 2024; Tipurić & Krajnović, 2020), others maintain it enables firms to gain social legitimacy (Latif et al., 2020; Ullah et al., 2024). Additionally, Romdoni (2022) claimed that there are incentives and seductions offered by institutions that are coercive isomorphism. In such a situation, businesses might not feel compelled to adopt particular practices unless there is a strong financial incentive in place. This incentive could come in the form of grants from the government or other financial opportunities that come with adopting specific practices and structures and like SPM. Moreover, as specified by Ullah et al. (2024) CIP are the primary driver for adopting SPM. Nonetheless, the consequence of coercive pressure as a persuasive driver of SPM remains comparatively unexplored.

### 2.2.2 *Mimetic isomorphic pressure (MIP)*

When a firm is unable to determine what to do in a given situation, it tends to imitate or copy the actions of others, this is termed as mimetic isomorphism (Canello, 2022). That is, in the state of uncertainties and doubts in decision-making within an organization, mimicry isomorphism seems like a workable solution. Thus, mimetic pressures encourage firms to emulate the wise and fruitful decisions made by the top construction industry firms. Mimetic isomorphism, as previously stated by DiMaggio and Powell (1983), is the phenomenon wherein a firm mimic or replicates other prosperous firms while remaining unsure of how to respond to specific externalities or contextual demands. As a result, firms face mimetic pressures due to external environment uncertainty, which they address by comparing their successful practices to those of their peers, which are considered, legitimate and acceptable (Masocha & Fatoki, 2018b). The small number of easily accessible models is one of the elements that could lead to isomorphism. Firms especially tend to copy those in their own field that they consider respectable or prosperous. The activities of consulting firms and industry associations, as well as customer demands and employee turnover, can all contribute to the diffusion of organizational models.

### 2.2.3 *Normative isomorphic pressure (NIP)*

The professional norms and codes of conduct that are obtained through official training and educational programs, associations of professionals, and employee mobility between firms are collectively referred to as "Normative Isomorphism" (Jepson et al., 2022; Saka et al., 2022). These are mainly the result of professionalization and linked to the impacts of a shared cognitive foundation. Through formal education and participation in professional associations, construction professionals legitimize and spread organizational models, mindsets, and problem-solving strategies. Professional associations, professional networks, and industry associations are the primary sources of normative pressures (DiMaggio & Powell, 1983). For example, educational platforms that promote rational behavior, network of professionals, or industry associations that have an interest in sustainable projects (Jepson et al., 2022; Saka et al., 2022). Associations and professional organizations within the building sector play a crucial role in this regard because they design their mechanisms for promoting desired behaviors through the imposition of formal standards that each member must abide by. Worldwide governments duly encourage and support this kind of industry self-regulation (Liu et al., 2023).

## 2.3. *Sustainable project management (SPM)*

The processes necessary for efficiently supervising the scheduling, conception, design, and execution of a facility are included in project management. To reduce unfavorable environmental consequences and maximize positive economic and social impacts, SPM integrates sustainable development practices, sustainable management practices, and sustainable construction materials (Carboni et al., 2024; Peng et al., 2025; Stanitsas et al., 2021; Willar et al., 2021). Since projects determine a firm's future, the right execution of SPM ideas might spur the realization of the Sustainable Development Goals (SDG) and competitive edge (Chofreh et al., 2019). Based on published research, companies are facing increasing demand from stakeholders to adopt and implement sustainable practices and conduct business ethically (Govindaras et al., 2023). Studies indicate that the addition of SPM in the planning and procedures of projects enhances the overall value of project management and has a major influence on PS (Shaukat et al., 2022). However, the incorporation of sustainability into construction project management may be hampered by several important issues, such as lack of knowledge about the possible advantages, lack of collaboration between academics, business professionals, and environmental organizations, and an ad hoc approach to reaching sustainability objectives (Fathalizadeh et al., 2022). SPM approaches guarantee the accomplishment of sustainability objectives as a means to get beyond such challenges. SPM is a derived expression that has various definitions, although it is generally understood to mean "the planning, monitoring, and controlling of project delivery and support processes; it involves taking into account the social, economic, and environmental aspects of the life-cycle

of the project's resources, processes, deliverables, and effects; its goal is to maximize benefits for stakeholders; it is carried out in a transparent, equitable, and moral manner, incorporating proactive engagement from stakeholders" (Silvius & Schipper, 2014, p. 64). Therefore, SPM mandates that project procedures be made more efficient by reducing waste, maximizing the use of earth's resources, obtaining environmentally friendly materials, upholding rights for individuals, enhancing conditions for employees, and involving stakeholders. In accordance with Silvius and Schipper (2014), the project's players must also provide responsibility and openness with regard to the project's overall social and environmental impacts on society.

