



## Impact of External Environmental Factors on Construction Firms' Performance, Mediated By Institutional Pressures

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### Abstract

While the mainstream of construction management research has paid attention to the causes of poor performance in construction projects, there is a dearth of empirical research that considers the influence of external environment and institutional pressures in the debate. The objective of this research was to examine the impact of external environmental factors and institutional pressures on the performance outcomes of construction firms. The role of institutional pressures as a mediator in that relationship was also evaluated. Using a self-administered questionnaire, primary data was collected from 250 executives working in construction firms. This was then analysed using partial least squares structural equation modelling. The results demonstrated that both external environmental factors and institutional pressures have an impact on the performance of construction firms. In light of the institutional theory, the findings addressed a genuine research gap, as institutional pressures were discovered to mediate the relationship between external environmental factors and construction firm performance outcomes. This study contributes to the current debate about the causes of poor performance in construction firms by assisting managers in recognizing the impact of the aforementioned factors on a firm's performance.

*Keywords:* Construction Firms; Performance Measures; External Environmental Factors; Institutional Pressures; Smart-PLS.

### 1. Introduction

Over the past decade, the construction sector has been characterized as a fragmented and complex industry sector confronted with incessant challenges and enormous demands that compel construction managers to devise ways of boosting their firms' performance [1]. Several studies concerning performance improvement within the construction industry have delineated three pillars that determine performance output: project level, stakeholders' level, and organizational level [2]. Construction performance at the organizational level represents the overall performance that guarantees an organization's survival in a competitive business environment [3]. Therefore, it is critical for construction firms to enhance their performance at the organizational level [4].

Although measurement immediately following performance outcomes benefits managers in implementing it for functions such as control, evaluation, and the progression of business procedures, the factors that can influence this performance and grade an organization's performance as being at an intermediate or high stage are still not well studied at the organizational level [5]. Such influences on an organization's performance have renewed interest in this subject,

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which has been explored by administrators, activists, policymakers, and researchers for decades [6]. External environmental pressures, according to construction researchers, have a critical role in determining competitive advantages among rivals in the construction industry due to their vital influence on organizational performance [7]. Pati et al. (2018) expanded on this claim, concluding that an organization's external environment is a source not only of opportunities but also of challenges because they are beyond the control of the organization, they are ubiquitous, and they have a significant impact on performance [8]. Oyewobi et al. (2020) believe that environmental munificence promotes organizational stability and reduces the need for alignment [9, 10]. This is because firms must quickly adapt to more competitive situations.

The relationship between external demands for change, as seen through the lens of institutional theory, and the adoption of increasingly complex performance assessment systems as a response to these changes, is studied using models from construction enterprises. Regulatory guidance (coercive), professionalization of new methods embraced by the industry (normative), and emulating best practices from outside the sector are all examples in the context of construction firms (mimetic). However, comparing performance with competitors may have the unintended consequence of encouraging isomorphism, i.e., the propensity to be analogous to other organizations for uniformity. The strength of Institutional Theory, which depicts the external world as an institutional environment that exerts absolute pressure on companies to comply with the standards of the industry in which they operate, is used to analyze these external variables [10]. Consequently, it is critical to uncover these external environmental elements that can impose this pressure. Despite this, only a few academics have investigated all the three isomorphic pressures simultaneously. Beyond simple answers to institutional demands, the possibility for institutional pressures to act as mediators has received insufficient consideration. There is a need for a more fine-grained description of how institutional constraints affect a construction company's performance, so as to effectively reflect institutional pressures within a construction organization. Such a consideration could help us gain better theoretical insight and empirical proof of how construction performance outcomes are influenced by institutional pressures.

Many scholars claim that low productivity, a fall in the industry's contributions to GDP, as well as operational failures and liquidations, are all caused by construction businesses' meager performance in emerging countries. Although, proportionately, most articles (reports) on these are predicated on questionable proof, the need to assess their effects on an organization's performance is paramount as it may raise their awareness before the adoption of new projects. Moreover, the World Bank estimates that the war in Syria has caused \$200 billion in damage, but on the other hand, the UN Economic and Social Commission for West Asia (ESCWA) estimates the entire cost of returning Syria to its 2010 state to be about \$400 billion. Such sums are enormous, thereby making it difficult to believe that such amount of resources would be discovered fast or readily [11]. The immense obstacles are beyond just mine clearance, physical infrastructure, and housing reconstruction; a colossal loss of skilled labour, economic recession, currency depreciation, and the collapse of public services are only a few of them [12]. As a result, the construction industry, which is already crippled, will bear a tremendous toll. Despite the unavailability of official data, Maya et al. (2014) claims that for the Syrian construction industry its recent performance has been frail, with a much lower annual GDP contribution in the last era [13]. This difficulty, according to Devarajan et al. (2017), is due to major disruptions in raw material supply chains which have been orchestrated by the war [14]. This logic is consistent with the claim that wars permanently diminish GDP per capita by 10% to 15%, which results in a loss of performance by roughly 18% [15]. To some extent, a number of accounts of these claims are not without questionable proof since there is little awareness of the impact of environmental conditions on the performance outcomes of the running construction enterprise in Syria. As a result, it is critical to clarify the ambiguous conclusions about the relationship between external environmental factors, institutional pressures, and the performance outcomes of construction enterprises. Therefore, a complete model that incorporates these aspects in the context of the Syrian construction industry is required. This study uses data from a survey of Syrian construction enterprises to create a structural equation model (SEM) to answer these research questions.

## 2. Literature Review

### 2.1. Construction Firm Performance Outcomes

The definition of performance has been argued for decades as the concept was present as a dilemma not only in its definition but also in its measurement [16]. However, Wu (2018) defines performance as a measure of the effectiveness and efficiency of an organization's mechanism or process to achieve its desired outcomes [17]. Owing to models' multiplicity generally and in construction particularly, most organizations have been perplexed, yet they gravely crave optimal performance. Various operational environments and varying challenges mean that performance measures should be in close alignment with their desired outcomes so as to secure their survival in the turbulent construction business environment [18]. It is essential to note that these construction industry measures are not homogeneous, and their outcomes cannot be measured using one physical measurement unit. The heterogeneous findings must be recognized, and ways must be created to interpret them [19].

Furthermore, construction firms' performance as a discipline, is growing in depth [20]. More than traditional performance metrics can deliver, today's construction enterprise require feasible information across a greater breadth of activities; besides this, decision-makers are required to select the policy that maximizes their expected utility among all conceivable outcomes [21]. Therefore, owning a detailed portfolio of performance metrics with the provision of an advance indication of the construction firm's business position and an enhanced prediction of performance outcomes becomes essential. Many scholars measured performance at the project level [22]. In the case of Syria, only a few efforts have been made to find usable indicators for the measurement of the outcomes of construction projects. Nevertheless, no information about these companies' overall performance has been provided [23]. Primary empirical research in Syria has revealed that industries that offer construction services intermittently, do not steadily utilize performance management procedures in projects; bringing about deleterious consequences on projects' performance (e.g., complete abandonment of the project) [24].

