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Evaluating the Causes of Extension-of-Time Requests in the Construction Industry Projects

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ABSTRACT

Background of the Study: The construction industry serves as an important driver of socio-economic growth in the developing countries in terms of urbanization and infrastructural development. However, construction projects often have to face issues of social, political and technical nature, leading to a delayed completion of the projects. Consequently, these delays in the construction projects result in cost escalations, compromised quality and dissatisfaction among the stakeholders. This highlights a need for comprehensive understanding of their root causes. This study thus focuses on examining the underlying causes of Extension of Time (EoT) requests in the construction projects of Pakistan and their consequent impact on the success of these projects.

Methodology: To peruse the research objective, quantitative research using non-probability convenience sampling technique was employed and the data were collected from 252 construction industry professionals such as construction managers, engineers, team members, clients, contractors etc.

Results: The results of this study confirmed that the "Project Management Factors, Project Complexity, Contractual Factors and External Factors" are the most significant factors contributing to the time extension requests in the construction industry projects.

Conclusion: This study suggests that well managed projects having clear understandings of external factors by both the parties are likely to be completed on time.

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Extension of time (EOT), project complexity, construction project delays, project management, economic development, contractual factors.

Introduction

The construction industry is one of the core components of economic development. It advances financial objectives in terms of income generation, employment creation, and achieving income redistribution. The construction industry in Pakistan is very active, which must be seen as an indicator of the accelerated pace of Pakistan's urbanization and infrastructure development. This is an industry that requires speed, characterized by a combination of electronic processing and manual dexterity. Policies and incentives provided by the government, as well as foreign investment, often create opportunities for conflict, often due to bureaucratic hassles and fluctuating economic conditions. The sector remains buoyant and experiences occasional hiccups because of its diverse human resource base and growing need for residential, office, and transport facilities. Construction contracts involve several problems, thus requiring more information, such as legal obligations and detailed definitions of the contract, provisions, etc.

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This research provides recommendations on factors of the extension of time, especially within the construction industry, which is aspiring to apply strategies and procedures in the assessment of similar entitlements. For example, construction projects regarding extension and overtime claims that lead to disruption concerns tend to raise similar fundamental issues on most occasions. Furthermore, achieving an agreement with a global solution to respond to a spectrum of possible outcomes and further agreement terms is not trivial. Additionally, understanding the real issues, such as the establishment of agreement procedures, submission, and evaluation of entitlements, float ownership, concurrent delays, construction plans, and procedures to update project plans, and record keeping, are necessary for the elimination of all unnecessary controversies in the evaluation of time extension claims. Once a project completion date has been set, it will not be considered a breach of contract. The phrase “time being the essence of the project” in fact means the company needs to achieve that milestone for the contract terms. Employers can end the work instantly and address the contract as if they are done if they fail to achieve the marked work progress they desire.

Many contracts state that a project’s implementation is likely to take more time than initially estimated due to unpredictable and uncertain events. In the event there is a delay in the project completion, both the construction contractor and the employer are willing to face the consequences. These project-related obligations are commonly charged under the extension of time clauses, which in the end create another point and the coming into operation of the liquidated damages (LAD) provisions as of the extended date. In this context, the contractor is legally bound under the contractual agreement not to allow the project completion schedule to be missed and must scrupulously follow the set goals and method of working most optimally within their practices to ensure work continues without interruption and to avoid accruing liquidated damages. It does not mean that the contractor should use more manpower or work over and above the planned productive hours to reduce the effect of a client-risk, even if the client opts to compensate the contractor in the same manner as he or she utilizes comparable justification procedures.

The uncontrolled delaying matters on which the contractor is discharged of LAD (Liquidated Damages) through the time extension clauses in the contract, necessitating the additional period within which the contractor must complete the work, are equally crucial. There is also a chance to rearrange the activity, and the client is offered another time limit to bring control back to the project. Nevertheless, using this method, the contractor remains responsible for delivering the completed work within the required time. As much as the contractor may not influence the uncontrollable delaying factor, time is in favor of the contractor. It means the work will be done in an acceptable time, and the employer will not be able to demand liquidated and assessed damages for completion of work beyond the agreed time.