#### 2.4. Organizational isomorphism and sustainable project management

Numerous studies have found that isomorphic pressures drive firms toward different institutional practices and that firms adapt to institutional requirements to gain social legitimacy (Acquah et al., 2021; Arranz et al., 2022; Depoers et al., 2020; Kuo et al., 2022; Latif et al., 2020; Ning et al., 2021). Nevertheless, in project contexts, institutional isomorphism has produced varying degrees of results (Mitrev et al., 2017; Tunji-Olayeni et al., 2023). Besides, some researchers have consistently emphasized the necessity of employing well-founded theory in studies on project management (Georgieva & Allan, 2008; Porter, 2019) especially in SPM research (Alnsour, 2022; Wuelser & Pohl, 2016). Moreover, Misopoulos et al. (2018) and Sabini et al. (2019) establish that few researchers have studied SPM by comparing it to well-known concepts from different disciplines utilizing a framework-based approach. They said that literature shows that not up to 1% of academic papers placed their research in a particular theoretical framework. This is a substantial restriction and as proposed by Goel et al. (2019), future studies should concentrate on this area, particularly to better understand the causes of SPM. With institutional theory acting as a theoretical foundation, this present study assesses the intrinsic factors that encourage the adoption and implementation of SPM in an emerging nation whose institutional contexts diverge greatly from those of industrialized nations (Acquah et al., 2021; Kauppi, 2022; Qiu & Chen, 2023). SPM is not very common in emerging economies, and there is a lack of information in past works, particularly concerning the issues and frameworks that allow SPM to exist there (Jabbour et al., 2020). Drawing from this point of reasoning, we propose three hypotheses as illustrated in Fig. 1:

**H<sub>1</sub>:** Coercive isomorphic pressure has a positive effect on sustainable project management.

**H<sub>2</sub>:** Mimetic isomorphic pressure has a positive effect on sustainable project management.

**H<sub>3</sub>:** Normative isomorphic pressure has a positive effect on sustainable project management.

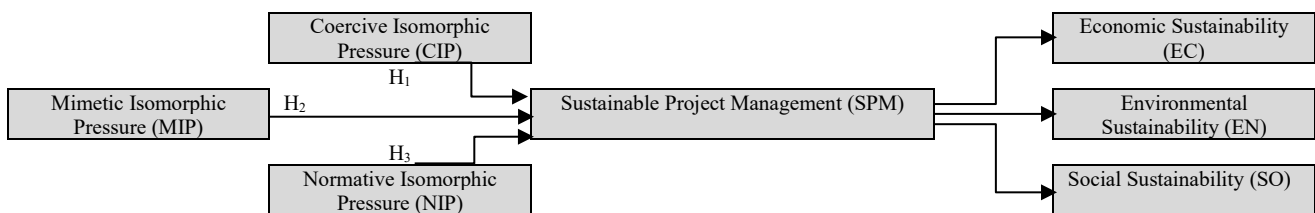


Fig. 1. Research model

### 3. Research Methodology

Having coined three hypotheses from the review of literature in the previous section, the research design and target population, sample size and sampling, measures and questionnaire development and respondents' characteristics were enumerated in this section.

#### 3.1. Research design and target population

This present investigation adopted survey strategy with structured questionnaires to help gather large quantities of data in a controlled and cost-effective means as well as to help generalize the findings across analogous traits in the broader population (Fuyane, 2021; Saunders et al., 2016). However, due to resource limitations, conducting a survey of worldwide construction firms was not practicable. Consequently, the decision was made to focus this research on a particular context of study. Ghana was selected as the research context due to its swift economic expansion, which has led to numerous construction projects and the creation of one of Sub-Saharan Africa's largest construction markets (Frimpong et al., 2020; Owoo & Lambon-Quayefio, 2020), as a result, offering a wealth of data for the project. Therefore, the population of the study was all construction firms in Ghana. However, the target demographic for the research was all listed construction firms with the Public Procurement Authority (PPA) as of March 18, 2024. The study chose this target population because it was concerned with the usage of SPM in the planning, design, management and construction of public-sector facilities. However, per section 22(3) of PPA Act, 2003 (Act 663), as modified with Act 914, only firms registered with PPA can do business with public organizations.