Given this fact, this study assessed a set of performance measures at four main perspectives (environmental performance, customer satisfaction performance, financial performance, internal business process performance).

## 2.2. Conceptualization of External Environmental Factors

Researchers in construction management have spent a lot of time trying to figure out what factors influence the success of construction companies [25–27]. Although there is sufficient knowledge of external environmental factors within the construction industry, yet their definition is sketchy. Black et al. (2019) defined the notion as an all-encompassing concept that encompasses all external components and influences that have an impact on a company's operations and to which it must adapt or react in order to maintain its operational flow [25]. These factors can be considered as exerted pressure on organizations to identify their strengths and limitations, as well as create systems to recognize and adapt to relevant business opportunities and dynamic business environments to mitigate or eliminate business threats. Furthermore, unique environmental drivers are acknowledged to produce higher outcomes for firms in various environmental scenarios [26]. The variation of these factors between studies has made the reasons for studying specific factors over others unclear.

Attempts have also been made to understand the relationship between the external environmental factors affecting organizations performance. According to Masrom et al. (2019) the political environment is the most critical factor influencing indigenous Nigerian construction contractors' performance [28]. Political environment has a significant negative effect on firms' productivity [29]. Economic and financial performance of construction firms are highly dependent on the degree of global economic activity, as well as the resources available to complete the work, which plays a significant role in increasing construction company performance [30]. An empirical study carried on by Sun et al. (2009) contends that technological environments are typically out of the project teams' control since their existence and evolution are not dependent on any individual project, such as utilizing new materials, adopting new construction methods, and technology complexity [31]. In the meantime, construction researchers, have asked for better methods to examine how technology influences a construction company's performance [32]. Therefore, companies (both the sender and receiver) must thoroughly understand what is being transferred, with a predefined product easier to transfer than a vague concept [33]. Mak et al. (2021) presented rich insights into comprehending how socio-cultural meanings appeared in organizational discourse when top Hong Kong organizations articulated their goals for and participation in their community as elements of their practices to be socially legitimized [34]. Daineko et al, (2021) argued that the socio-cultural environment has a positive influence on performance of construction firms [35]. Many studies conclude that there is a substantial effect of external environmental factors (economic environment, socio-cultural environment, technological environment, and political environment) on a construction firm's performance. However, these studies reported inconsistent findings, and how these components interact to produce improved performance is largely unknown, especially in the construction industry [7]. Hence this study will empirically investigate how these external environmental factors can causally explain performance heterogeneity within the construction industry. To structure the course of this investigation and in congruent to Figure 1, the following hypotheses are provided:

**Hypothesis 1.** Political environment influences the performance outcomes of construction firms.

**Hypothesis 2.** Economic environment influences the performance outcomes of construction firms.

**Hypothesis 3.** Technological environment influences performance outcomes of construction firms.

**Hypothesis 4.** Socio-cultural environment influences performance outcomes of construction firms.

## 2.3. Use of Institutional Pressures as a Mediating Factor

The institutional theory states that organizations operate in a regulated environment or organizational field that requires conformity to social and legal requirements which apply pressures [10]. As a result, organizations adapt their processes, structures, and practices to ensure their actions are compatible with environmental requirements [36]. This adaptation process tends to become homogenous over time due to various pressures exerted upon organizations operating in the same environment, reducing heterogeneity between different organizations and ensuring they fulfill the

environment's demands. Isomorphism is the result of the reduction of heterogeneity between organizations [37]. The organization manages its performance through a set of measures that have been strategically aligned through an institutional isomorphism process [10]. According to this theory, a firm's ability to respond to the external and internal context in which it operates and maintains its acts and behaviours is crucial to its survival [38, 39]. On the one hand, formal and informal activities between internal groups within the organization result in the institutionalization of norms, values, structures, and social behaviours [40]. The external context, on the other hand, is concerned with the likelihood of establishing many relationships between the firm and the regime's norms and rules, professional bodies (authorization and certification), and other organizations, particularly those in the same industry [41].

External isomorphic pressures, whether coercive, mimetic, or normative, cause organizations to become homogeneous in their architecture and processes, according to institutional scholars. Coercive isomorphism is caused by the pressure exerted by policies, regulations, or rules imposed by external stakeholders. Mimetic isomorphism arises when organizations imitate the conduct or techniques of other organizations in order to be superior in the face of uncertainty. Finally, when individuals or groups transmit norms and views from outside the organization into the organization (for example, due to persons with specific education or degrees), the organization responds with normative isomorphism. Because firms are frequently subjected to more than one sort of pressure, the distinctions between these three types of pressures are not always evident [42]. Although these pressures can arise at the same time and can be difficult to differentiate in practice, the institutional theory supposes that they are caused by different factors [10, 43, and 44]. Organizations succumb to these isomorphic forces over time, adapting their structures, cultures, and outputs to achieve legitimacy, thereby becoming more homogeneous and enabling access to resources necessary for survival and success [45]. Although Pawel & DiMaggio (1983), are mostly responsible for the notion of institutional isomorphism, many other academics have expanded on it, particularly since researchers have begun to investigate why organizations respond differently to the same constraints [10, 46]. Dolnicar et al. (2008) added that clarity of organizational mission and dedication to it are critical in determining how an organization reacts to institutional pressures [47]. This isomorphism is related to irregularity in institutional or government policies, laws, or regulations that are stringent and potentially affect construction organizations [9].

This study argues that construction firms react to institutional pressures and external environmental factors differently depending on how they understand the influence that external pressures exert on the performance outcomes. Their response to these pressures reflects their understanding of their impact on firms' performance. To demonstrate this argument, this study's model incorporates factors responsible for heterogeneous performance (external environmental factors - institutional pressures), tagged as predictive (independent) or explanatory variables, and performance (the outcome variable). They suggest that the organization's superior performance is contingent upon external environmental factors and institutional pressures. The hypotheses which are in conformity with Figure 1, are given as follows:

**Hypothesis 5.** Institutional pressures influence performance outcomes of construction firms.

**Hypothesis 6.** The relationship between the political environment and the performance outcomes of construction firms is mediated by institutional pressures.

**Hypothesis 7.** The relationship between the economic environment and the performance outcomes of construction firms is mediated by institutional pressures.

**Hypothesis 8.** The relationship between the technological environment and the performance outcomes of construction firms is mediated by institutional pressures.

**Hypothesis 9.** The relationship between the sociocultural environment and the performance outcomes of construction firms is mediated by institutional pressures.