In the present world of various corporate business organizations and government bodies adopting outsourced construction projects, contractors, and project consultants, the government and a large proportion of the community are forming certain issues and defying certain facts and data that are involved in construction delay and dispute claims for time extension between end clients and contractors. This research thus examines the factors that result in time extension claims and subsequently lead to arbitration or litigation in construction projects.

Literature Review

Project Complexity

This includes the sum of the connections between the various components of the project and the many challenges that form project difficulty. In a great number of studies, over-complexity was found to have a measurable impact on the time scale of projects. Bakhshi et al. (2021) claim that an augmentation of complexity is often contingently linked to a rise in risk and uncertainty, thereby creating a delay. Tenders for construction projects in Pakistan often have technical requirements and complexities. It may aggravate these positives as it might make these problems worse. Similarly, complexity frequently results in a rise in risk and uncertainty, which delays the project. Construction projects in Pakistan frequently entail intricate technical specifications, which might make these problems worse. It has been found that EoT requests are significantly correlated with the level of project complexity. Sharma et al. (2021) found that the probability that one seeks an extension for a project increased by 30% if the project was considered difficult. The usual definitions of project complexity encompass aspects such as technical, organizational, and/or environmental complexities, among other factors (Gidado, 2021). Large projects are at a higher risk of being delayed due to multiple interrelated activities. Technical complexity relates to the planning and management of building projects, where components cumulatively affect task execution. Complexity-based projects face problems like scope change, design problems, and the integration of advanced technologies (Rashid & Khalid, 2022). This can have a significant impact on the project schedule and lead to the request for an extension time. The involvement of stakeholders with different expectations and aspirations results in organizational complications. The efficient cooperation of these parties, their coordination, and communication are essential to the project's success. According to Ahmad (2023), the following are some reasons that precede task delays.

Contractual Factors

Contractual factors consist of legal and contractual agreements with related project participants. Some of the main causes of contract delays include unclear contracts, disputes, and poor project management. According to Ali et al. (2022), Pakistan has two primary reasons for requesting EoT: one is the vague and poorly drafted contracts, and the second is revisions or changes in the scope of the project itself. A conducted survey of construction professionals in Pakistan (Ali et al., 2022) stated that the greatest causes of EoT requests included uncertain contract provisions and changes in a project’s scope of work. Further, on the originator's performance, disputes arising from the imprecise distribution of responsibilities in the contract may lead to lengthy discussions and time wastage. The degree of construction project success mainly depends on some contractual factors.

The duration of the projects also depends on the types of contractual arrangements, how provisions are worded, and the methods of solving disputes (Khan & Mahmood, 2021). Whereas time-and-material, cost-plus, and fixed-price contracts imply different effects on project schedules. For instance, where contracts have fixed prices, they create a great incentive to complete a project quickly; however, where the scope varies, problems often emerge (Ali & Niazi, 2022). While the cost-plus arrangements are flexible, they are most likely not as urgent as the fee-for-service models. This means that in a situation where the duration of the project is affected by contract provisions, the provisions should be clear, precise, and unconditional. Unclear terms are another bad thing about terms because they lead to misunderstandings and delays. These risks can be minimized provided there are understood

roles and activities expected of the different parties involved and the contract provisions, as recommended by Hassan et al. (2023). Several issues reinforce the fact that adequate conflict-handling

procedures help determine timely project completion. Accumulated conflict over time leads to significant project delays regarding completion time. The following proposal shows that the use of ADR, such as arbitration and mediation, provides results much faster compared to traditional means (Malik & Akhtar, 2021). Contingent on the economic performance, there will be variations of the available capital, interest rates, and inflation, among other economic factors affecting the project's timetabled performance. It might be because of funding deficits and the increased cost due to the fluctuations in the economy (Rehman et al., 2023).