### 3.2. Sample size and sampling

With regards to sample size determination in Structural Equation Modelling (SEM), Jhantasana (2023) point out Marsh et al. (1998), Soper (2021) and Kock and Hadaya (2018) as the most appropriate methods. Therefore, using Soper's (2021) method from [www.danielsoper.com/statcalc/calculator.aspx?id=89](http://www.danielsoper.com/statcalc/calculator.aspx?id=89) with an effect size of 0.20, desired statistical power of 0.80, 6 latent variables, 55 observed variables and probability level of 0.05, the recommended minimum sample size for the study was 403 respondents. However, the average response rate of similar studies was 30% (Ullah et al., 2020; Ullah et al., 2024; Wu et al., 2023; Yue et al., 2023). Consequently, 1350 firms in the construction sector were contacted so as to obtain a sufficient sample size. Again, using probability-sampling technique the study sample was chosen from the sampling frame. That is, the study implemented systematic random sampling because the list obtained from PPA was in alphabetical order. However, with a sampling ratio of 1:3 and a random starting number of 55, the cases were systematically selected from the sampling frame.

### 3.3. Measures and questionnaire development

To quantify SPM, the study used the Ershadi and Goodarzi (2021) measurement items related to the three aspects of sustainability. Likewise, the measurement items of Masocha and Fatoki (2018a) were adapted for coercive isomorphic pressures and that of mimetic and normative isomorphic pressures were adapted from Ullah et al. (2020). On a five-point Likert scale, respondents from the sampled firms were instructed to evaluate the measuring items of the constructs. Compared to other Likert scales, the five-point scale lowers the frustration level of respondents while increasing response rate and quality (Russo et al., 2021; Tanujaya et al., 2022). Furthermore, the usage of five-point Likert scale in construction management research is widespread (Bernat et al., 2023; Nebrida & Gomba, 2023; Watfa et al., 2023; Wu et al., 2023) due to its ability to produce unambiguous results that are simple to interpret (Tanujaya et al., 2022; Yaska & Nuhu, 2024). In addition, it is rather simple to utilize among busy construction professionals (Alabi & Jelili, 2023). Three sections made up the survey questionnaire, which also included a cover letter. The first section was schemed to gather background information on respondents. Thirteen items in the next section evaluate the organizational isomorphic pressures while the last section is designed to gather information related to the capabilities of SPM. Because of the location of firms and difficulty of meeting of respondents, the questionnaire was circulated through WhatsApp, e-mail, and in-person. After the data collection, the study utilized SmartPLS version 4.1.0.9 to accomplish the analysis. Consistent with Memon et al. (2021), Sarstedt et al. (2022) and Zeng et al. (2021), SmartPLS, a contemporary multivariate analysis method, has become prominent in project management research due to its proven capacity to estimate theoretically defined cause-effect relationship models.

### 3.4. Respondents' characteristics

The questionnaire survey was completed by 641 respondents, accounting for a 47.5% response rate. The respondent's demographic profile is displayed in Table 1, which shows that our sample is representative.

**Table 1**  
Respondents' characteristics

Characteristics	Frequency	Percentage
Highest academic qualification		
HND or lower	46	7.18
First degree	167	26.05
Post graduate	428	66.77
Type of organization		
Contractor	356	55.54
Consultant	285	44.46
Role in organization		
Architect	61	9.83
Civil/structural engineer	77	12.01
Quantity surveyor	55	8.58
Electrical engineer	42	6.55
Mechanical engineer	43	6.71
Project manager	139	21.68
Construction manager	62	9.67
Contract manager	57	8.89
Site engineer	19	2.81
General manager	59	9.05
Managing director	27	4.21
Experience in years		
Less than 5	47	7.33
5 – 10	102	15.91
11 – 20	163	25.43
Above 20	329	51.33

## 4. Results

### 4.1. Assessment of the measurement model

First, utilizing PLS-SEM algorithm, the measurement model was assessed based on the quality criteria for all the constructs as recommended by Hair et al. (2019) and Usakli and Rasoolimanesh (2023). Meanwhile, with SPM being a second-order construct, the study evaluated the first-order constructs first. Consequently, since the model was reflective, the indicator loadings were calculated, which show values higher than 0.7 (0.706 – 0.937) as shown in Table 2.