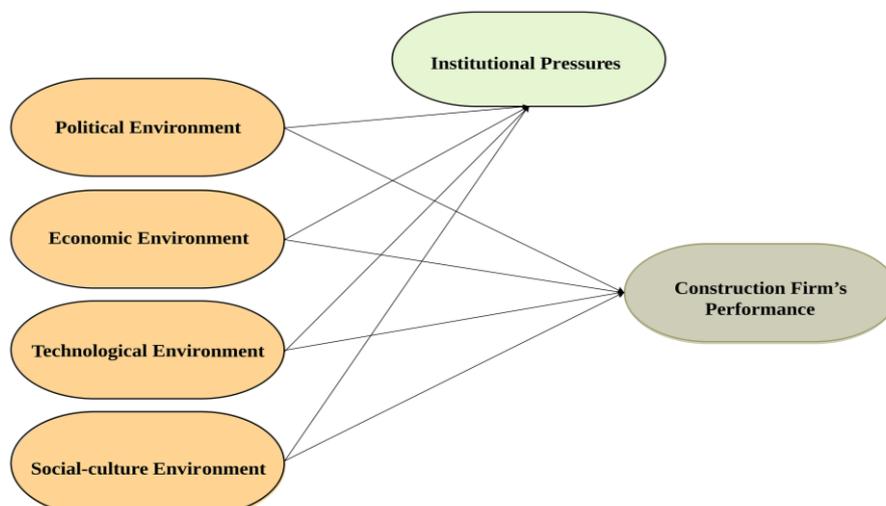


Figure 1. Conceptual Model

### 3. Methodology

This study utilises a deductive strategy following quantitative techniques, which is a frequently used methodology in the social sciences. The data for this study were gathered at a single-point-in-time via a structured questionnaire hinged on a 5-point Likert's scale to gauge feedback to the survey, ranging from 1- Strongly Disagree; 2- Disagree; 3- Neutral; 4- Agree; 5- Strongly Agree; this study is cross-sectional. To improve dependability and ensure the questionnaire's clarity for the study to build the final research instrument, 25 construction firms in the research field (see [48]) were considered for a pilot survey. In the Syrian construction sector, sizeable civil and building construction companies attract more attention. The study's target demography was public-sector construction businesses in Syria, which served as a unit of evaluation. The unit of observation was the professionals who worked for the companies, who were sampled via the snowball approach. A power analysis was used to ascertain the size of the sample for this investigation using the software package G\*Power 3.1.9.4 [49]. The Investigation's sample size was determined using the variable equations of five (5) predictors based on this G\*Power model, as depicted in Figures 2 and 3. There were enough copies of the questionnaire to make up a minimal sample of 138 assumptions for PLS-SEM. As a result, 250 surveys were distributed, with 197 valid questionnaires received directly through responses and emails, and the response rate was 78.9%, which was considered acceptable.