Project Management Factors

Minimizing delays entails the integration of proper management methods in the project. These are, namely, resource deployment, scheduling, and management of stakeholders involved in the implementation process. More detailed here, Javed et al. (2022) have pointed out that the poorly carried out project management tactics may lead to downright inefficiencies and delays. It is possible to always avoid these risks by employing modern project management techniques and tools. Javed et al. (2022) indicate that poor planning, poor resource management, and inefficient communication with stakeholders are the primary causes of project delays. The report reveals that utilizing highly innovative project management methodologies and practices, including the use of agile-type project management approaches and other matters, can significantly reduce the rate at which EoT requests are made.

Over the time, it may not be noticeable, and time for project delivery is achieved with efficient management of the project. This paper lists planning, risk management, communication, and the use of technology as being inherent in project management activities (Ahmed et al., 2022). It is agreed that project planning is a vital component of project management practice. When projects are concerned, there is always a need for project development that incorporates a schedule, resources, and risk management strategies for projects to be accomplished as planned (Nawaz et al., 2021). Risk management, mitigation, and identification of potential threats are two of the ways used in managing risks. As a result of tackling issues before they become unmanageable, efficient risk management will minimize the occurrence of delays (Ali & Haider, 2023). If the projects must be coordinated and the problems to be solved effectively all the stakeholders need to be in proper communication.

External factors

The project team is not in any position to control social or even economic impacts. These elements may cause some unforeseen extra time that requires an extension of time. Political instability and fluctuations in political relations are two more factors of concern in Pakistan (Khan et al., 2023). Among the several factors timely construction is affected by, they include regulations, economic factors, and environmental regulations. Khan et al. (2023) found that those delays in construction projects in Pakistan are mostly due to political instability and changes to government regulations.

In addition, external conditions that may cause unexpected disturbances in the work include a worse climate that may lead to a request to prolong the schedule. Weather-related delays are an external factor, while delay due to regulatory approval is another external factor. Finally, external delays are socio-political challenges. Schedules for carrying out projects can also be influenced by the various economic conditions made available by the market, such as capital, interest, and inflation. These might

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be attributed to funding constraints and increased costs arising from the economic conditions (Rehman et al., 2023). Havoc is also another component that can slow down construction projects, such as storms, hurricanes, and earthquakes. These occurrences are especially important in areas assumed to be

prone to natural disasters. This demands flexibility in project schedules and disaster preparedness. The construction work may be further constrained due to the regulatory area, such as the building regulation, safety regulation, and even the environmental regulation. If not managed appropriately, it can be time-consuming to meet these requirements and result in costs resulting in delays (Shah & Usman, 2021). The details of external factors are given below.

Causes Related to Consultants

To that extent, consultants remain critical to the planning and delivery of projects. Lack of site control, lack of experience, and inadequate project feasibility are some of the Consultant's faults for delays. Research suggests that negligence of project managers and consultants leads to inefficiencies and the consequent negative changes in the project schedule (Sarwar et al., 2021).

Causes Related to Contractors

Regarding timely project completion, contractors' performance plays a great role. Contractors may also end up working slowly due to inadequate preparations, a lack of skilled human resources, and cash challenges. Most project delays are due to contractors who are having difficulties in the identification of their projects and those who are having challenges in the identification of a qualified workforce (Sarwar et al., 2021).

Causes Related to Materials

Compliance with the construction work schedule mainly requires good-quality and accessible building materials. Replacement of certain supplies and difficulties connected with procurement of materials may lead to negative outcomes: lack of material supply and violation of quality control can become critical issues. To eliminate such delays, it becomes essential to pay much attention to the timely acquisition of materials and the means of their efficient handling (Sarwar et al., 2021).

Causes Related to Labor and Equipment

Challenges with labor and equipment include inadequate measures of handling manpower, equipment breakdowns, and inadequate human resource skills. Looking at the timeline, resource utilization, particularly labor and equipment, is very sensitive to the success of a project. The schedule in the projects can also be affected by several factors such as equipment breakdown and delays in human resources (Sarwar et al., 2021).