**Table 2**  
Construct reliability and validity and variance inflation factor (VIF) results of measurement Model.

Constructs	Items	Outer load- ing	Cronbach's alpha	rho_a	rho_c	AVE	VIF
CIP	CIP 1	0.937	0.940	0.943	0.957	0.847	4.615
	CIP 2	0.936					4.839
	CIP 3	0.931					4.335
	CIP 4	0.877					2.686
MIP	MIP 1	0.849	0.892	0.892	0.921	0.699	2.444
	MIP 2	0.828					2.249
	MIP 3	0.832					2.152
	MIP 4	0.844					2.292
	MIP 5	0.826					2.198
NIP	NIP 1	0.933	0.934	0.935	0.953	0.836	4.712
	NIP 2	0.909					3.856
	NIP 3	0.920					3.782
	NIP 4	0.895					3.109
EC	EC 1	0.858	0.972	0.972	0.974	0.732	3.839
	EC 2	0.851					3.677
	EC 3	0.844					3.552
	EC 4	0.819					2.812
	EC 5	0.859					3.857
	EC 6	0.864					4.216
	EC 7	0.863					3.779
	EC 8	0.858					3.904
	EC 9	0.863					3.860
	EC 10	0.870					3.970
	EC 11	0.876					3.967
	EC 12	0.873					3.970
	EC 13	0.813					2.956
	EC 14	0.860					3.755
EN	EN 1	0.831	0.958	0.961	0.963	0.651	3.558
	EN 2	0.841					3.900
	EN 3	0.846					3.449
	EN 4	0.828					3.133
	EN 5	0.831					3.385
	EN 6	0.835					3.638
	EN 7	0.853					3.684
	EN 8	0.821					3.176
	EN 9	0.765					2.928
	EN 10	0.740					2.660
	EN 11	0.706					2.073
	EN 12	0.711					1.999
	EN 13	0.834					2.874
	EN 14	0.821					2.902
SO	SO 1	0.800	0.965	0.966	0.969	0.691	3.047
	SO 2	0.856					3.795
	SO 3	0.822					3.108
	SO 4	0.856					4.105
	SO 5	0.819					3.194
	SO 6	0.841					3.565
	SO 7	0.862					3.641
	SO 8	0.840					3.191
	SO 9	0.838					3.256
	SO 10	0.846					4.055
	SO 11	0.814					3.570
	SO 12	0.831					3.161
	SO 13	0.795					2.629
	SO 14	0.810					2.833

Then, the authors examined the construct reliability and validity, by using Cronbach's alpha, Composite Reliability (CR) (rho\_a, rho\_c) and Average Variance Extracted (AVE). The results as indicated in Table 2 display Cronbach's alpha figures exceeding 0.7 (0.892 – 0.972), CR (rho\_a) larger than 0.7 (0.892 – 0.972), CR (rho\_c) bigger than 0.7 (0.921 – 0.974) and AVE values of (0.651 – 0.847), which were higher than 0.5 as advised by Hair et al. (2019) and Usakli and Rasoolimanesh (2023).

**Table 3**  
Heterotrait-Monotrait ratio (HTMT) results

	CIP	EC	EN	MIP	NIP	SO
CIP						
EC	0.576					
EN	0.559	0.719				
MIP	0.568	0.750	0.790			
NIP	0.519	0.706	0.797	0.725		
SO	0.539	0.478	0.626	0.616	0.546	

**Table 4**  
Fornell-Larcker criterion results

	CIP	EC	EN	MIP	NIP	SO
CIP	0.921					
EC	0.551	0.855				
EN	0.535	0.705	0.807			
MIP	0.521	0.699	0.736	0.836		
NIP	0.487	0.673	0.760	0.661	0.914	
SO	0.516	0.467	0.608	0.574	0.521	0.831