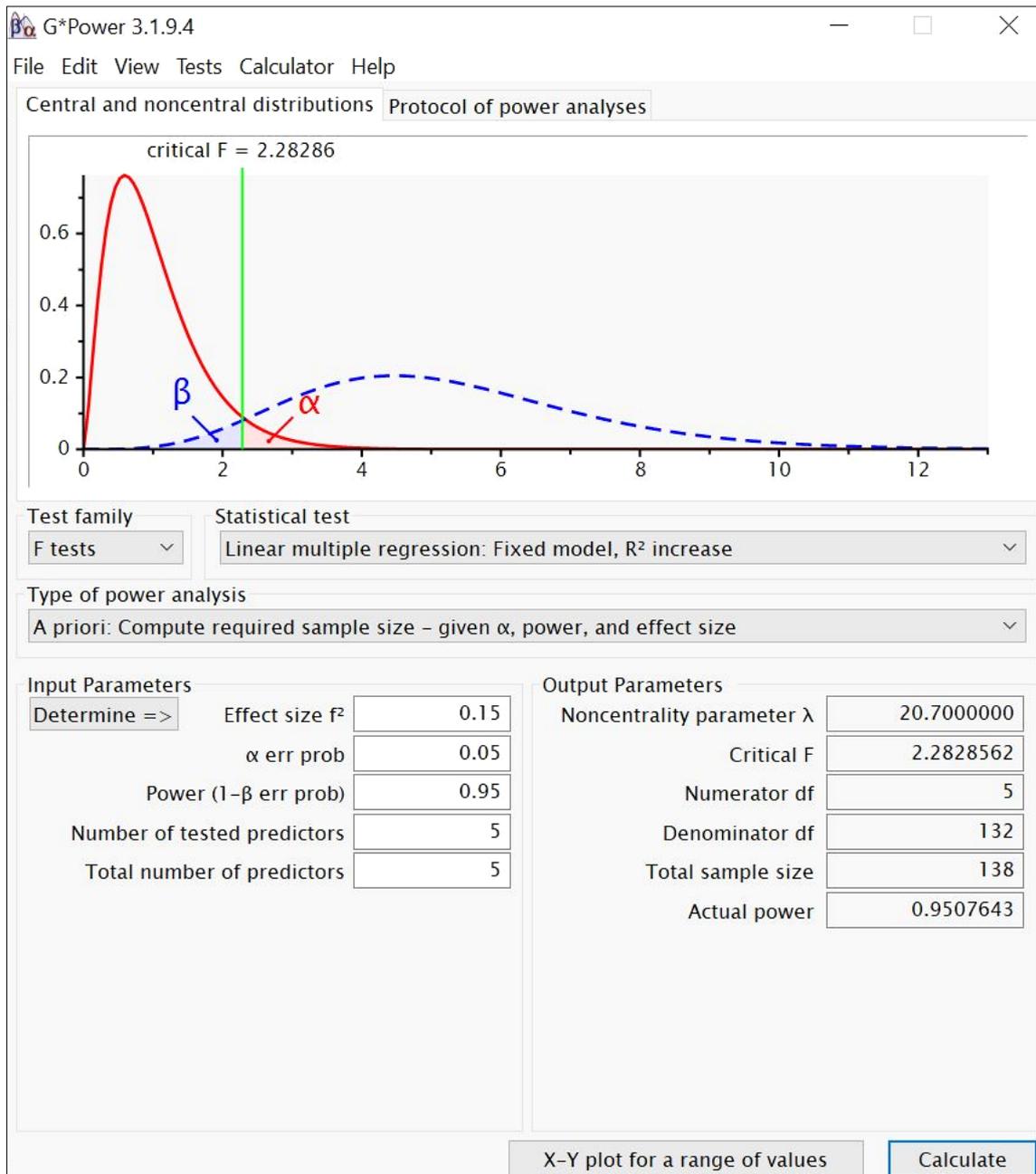


Figure 2. Medium Effect Power Analysis via an X-Y Plot

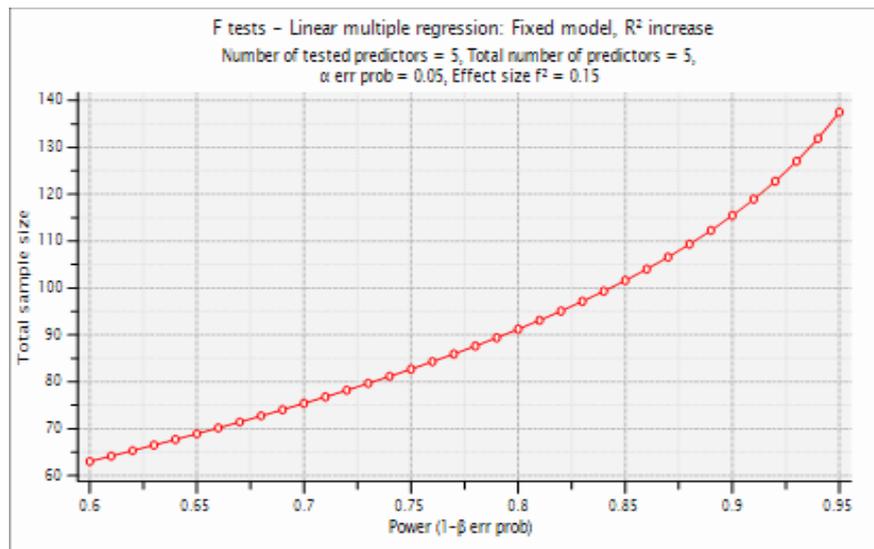


Figure 3. The Medium Effect Power Analysis

### 4. Results and Discussion

A variety of statistical approaches, like structural equation and regression modelling, have been employed to verify models in the construction management literature. The PLS path modeling is adjudged to be the best procedure for this investigation for specific reasons: To begin, PLS path modeling holds the prospects to estimate the correlations between the constructs (structural model) and the correlations amid the markers and the markers’ corresponding latent constructs (model for measurement), simultaneously [50]. Second, PLS path modeling is arguably proper since it reduces the demand for distributional assumptions and can generate unbiased parameter estimates with limited datasets, which may be insufficient for Amos or Lisrel modeling [51].

#### 4.1. Respondents' Demographic Distribution

A valuable aspect of the sample size is the demographic profile of respondents. The profile can be considered if it recognizes resemblances and variations within the following units: position, gender, qualification, and specialization in the company. A sample of professionals from construction firms working in Syria were asked to complete 82 questions on a five-point Likert scale, comprising demographic and informative questions about their opinion on the effects of environmental factors and institutional pressures on the performance outcomes of construction organizations (Table 1).

Table 1. The respondents' demographic distribution

Demographic Factor	Category	Frequency	Percentage (%)
Position in the firm	Managing Director	10	5.1
	Project Manager	27	13.7
	Engineer (Architect, structural, electrical, mechanical, Planner)	126	64.0
	Site Manager	29	14.7
	Quality Officer	5	2.5
	Foreman	0	0
	<b>Total</b>		<b>197</b>
Level of education	Vocational Study	11	5.6
	BSc	149	75.6
	MSc	26	13.2
	PhD	11	5.6
	<b>Total</b>		<b>197</b>
Gender	Male	106	53.8
	Female	91	46.2
	<b>Total</b>	<b>197</b>	<b>100</b>
Business activities in the firm	Government officials (Specialist, Professional, Mayors & Engineer)	156	97.2
	Contractors	26	13.2
	Consultants	15	7.6
	Client/ client representative	0	0
	<b>Total</b>		<b>197</b>

## 4.2. The Measurement Model

### 4.2.1. The Validity of Reliability and Convergence

Reliability of individual items, internal consistency, and validity discriminant were examined to determine the used scales' psychometric properties in this study. The outer loadings of the measure of each construct were scrutinized first, to establish individual item dependability [52]. Following standard practice for retaining items with loadings above 0.70, only 36 items remained for the entire model and they portrayed loadings between 0.714 and 0.951 (refer to Table 2, Figure 4). The coefficient of composite reliability was then adopted to decide the measure's internal consistency reliability. The internal consistency reliability readings were based on the rule of thumb proposed by Hair et al. (2011); as they recommended that the coefficient of composite reliability has to be a minimum of 0.70, and AVE is required be 0.50 or more [53]. As depicted in Table 2, each latent construct's composite reliability coefficients varied from 0.8486 to 0.9657, and the AVE varied from 0.5593 to 0.86. The consistency reliability of the measures adopted in the recent research is judged sufficient because each of the latent constructs exceeds the minimum thresholds of 0.70 and 0.50.

**Table 2. Validity results of measurement model-convergent**

Constructs	Items	Loading	AVE	CR
Construction Firm's Performance	I-11	0.82	0.6856	0.9657
	I-12	0.814		
	I-13	0.766		
	I-14	0.875		
	I-16	0.726		
	I-17	0.815		
	I-18	0.945		
	I-19	0.863		
	E-1	0.783		
	E-4	0.714		
Political Environment	E-7	0.821	0.8008	0.9413
	E-9	0.879		
	E-10	0.909		
	PE-1	0.827		
Economic Environment	PE-2	0.895	0.8485	0.9572
	PE-3	0.938		
	PE-4	0.916		
	EE-1	0.912		
Technological Environment	EE-2	0.911	0.86	0.9485
	EE-3	0.921		
	EF-4	0.939		
Social-culture Environment	TE-1	0.902	0.652	0.8486
	TE-2	0.928		
	TE-3	0.951		
Institutional Pressures	SE -2	0.863	0.5593	0.9191
	SE -3	0.755		
	SE-6	0.801		
	CP-1	0.785		
	CP-2	0.837		
	CP-3	0.827		
	CP-4	0.726		
	MP-1	0.79		
	MP-2	0.791		
MP-3	0.739			
	NP-1	0.724	0.793	
	NP-3	0.793		

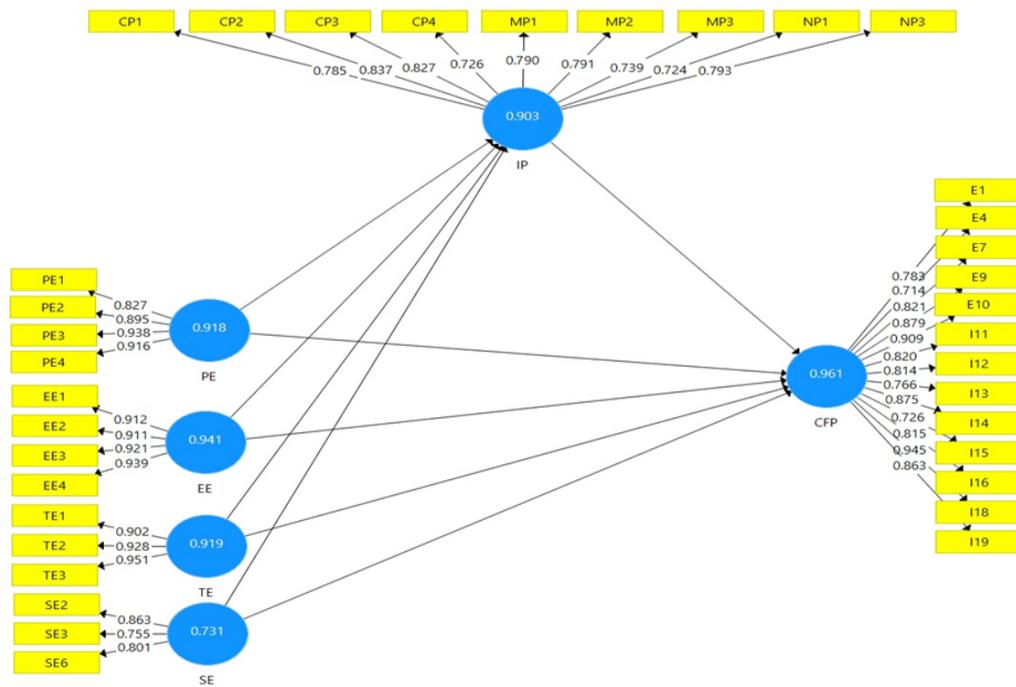


Figure 4. Measurement Model (Outer Loadings, Cronbach's Alpha)

4.2.2. The Validity of Discriminant

The goal of the discriminant validity evaluation is to verify that a reflective construct in the PLS path model has the strongest correlations with its indicators (in contrast to any other construct) [54]. This evaluation by smart-PLS has three validation methods for discriminant validity: examining the cross-loadings, Fornell-Larcker criterion, and Heterotrait-monotrait ratio of correlations (HTMT) criterion results.