Project Specific Reasons

These are delays that are a result of project-related factors, issues on site, and changes in design and technology. These aspects have the attributes of derailing a project and/or necessitating changes to its schedule (Sarwar et al., 2021).

Extension of Time Provisions and Legal Aspects

This is because construction contracts may include an extension of time provision to provide for delays and adjust delivery dates of the projects. These sections are necessary for preventing or minimizing delays and concurrently protecting against liquidated damages. EoT terms need to be

spelled in clear and unambiguous language, then some disputes can emerge and may not yield a fair end, based on the legal precedents of Chester Mount Properties v. Balfour Beatty Building (Law Teacher.net published in 2021).

Research Model and Hypothesis Development

The proposed research model aims to test some key factors that potentially contribute to extension of time (EoT) requests in the construction projects of Pakistan. By considering the effect of key variables such as Project Complexity, Contractual factors, Project Management Factors on time extension request, it is identified how these factors affect the success of the projects.

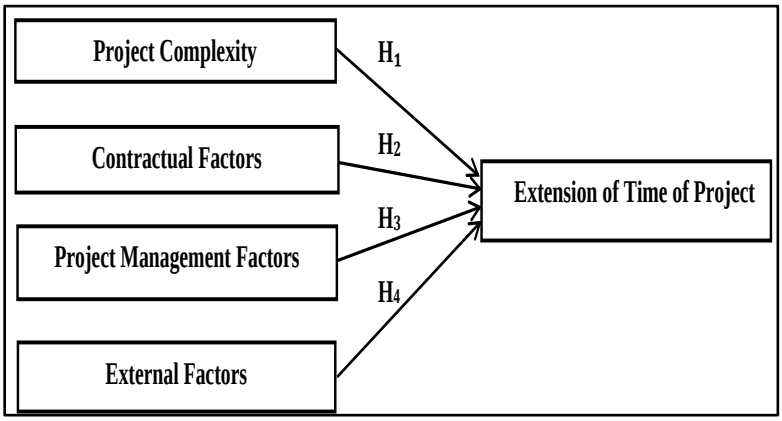

Figure 01: Theoretical Model

Hypothesis Development

Project Complexity and Extension of Project Time

Project complexity in the context of the current construction work defines the kinds of practical and logistical difficulties experienced with the planning and implementation of construction projects. Large projects, and particularly those that are concerned with the application of innovative technology, large numbers of participants, and many coordinates, are going to be delayed (Baccarini, 1996). Analysis of prior research has also indicated that elaborate project requirements will often cause the project to be changed or misunderstood and may also lead to time extension (Assaf & Al-Hejji, 2006). Extended projects from architectural and infrastructural multifaceted gross construction works higher with complex technical project works, especially in higher building structures, which make projects multifaceted (Kazaz, et al., 2012).

H1: The level of project complexity influences the likelihood of extension of time requests in construction projects in Pakistan

Contractual Factors and Extension of Project Time

Contractual factors concern the terms of the contract between the parties; therefore, delay may result from inadequate or ambiguous contract documents, change of scope, and ineffective means of handling disputes. (Fugar & Agyakwah-Baah, 2010), Understood that poorly defined contract management causes significant delays in projects. In Pakistan, lack of standardization in contracts and inefficiency in the resolution of disputes is a significant cause of EoT requests since the parties cannot (Iyer & Jha, 2005).

H2: There is a significant relationship between contractual factors and the frequency of extension of time requests in construction projects

Project Management Practices and Extension of Project Time

Lack of project planning, including a project schedule, communication management, and best practices in resource management, should be avoided to prevent project delays. Lack of efficient planning, communication, and inadequate risk handling are the vital general causes for project extension and EoT indicators that are so often mentioned (Toor & Ogunlana, 2008). In the case of the Pakistani experience, lack of project management efficiency has appeared as a root cause of delay, particularly in public projects (Azhar, 2022).