**Table 5**  
Cross loadings results

	CIP	EC	EN	MIP	NIP	SO
CIP 1	0.937	0.559	0.528	0.511	0.488	0.491
CIP 2	0.936	0.486	0.484	0.479	0.447	0.483
CIP 3	0.931	0.513	0.496	0.458	0.438	0.466
CIP 4	0.877	0.465	0.459	0.469	0.416	0.458
EC 1	0.468	0.858	0.632	0.606	0.593	0.392
EC 2	0.455	0.851	0.631	0.618	0.588	0.375
EC 3	0.443	0.844	0.586	0.597	0.574	0.328
EC 4	0.475	0.819	0.610	0.564	0.549	0.445
EC 5	0.463	0.859	0.603	0.636	0.548	0.390
EC 6	0.432	0.864	0.598	0.596	0.583	0.435
EC 7	0.476	0.863	0.593	0.603	0.591	0.365
EC 8	0.464	0.858	0.570	0.607	0.552	0.366
EC 9	0.427	0.865	0.640	0.645	0.617	0.426
EC 10	0.467	0.870	0.587	0.595	0.548	0.416
EC 11	0.509	0.876	0.636	0.638	0.597	0.480
EC 12	0.515	0.873	0.637	0.612	0.636	0.420
EC 13	0.532	0.813	0.540	0.508	0.510	0.329
EC 14	0.476	0.860	0.563	0.539	0.561	0.403
EN 1	0.425	0.675	0.839	0.690	0.672	0.516
EN 2	0.449	0.629	0.841	0.641	0.663	0.487
EN 3	0.475	0.645	0.846	0.662	0.709	0.554
EN 4	0.509	0.611	0.828	0.635	0.686	0.565
EN 5	0.457	0.528	0.831	0.609	0.605	0.552
EN 6	0.360	0.466	0.835	0.569	0.570	0.478
EN 7	0.484	0.635	0.853	0.641	0.706	0.522
EN 8	0.418	0.575	0.821	0.555	0.660	0.446
EN 9	0.370	0.402	0.765	0.478	0.528	0.402
EN 10	0.323	0.383	0.740	0.503	0.457	0.420
EN 11	0.431	0.554	0.706	0.511	0.546	0.385
EN 12	0.328	0.360	0.711	0.469	0.493	0.415
EN 13	0.478	0.689	0.834	0.649	0.582	0.548
EN 14	0.483	0.677	0.821	0.627	0.635	0.526
MIP 1	0.436	0.598	0.622	0.849	0.596	0.470
MIP 2	0.421	0.576	0.611	0.828	0.556	0.466
MIP 3	0.461	0.620	0.575	0.832	0.529	0.510
MIP 4	0.425	0.603	0.626	0.844	0.520	0.457
MIP 5	0.433	0.523	0.642	0.826	0.564	0.497
NIP 1	0.455	0.625	0.721	0.605	0.933	0.479
NIP 2	0.461	0.651	0.650	0.583	0.909	0.430
NIP 3	0.439	0.589	0.717	0.589	0.920	0.510
NIP 4	0.427	0.597	0.688	0.641	0.895	0.486
SO 1	0.365	0.344	0.509	0.427	0.444	0.800
SO 2	0.465	0.312	0.469	0.425	0.415	0.856
SO 3	0.463	0.449	0.548	0.563	0.547	0.822
SO 4	0.545	0.445	0.581	0.541	0.475	0.856
SO 5	0.423	0.396	0.490	0.499	0.418	0.819
SO 6	0.533	0.393	0.546	0.489	0.482	0.841
SO 7	0.407	0.386	0.505	0.501	0.447	0.862
SO 8	0.385	0.376	0.472	0.438	0.418	0.840
SO 9	0.504	0.402	0.556	0.503	0.449	0.838
SO 10	0.369	0.431	0.491	0.493	0.419	0.846
SO 11	0.342	0.313	0.416	0.400	0.382	0.814
SO 12	0.394	0.407	0.555	0.472	0.411	0.831
SO 13	0.390	0.362	0.453	0.434	0.362	0.795
SO 14	0.386	0.387	0.457	0.465	0.374	0.810