Cross Loadings

Examining cross-loadings is the most common method for determining discriminant validity [55]. Table 3 shows the results of cross-loadings of the indicators to assess the discriminant validity of the measurement model.

Table 3. Discriminant Validity - Cross Loading

	CFP	PE	EE	TE	SE	IP
E1	0.7835	0.1989	0.0224	0.6191	0.6475	0.4781
E4	0.7141	0.1387	-0.0591	0.3751	0.5815	0.5438
E7	0.8214	0.2026	0.0704	0.5117	0.5418	0.7045
E9	0.879	0.6178	0.4742	0.733	0.7266	0.777
E10	0.9092	0.2398	0.1002	0.6155	0.5664	0.5644
I11	0.8198	0.5224	0.3591	0.5832	0.7366	0.6821
I12	0.8136	0.3212	0.1925	0.527	0.5185	0.4633
I13	0.7659	0.4487	0.4277	0.6313	0.5511	0.744
I14	0.8747	0.3808	0.2674	0.7644	0.6985	0.7074
I15	0.7264	0.2882	0.2134	0.6095	0.7156	0.7714
I16	0.8149	0.3035	0.0694	0.5941	0.4428	0.5473
I18	0.9452	0.3642	0.2509	0.6263	0.7209	0.6247
I19	0.8628	0.2557	0.0579	0.6821	0.6843	0.5684
PE1	0.2604	0.8265	0.6872	0.4444	0.3338	0.3007
PE2	0.4171	0.8951	0.8542	0.437	0.6134	0.4824
PE3	0.2617	0.9379	0.8182	0.4764	0.5306	0.404
PE4	0.437	0.9159	0.8149	0.5539	0.6519	0.5646
EE1	0.2586	0.863	0.912	0.5587	0.5539	0.354
EE2	0.2215	0.7368	0.9114	0.3818	0.3282	0.2125
EE3	0.0903	0.8933	0.9213	0.3772	0.3893	0.3167

EE4	0.2568	0.796	0.9394	0.3219	0.493	0.3287
TE1	0.6867	0.5067	0.4244	0.9022	0.7525	0.692
TE2	0.6108	0.4228	0.3381	0.928	0.4723	0.4774
TE3	0.7439	0.5521	0.4768	0.9513	0.6326	0.6709
SE2	0.6247	0.4603	0.3801	0.6339	0.863	0.6058
SE3	0.6809	0.4802	0.4308	0.5681	0.7547	0.5715
SE6	0.5414	0.563	0.3826	0.4372	0.801	0.6537
CP1	0.5247	0.4798	0.4314	0.7499	0.6161	0.7854
CP2	0.4843	0.5383	0.3858	0.6029	0.6796	0.8373
CP3	0.7099	0.5308	0.4564	0.4775	0.8269	0.8272
CP4	0.6112	0.2375	0.1031	0.6681	0.6644	0.7258
MP1	0.2794	0.3368	0.131	0.2366	0.3478	0.6898
MP2	0.2771	0.5084	0.3181	0.3273	0.3698	0.691
MP3	0.5563	0.4333	0.2185	0.2766	0.5004	0.7393
NP1	0.7162	0.2428	0.0917	0.5644	0.4815	0.7241
NP3	0.6571	0.1798	0.0973	0.4155	0.3945	0.6932

The indicators' cross-loadings indicated that an indicator's outer loading on the attendant construct was greater than all of its other loadings on other constructs on each item row, as shown in Table 3. There was no concern with discriminant validity in these results.

**The Fornell-Larcker Criterion**

The square root of each construct's AVE should be more than the construct's highest correlation with every other construct in the model, according to the Fornell-Larcker criterion [54]. The discriminant validity of the measurement model was examined via the Fornell-Larcker criterion, and the outcomes are displayed in Table 4.

**Table 4. The Latent Variable Correlations-Square Root of AVE**

	CFP	EE	IP	SE	PE	TE
CFP	<b>0.828</b>					
EE	0.233	<b>0.9211</b>				
IP	0.7666	0.3362	<b>0.7479</b>			
SE	0.7652	0.494	0.7564	<b>0.8075</b>		
PE	0.4029	0.8946	0.5112	0.6209	<b>0.8949</b>	
TE	0.74	0.4521	0.6729	0.6794	0.5388	<b>0.9273</b>

Table 4 reveals that the value of the off-diagonal elements was less than the square root value of AVE. As a result, it is demonstrated that each latent construct measurement was discriminatory to each other based on the Fornell-Larcker technique.

**HTMT Discriminant Criteria**

Through a simulation study, Henseler et al. (2015) show that these methodologies do not convincingly recognize the absence of discriminant validity in everyday research situations and recommend an alternative approach to evaluate discriminant validity based on the multitrait-multimethod matrix: the heterotrait-monotrait ratio of correlations (HTMT) [55]. If the HTMT value is less than 0.9, discriminant validity between two reflective constructs has been generated, according to this method. Table 5 displays the findings of the HTMT discriminant criteria used to test the measurement model's discriminant validity.

**Table 5. The HTMT discriminant criteria**

	CFP	EE	IP	SE	PE	TE
CFP	-					
EE	0.2647	-				
IP	0.7738	0.3625	-			
SE	0.802	0.5762	0.8916	-		
PE	0.409	0.8505	0.5515	0.726	-	
TE	0.7739	0.4715	0.6895	0.8124	0.5739	-

As captured in Table 5, the entirely HTMT values of the latent constructs were beneath 0.90. As a result, it validates that the measure of each latent construct was completely distinct from one another.

### 4.3. The Structural Model

#### 4.3.1. Path Coefficient of the Research Hypotheses

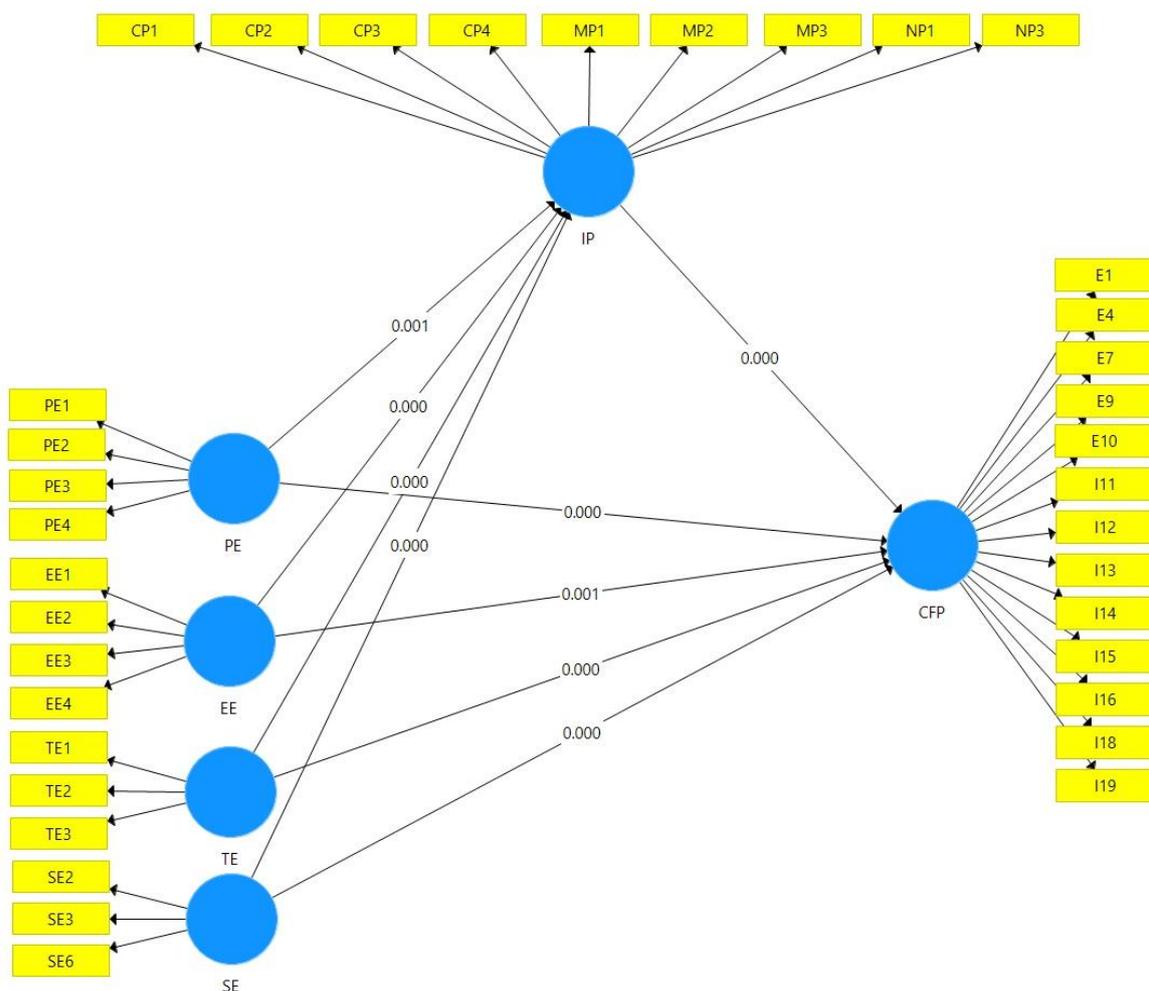
To confirm the statistically significant path for the coefficients, a bootstrapping technique with 5,000 interactions and 197 cases was used to yield t-values and standard errors [54]. Table 6 displays the significant paths of the coefficients for this study model.

**Table 6. The Research Hypotheses Path Coefficient**

	Relationship	Std. Beta	Std. Error	T-value	P-value	Decision
H1	Political Environment → Performance Outcomes of Construction Firm	0.4881	0.1032	4.7299	0.000	Supported**
H2	Economic Environment → Performance Outcomes of Construction Firm	0.3996	0.1295	3.0854	0.001	Supported**
H3	Technological Environment → Performance Outcomes of Construction Firm	0.2956	0.0868	3.4048	0.000	Supported**
H4	Socio-cultural Environment → Performance Outcomes of Construction Firm	0.406	0.11	3.6896	0.000	Supported**
H5	Institutional pressures → Performance Outcomes of Construction Firm	0.378	0.0572	6.6126	0.000	Supported**

Significant at P\*\*= < 0.01, p\* < 0.05

To examine the latent variables' hypothesized correlation, the diagrammatical histrionics of the structural modelling analysis results were proposed. These study hypotheses are stated in a directional form and the strength of the tow-tailed test. The established (supported) finding from Table 6 shows the correlation between (political environment, economic environment, technological environment, socio-cultural environment, institutional pressures) and construction company's performance outcomes based on standard beta value and P-value is positive and significant.



**Figure 5. Structural Model (P-value)**

**4.3.2. The Coefficient of Determination\_R<sup>2</sup>**

The R<sup>2</sup> number is defined as the fraction of variance in the dependent variable(s) that can be described by one or more predictor variables. According to Chin (1998), R<sup>2</sup> estimates greater than 0.67 are considered strong, 0.33 to 0.67 are considered moderate, 0.19 to 0.33 are deemed weak, and R<sup>2</sup> estimates below 0.19 are considered undesirable [56]. The research model revealed that all the five exogenous latent variables (political environment, economic environment, technological environment, socio-cultural environment, institutional pressures) showed 75.6 percentage variance in construction enterprise performance outcomes. In the same vein, (political environment, economic environment, technological environment, socio-cultural environment) showed 65.11 percentage variance in construction company performance outcomes. The endogenous latent variable is conclusively adjudged to have a high level of R-squared threshold values.

**4.3.3. The Effect Size\_F<sup>2</sup>**

Through a shift in R<sup>2</sup> values, the effect size would reveal the relative impact of a given external (exogenous) latent variable on the internal (endogenous) latent variable(s), herein, if the F<sup>2</sup> estimate was measured as 0.020, 0.150, or 0.350, the exogenous latent variable reflects minor, average, and major effects, respectively [56]. Outcomes have confirmed effect sizes of 0.022 for political environment, 0.0635 for economic environment, 0.2675 for technological environment, 0.2238 for socio-culture environment, and 0.1007 for institutional pressures, considering small, small, medium, medium, small effect size, respectively

**4.3.4. The Predictive Relevance\_Q<sup>2</sup>**

The Stone–Geisser test is used in this study to determine the predictive validity of the entire research model employing blindfolding techniques. The model's predictive value was proven by a Q<sup>2</sup> (0.4716 – 0.326) statistic above zero in favour of the investigated internal latent variables (construction company performance – institutional pressures), signifying model's predictive significance [57].

**4.3.5. The Goodness of Fit of the Model\_GoF**

GoF is the geometric mean of both the extracted average variances (AVE) and the endogenous variables' average R<sup>2</sup> [58]. The GoF model in this study has a value of 0.804, which is more than 0.36, implying that the GoF model is substantially adequate to consider significant global PLS model validity.

**4.4. Mediating Effect Test**

To determine the degree of the intervening influence of institutional pressures on the correlation between external environmental factors and construction company's performance outcomes, the present research used the bootstrap methodology with PLS-SEM [59, 60]. Firstly, the bootstrapped indirect effect was examined, which should be the correlation between IV and DV via mediator-must be significant, P-value must be less than 0.05. Table 7 shows the bootstrap of the indirect effect.