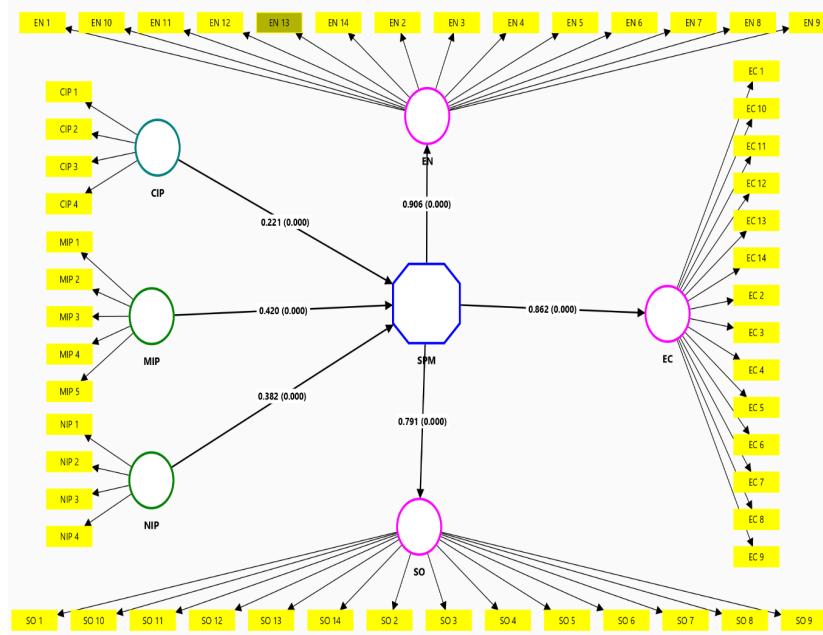
Accordingly, the study does not have any problems with convergent validity or internal consistency reliability. Consequently, three methods were used to evaluate how empirically different a construct is from other constructs in the study model. That is, cross loadings, the Fornell-Larcker criterion, and the Heterotrait-Monotrait ratio (HTMT). Tables 3 through 5 show the outcomes of these discriminant validity criteria. To meet the HTMT criterion, all HTMT values must be less than 0.85, as publicized in Table 3 (Hair et al., 2019; Henseler et al., 2015; Usakli & Rasoolimanesh, 2023). Similarly, Table 4 illustrates that the variables' square root of AVE values are larger than their correlation with others, which is a necessary requirement to meet this criterion (Fornell & Larcker, 1981; Hair et al., 2019; Usakli & Rasoolimanesh, 2023). To conclude, Table 5 displays that the measurement items' loading on their variable is greater than that on the other variables, which is the required condition as suggested by Aburumman et al. (2022) and Usakli and Rasoolimanesh (2023). Therefore, there is no problem with discriminant validity in this present study. Finally, the Variance Inflation Factor (VIF) was checked to detect multicollinearity. Hair et al. (2019), Ringle et al. (2012) and Usakli and Rasoolimanesh (2023) maintained that multicollinearity does not exist if VIF is less than 5. Therefore, as illustrated in Table 2, the VIF of the measurement items ranges from 1.999 to 4.839. Three latent reflective constructs, EC, EN, and SO, were used to conceptualize SPM as a second-order construct in the study's model. The second-order construct was evaluated using a repeated indicator technique as detailed by Sarstedt et al. (2019) and Sarstedt et al. (2021). The measurement model for SPM is displayed in Table 6, where it is evident that the reliability and validity are recognized.

**Table 6**  
Measurement of second-order construct

Constructs	Items	Items loading	Cronbach's alpha	rho_a	rho_c	AVE
Sustainable Project Management (SPM)	EC	0.862	0.975	0.977	0.977	0.502
	EN	0.906				
	SO	0.791				

4.2. Assessment of the structural model

Once the results of the measurement model were adequate, the authors proceeded with the recommendations of Hair et al. (2019) and Usakli and Rasoolimanesh (2023) to evaluate the structural model as indicated in figure 2. Again, per the guiding principle suggested by Hair et al. (2019) and Usakli and Rasoolimanesh (2023) and using nonparametric bootstrapping with 5000 resample, R<sup>2</sup> values, effect size f<sup>2</sup>, t-values, path coefficients, and p-values were evaluated. The bootstrapping results show that the model can describe 76.2% of the variance in SPM, which as itemized by Hair et al. (2019) means a substantial explanatory power. Moreover, the effect size, f<sup>2</sup> was used to investigate the magnitude of the impact of the institutional isomorphic pressures. Notably, Table 7 shows that MIP has the most impact on the SPM (f<sup>2</sup> = 0.378), whereas CIP has the least impact (f<sup>2</sup> = 0.142). In addition, Table 7 presents the results from the analysis of the structural model, showing that CIP (β = 0.221, t = 4.942, p < 0.00), MIP (β = 0.420, t = 9.789, p < 0.00), and NIP (β = 0.382, t = 8.309, p < 0.00), meaning, all had a direct impact on SPM. Thus, the empirical analysis supported each of the three hypotheses (H1, H2, and H3). Likewise, a blindfolding procedure was used to determine Q<sup>2</sup>, a potent indicator of predictive significance (Stone-Geisser criteria). The values of 0.555 and 0.310 were obtained. Any Q<sup>2</sup> score greater than zero (Q<sup>2</sup>>0) shows that the model being tested has appropriate predictive significance.