**Table 7. Bootstrap the indirect effect (Total indirect effect)**

Relationship	P-value	Decision
Political Environment → Construction Firm Performance Outcomes	0.0203	Significance
Economic Environment → Construction Firm Performance Outcomes	0.0088	Significance
Technological Environment → Construction Firm Performance Outcomes	0.0011	Significance
Socio-cultural Environment → Construction Firm Performance Outcomes	0.0000	Significance

Second, the findings of the Bootstrapped Confidence Interval (Lower and Upper Level) analysis are presented in Table 8.

**Table 8. The Bootstrapped Confidence Interval (Lower and upper level)**

Original sample = standard beta								
	IV- -> Mediator	Mediator -> DV	Automatic calculation	Standard deviation	Automatic calculation	Bootstrapped Confidence Interval		
	Path a	Path b	Indirect Effect	SE	t-value	95% LL	95% UL	Decision
M1(PE)	0.400	0.265	0.106	0.046	2.320	0.016	0.196	MEDIATOR
M2(EE)	-0.406	0.265	-0.108	0.041	-2.621	-0.188	-0.027	MEDIATOR
M3(TE)	0.30	0.265	0.079	0.02	3.261	0.031	0.126	MEDIATOR
M4(SE)	0.51	0.265	0.135	0.03	5.200	0.084	0.185	MEDIATOR

Note: The Bootstrapped Confidence Interval values should exclude a true zero value

The approximations subsequent to using the mediator analysis approach to assess the intervening influence of institutional pressures on the correlation between the internal and external latent variables are shown in Figure 6, as well as Tables 7 and 8 [59, 60].

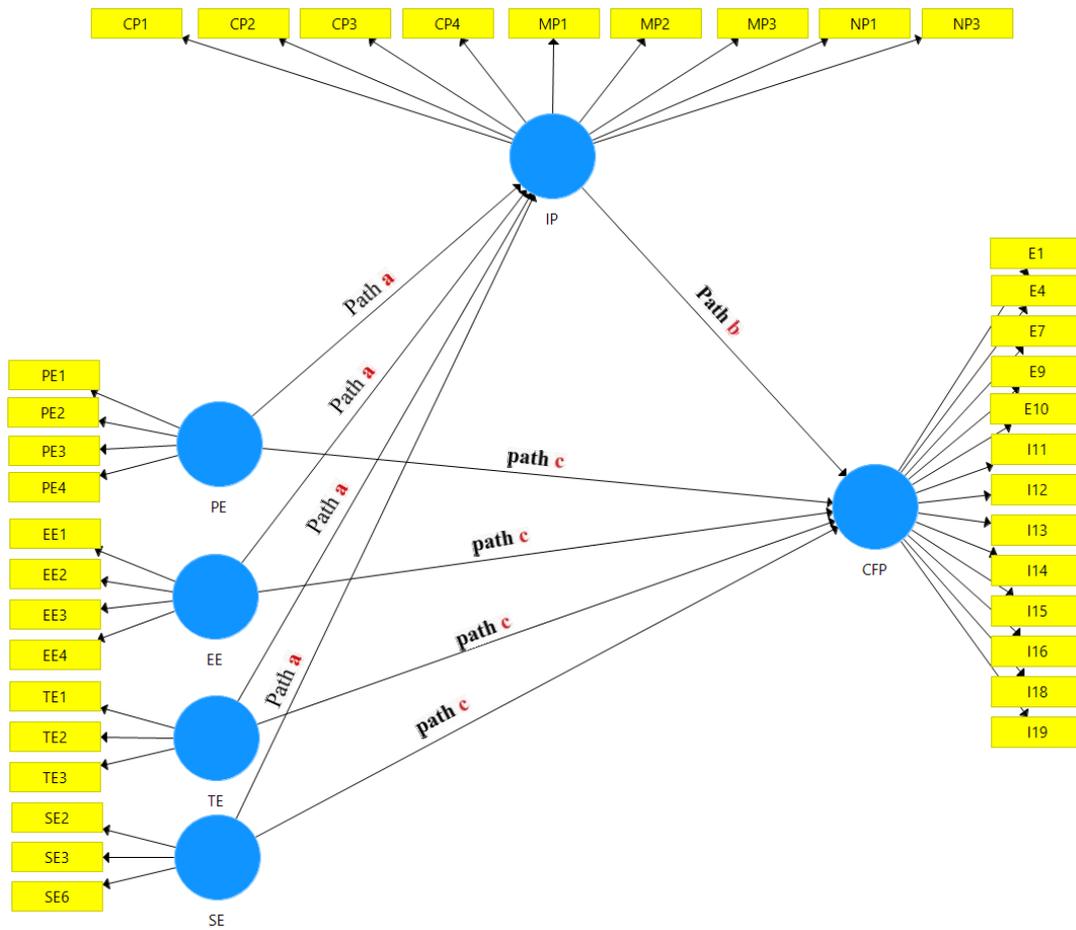


Figure 4. Mediation path Model

Hypothesis 6 claims that institutional pressures considerably moderate the relationship between the political climate and the performance outcome of construction firms. Though, the upshot is statistically significant for bootstrapping the indirect impact with a P-value of 0.0203, indicating that there is a significant connection between the political climate and the performance results of construction enterprises due to institutional pressures. A true zero value should be excluded in the bootstrapped confidence interval values (95 percent LL = 0.016, 95 percent UL = 0.196), as indicated in Table 7. Consequently, Hypothesis 6 was endorsed, and institutional pressures mediate the relationship among political environment and the construction firm's performance outcomes. The mediator type based on Baron et al. (1986), and Nitzal et al. (2016) , as shown in Table 9, was a complementary partial mediation effect [61, 62].

Table 9. Type of Mediator

	Direct Effect's P-value of the (C')	Decision	Original Sample of Indirect Effect's (a*b)	Original Sample of Direct Effect's (C')	Mediator Type
M1(PE)	0.0424	Significant	0.106	0.1813	Complementary Partial Mediation
M2 EE)	0	Significant	-0.1077	-0.4033	Complementary Partial Mediation
M3(TE)	0	Significant	0.0786	0.4566	Complementary Partial Mediation
M4(SE)	0	Significant	0.1347	0.5417	Complementary Partial Mediation

Similarly, Hypothesis 7 was verified, stating that institutional pressures strongly moderate the correlation between the economic environment and the performance outcomes of construction enterprises, with a P-value of 0.0088 for bootstrapping the indirect impact. Hypothesis 7 was shown to be true, and institutional pressures have a mediating effect on the relationship between the economic environment and construction business performance results, as evidenced by the bootstrapped confidence interval values (95 percent LL = -0.188, 95 percent UL = -0.027). The mediator type, as shown in Table 9, was a complementary partial mediation effect.

Hypothesis 8 was also verified, stating that institutional pressures strongly moderate the association between technological environment and construction company performance outcomes, with a P-value of 0.0011 for bootstrapping the indirect impact. Hypothesis 8 was endorsed, and there is a mediation impact of institutional pressures on the link between technological environment and construction enterprise's performance outcomes, as evidenced by the bootstrapped confidence interval values (95 percent LL = 0.031, 95 percent UL = 0.126). The mediator type, as shown in Table 9, was a complementary partial mediation effect.

Lastly, Hypothesis 9 was validated, stating that institutional pressures strongly mediate the link between socio-cultural environment and construction firm performance outcomes, with a P-value of 0.000 for the indirect effect. It doesn't include a true zero value because of the bootstrapped confidence interval values (95 percent LL = 0.084, 95 percent UL = 0.185). As a consequence, Hypothesis 9 was confirmed: institutional pressures have a mediating effect on the relationship between socio-cultural environment and construction business performance. The mediator type, as shown in Table 9, was a complementary partial mediation effect.

Investigating the consequences of the exogenous environmental factors on the construction enterprise performance outcomes confers substantial benefits to construction organizations and construction management researchers. In line with Hypotheses 1, 2, 3, and 4, it was affirmed that the four constructs of the external environment examined in this study, have a positive and significant correlation with construction company's performance outcomes. Given the rapidly changing and very competitive climate within which construction companies work in Syria, they must become adaptive, devising creative methods for these forces that will ensure their existence as they also continue to meet and exceed their clients' performance prospects.

This indicates that the Syrian construction sector is not entirely free from the influence of political factors (such as tax policies, tariffs, government instabilities, etc.) and, as a consequence, will have an impact on construction firm performance. This agrees with the findings of Akanni et al. (2015), who argue that political factors are related to the performance outcomes of construction firms [63]. Similar results were obtained for H2, H3 and H4. The results of H2 are in agreement with the findings of Asamoah [64] and Bui [30], while the result of H3 is in agreement with the findings of Sun and Meng [31]. The result of H4 in this study is in agreement with the findings of Atuahene and Baiden [65], as well as Oyewobi et al. [9]. Moreover, although the result of H3 in this study is in congruence with the findings of Sun and Meng [31], it runs contrary to the findings of Sait [66], who observed that a negative relationship exists between the technology environments towards firm's performance outcomes. This negative relationship has alluded to the fact that companies tend to allocate their R&D investment to new product development.

Examining the mediating effects of institutional pressures on the link between external environmental factors and construction company performance results provides construction firms with a value-added point. As a result, the findings show that institutional pressures somewhat mitigate the impacts of external environmental factors on the performance of organizations. An integrated investigation of the coercive, normative, and mimetic pressures associated with environmental management should be a top focus in advancing our understanding of construction enterprise performance in a regulated economic framework.

## 5. Conclusion

It is widely understood that the current construction market's distinctive dynamic, as well as the industry's trends toward more complex, specialized, and customer-oriented services, necessitate a more efficient, proactive, and practical strategy to meet these problems. Non-recognition of an organization's external features is a recipe for failure in operations as regards construction firm performance, particularly for construction operations, which are dynamic in nature. This reality raises serious concerns regarding the institutional structures that form the industry and its organizations, as well as how the construction organization is conceptualized, understood, and probed.

We merged two literary streams in this investigation. On the one hand, we investigated the impact of external environmental factors and institutional pressures on the performance of construction firms. On the other hand, we looked at the function of institutional pressures in mediating the bonding strength between external environmental conditions and the performance of construction firms. We were especially interested in analyzing both the positive and negative influences and consequences of external pressures on an organization's performance outcomes. The indicators for the different external pressures proved to yield reliable results. All four were distinguishable. Our model allowed us to measure the influence of all four external pressures simultaneously. Hypotheses were formulated based on evidence from literature and were tested using Smart-PLS 3.

This report presents important findings for construction management. It begins by discussing institutional theory in a broader sense. Performance outcomes have been regarded as an isomorphic process at the project level in previous publications on construction management based on institutional theory. This article viewed performance outcomes as a cross-organizational issue, allowing us to concentrate on the institutional systems at a complex organizational level.

## 5.1. Theoretical and Practical Implications

The implications of this study for construction management are influenced not just by national institutional frameworks but also by environmental factors that are subject to local and global legitimizing influences. As a result, organizations must recognize that external pressures must be consistently considered in their (Performance Measures Framework) tactics, as well as recognize how external pressures can shape the organizations in this field in their quest for legitimacy. This also enables us to comprehend the types of pressures that new entrants will face, as well as how the industry may evolve. An institutional analysis also identifies institutional gaps that stakeholders and policymakers must remedy in order to achieve optimal performance in such a changing environment.

From a theoretical standpoint, the study laid the groundwork for future scholars interested in investigating the causes of performance variation in construction organizations. It also has practical ramifications for construction practitioners and managers, in terms of developing and deploying resources and tactics to achieve exceptional performance. This is the first attempt to assess external environmental elements and institutional pressures as a significant determinant of organizational performance, which should be of interest to management at all levels of the Syrian construction enterprise.

The discoveries should be of interest to chief executive officers, project managers, and others in management positions in construction companies who need an understanding of the types of external pressures that are most prevalent in various business environments in order to improve their companies' performance. These research findings may be of interest to public authorities responsible for the construction sector's performance-related policy formulation and implementation, as well as construction specialists.

Practically, the study has practical implications for owners of construction companies in the construction sector. However, caution should be exercised in interpreting the data, as the findings reveal that organizations function in a changing environment. When some acts and laws grant preferential treatment to a specific category of organizations, decision-makers inside those organizations should take this into account when creating and executing policies. Additionally, when a business climate is considered unpredictable and problematic, construction managers must collect and analyze market and environmental data to lessen uncertainty. The study has important implications for managers who are tasked with making strategic decisions within organizations, as their perception of the business environment will aid in determining which of the complex environmental issues will require more attention and result in better performance outcomes.

## 5.2. Limitations and Future Research Directions

Though this research has offered some insight into the roles of external environmental factors and institutional pressures on construction organizations' performance outcomes, it also has limitations. Because the current study used a cross-sectional methodology, no underlying inferences about the study population can be drawn. As a result, a longitudinal data gathering technique (mixed approach) with more robust methodologies may give superior findings. Furthermore, the findings' generalizability may be constrained due to sample size constraints, as a larger sample size would have allowed for more practical deductions. Future researchers should aim to expand the number of samples for study from the current 197 employed in the current research for improved findings and enhance the variance to get more than 75.6 percent by adding other external pressures. It might potentially be reproduced in a separate clime and with separate samples to further confirm the findings. The findings pave the way for further research in the field of construction management to investigate the role of institutional pressures as a moderator, as well as other charismatic qualities such as legitimacy.

## 6. Declarations

### 6.1. Author Contributions

Conceptualization, H.F. and O.A.; methodology, H.F.; software, H.F.; validation, H.F. and O.A.; formal analysis, H.F.; investigation, H.F.; resources, H.F.; data curation, H.F. and O.A.; writing—original draft preparation, H.F.; writing—review and editing, O.A.; visualization, H.F.; supervision, O.A.; project administration, O.A.; funding acquisition, H.F. All authors have read and agreed to the published version of the manuscript.

### 6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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### 6.4. Conflicts of Interest

The authors declare no conflict of interest.

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