**Fig. 2.** Outcomes of structural model

**Table 7**

Results of the structural model analysis

	Relationship	Beta	STDEV	t-values	f <sup>2</sup>	p-values	Decision
H <sub>1</sub>	CIP → SPM	0.221	0.045	4.942	0.142	0.000	Supported
H <sub>2</sub>	MIP → SPM	0.420	0.043	9.789	0.378	0.000	Supported
H <sub>3</sub>	NIP → SPM	0.382	0.046	8.309	0.328	0.000	Supported

## 5. Discussions

This study evaluates why construction firms adopt/implement SPM, particularly in emerging countries like Ghana. Specifically, it examines the effect of coercive, normative, and mimetic pressures on the acceptance and implementation of SPM by firms in the construction sector in the execution of public-sector projects. The results of this investigation provide validation of positive and substantial influence of the concept of isomorphism from the institutional theory on SPM adoption and implementation. That is, it backs up the fundamental idea that, in the context of emerging economies, institutional isomorphism significantly facilitates SPM. In real terms, mimetic pressures seemed to be the utmost factor prompting the acceptance and implementation of SPM by construction companies, which corroborates the findings from Ullah et al (2020). That is, construction firms improve their adoption and implementation of SPM mostly under MIP by imitating successful firms.

The results of our study reveal that CIP significantly impacts construction firm's adoption and implementation of SPM because as endorsed by other scholars (Alqershy et al., 2024; Bamgbade et al., 2019; Masocha & Fatoki, 2018a; Ullah et al., 2024), CIP is seen by construction industry players as a key factor that contributes to the industry's emphasis on green initiatives. However, the results contradict the conclusions from Li et al. (2019), when they questioned the usefulness of coercive force for regulating environmental sustainability in building projects, Tunji-Olayeni et al. (2023), when they concluded that CIP exerts no appreciable impact on the application of sustainable construction practices and other scholars (Muriany & Ruhunlela, 2024; Tipurić & Krajnović, 2020) who perceived the CIP as an instrument of persuasion, coercion or invitation to involve in collusion. Even so, client pressure is the primary coercive factor impacting the adoption and implementation of SPM in Ghana. This is consonant with empirical conclusions by Loosemore et al. (2021) and Murphy and Eadie (2019). In addition, according to these earlier studies, client demands are primarily limited to government clients, particularly in Ghana (Loosemore et al., 2021; Murphy & Eadie, 2019). Again, pressures from suppliers and norms and regulations had a substantial impact on the results

In addition, this study's results show that construction firms usually imitate or copy those in their field that they consider respectable or prosperous in adopting and implementing SPM. Again, the activities of competitors, demands of customers, hiring of experienced artisans and professionals, contribute to significant evidence of mimicking behavior that accelerates SPM adoption and implementation of SPM. This conforms with earlier research by Alqershy et al. (2024), Masocha and Fatoki (2018b), Ullah et al. (2020) and Wu et al. (2023). Given the increasing significance of SPM as an instrument of competitive advantage in securing contracts (Raidén et al., 2019), a competitive environment is crucial in homogenizing these firms toward SPM. As a result, when firms' objectives are unclear or the construction sector produces an atmosphere of symbolic insecurity, they may model themselves after others.

Normative pressures as mentioned earlier, include formal education and participation in professional associations which enables construction professionals to legitimize and spread organizational models, mindsets, and problem-solving strategies. Therefore, the outcomes of our investigation show that NIP significantly impacts the adoption and implementation of SPM in emerging economies, which is consistent with other scholarly works (Ullah et al., 2020; Wu et al., 2023). Nonetheless, the outcomes of our study differ from that of Tunji-Olayeni et al. (2023), who determined that normative pressures exerted no appreciable impact on the execution of sustainable construction practices and Alqershy et al. (2024) as they considered the normative component as influential when solely channeled through the support of top management.

## 6. Conclusion

Over the years, literary works show that there are limited studies that investigate SPM by comparing it with a particular theoretical framework. Therefore, this study examined the effect of isomorphic pressures on the acceptance and implementation of SPM by construction companies in developing countries, utilizing the institutional theory's concept of isomorphism as the theoretical standpoint. It is clear from the findings and discussions that isomorphic forces have a substantial and lasting influence on the acceptance and implementation of SPM. These results indicate construction firms in developing countries do adopt and implement SPM and they mostly do so by copying from other successful firms. Therefore, construction firms are encouraged to continuously adopt and implement SPM to preserve biodiversity, conserve energy, reduce emissions, protect environment, increase economic benefits, and so on. Additionally, this present research confirms that the acceptance and application of SPM have a crucial role in enhancing institutional legitimacy, which in turn improves social, environmental, and economic performance. Moreover, this work focused on Ghana specifically and provided a theoretical overview of the isomorphic pressures that facilitate SPM in emerging economies, which has not been well-documented in the literature thus far. Empirical studies that precisely describe the crucial elements acting as SPM enablers are generally

lacking in the context of SPM. Therefore, when compared to controlling the performance of projects in terms of sustainability, the validation of the hypotheses of the study will help us better understand the distinct function of various isomorphic forces as drivers. Furthermore, the general premises presented in a few exploratory research and systematic reviews on SPM are supported and subsequently confirmed by our results. In terms of methodology, this study used the three fundamental constructs, economic, social and environmental, to quantify SPM. In the past, a vast majority of the research on juxtaposing isomorphic pressure on SPM have taken into account of using one or two of the isomorphic pressures. Finally, by presenting and then evaluating the aforementioned research model, this research sought to bridge the gap of the inconclusive influence of isomorphic forces on the adoption and implementation of SPM.

### 6.1. Theoretical and practical implications

Researchers and experts in the construction sector might learn a lot from this study. In order to understand what motivates businesses to adopt and implement SPM, this research, which is grounded in the institutional theory, looks at how isomorphic forces impact on the acceptance and implementation of SPM and how it affects organizational legitimacy and performance in terms of sustainability. This theory stresses that organizations adopt and implement practices after they are seen to be acceptable behavior and industry norms when elucidating theoretical implications. Building on the institutional theory, construction firms are embracing or enhancing organizational legitimacy and boosting sustainability performance. Again, by examining the link between organizational isomorphism and SPM, it has contributed to the prevailing field of information. Given the circumstances, this current research is, as far as the authors are aware, the first to assess the influence of isomorphic forces on SPM on public-sector projects in the Ghanaian construction sector. Reports show that Ghana like other developing countries is experiencing a surge in carbon dioxide and greenhouse gas emissions and other sustainability issues, hence the need to strategically adopt and implement SPM.

The dearth of scholarly research on SPM depicts the current situation in practice, with firms facing significant obstacles when it comes to embracing and putting SPM into practice. Thus, this research offers information and useful ramifications for construction professionals and business executives. In other words, our results highlight the implication of treating SPM as a strategic issue in order to proactively address institutional challenges. The results showing that mimetic pressures had a greater impact on construction firms, implies that most firms imitate others in adopting and implementing SPM, which enables them to obtain a sustained edge over competitors. Furthermore, policymakers, clients, and industry leaders can all work together to encourage firms to adopt and implement SPM in the pursuit of more environmentally balanced and socially healthy societies by recognizing that SPM results in safer products that protect the environment.

### 6.2. Limitations and future directions

There are certain limits that forthcoming studies might take into consideration to improve information and comprehension, even though the findings of this research make substantial contributions. First, the findings may not be generalized to other contexts due to unique country-specific institutional structure. Therefore, as a continuation of this research, scholars may compare the results from various institutional environment. After-the-fact investigation designs do not provide much information on how sustainability is managed at different stages of the lifecycle. This can be regarded as a significant SPM research topic in subsequent investigations. Furthermore, when analyzed from the viewpoint of various project stakeholders, sustainability principles may differ. Future research might think about combining these various facets into a single study design. This study's SPM construct can also be empirically evaluated outside of the construction industry, which will provide important insights on how to operationalize the construct. Lastly, researcher can examine the impact of intra-organizational elements, such as the competencies and resources of firms, on the adoption and application of SPM in building projects.

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