H3: Effective project management practices have a significant impact on decreasing the number of time requests in construction projects in Pakistan.

External Factors and Extension of Project Time

External factors are factors that are usually outside the control of the project collaborators, such as vulnerabilities like political instabilities, economic fluctuations, supply chain interruptions, floods, among others, and governmental regulations. During this research, external factors have been exhibited by literature as crucial factors that cause delays in construction projects (Sambasivan & Soon, 2022). These factors always lead to unpredictable issues in project planning that lead to the issuance of EoT. In turn, the research done by Olawale & Sun (2010), established external factors to be major influences towards project delay, most especially in developing nations like Pakistan over political instabilities and economic and environmental challenges.

H4: External factors exert a significant impact on the occurrence of extension of time requests in construction projects in Pakistan

Methodology

Research Data Collection

This study was aimed at gathering information about the key stakeholders of the construction industry such as construction managers, engineers, staff, surveyors, clients, and contractors, to understand the causes and risks associated with delays in the construction projects. To ensure that the developed questionnaire was relevant and comprehensible, it was pre-tested as part of pilot research before participants were emailed the questionnaire and a link to the online survey.

Sample Population and Sample Size

Using a Google form, the developed survey questionnaire was distributed among 270 respondents who were directly or indirectly involved in managing different construction projects in their firms. These mainly included contractors, the consultant, and the client representative. A total of 252 responses were received back on the distributed survey questionnaire, and 230 were usable for the data analysis.

Sampling Strategy

The researchers employed a purposive sampling method while selecting the participants for this research. The rationale for the selection criterion was to ensure that participants expressed diverse perspectives from the different roles that they have in construction projects and that recruits had minimum and maximum experience levels in the field.

Data Analysis Approach

Initially, the data was screened and refined before further analysis. After the data refining phase, descriptive, correlation and semi-experimental reviews were conducted. The statistical tool SPSS was

utilized for the processing and analysis of demographic data. The advanced level data analyses were done using Smart PLS. It was ensured that the data were legitimate, trustworthy and appropriate for answering the research objectives.

Data Analysis & Results

Descriptive Statistics

The purpose of descriptive analysis is to summarize the key features of the dataset. It aims to present the data in a meaningful way, like the central tendency. Table 07 indicates the Mean and Standard Deviation of variables. It shows that all variables have means ranging from 3.10 to 3.77 and Standard Deviations from 0.90 to 1.22.

Variable	Mean	SD	EOT	PC	CF	EF	MF
EOT	3.77	0.90	1				
PC	3.56	1.21	.601**	1			
CF	3.48	1.17	.643**	.580**	1		
EF	3.27	1.12	.612**	.528**	.586**	1	
PMF	3.10	1.22	.490**	.361**	.319**	.326**	1

N = 230, SD = standard deviation, ** = p < .01

Table 01: Mean, SD, and Correlations

Correlation Statistic

According to Sekaran (2003), correlations between research variables provide clues about how effectively the variables connect or what linear association, "if any," exists between the variables. Correlations between the research variables are computed to determine how these variables are related to one another. In Table 01, all predicting/independent variables have a positive and significant correlation with the outcome/dependent variable, ranging from moderate to mildly strong correlation on the strength scale.

Measurement Model Assessment

The measurement model, also known as the outer model, gives information on the validity and reliability of the constructs. Average variance extracted (AVE), composite reliability, and indicator reliability are all evaluated in the suggested measurement paradigm. Taken collectively, these analyses serve a twofold purpose of confirming the validity of these constructs by verifying their convergent validity and discriminant validity using HTMT ratios and affirming that this measurement model is useful for predictive research (Hair et al., 2019).

Factor Loading and Indicator Reliability

The measurement model's dependability was the first criterion to be looked at. When assessing the measurement model, individual indicator dependability is considered. It entails looking at the indicators' factor loading, which shows how strongly the indicator and construct are related. When the

factor loading (FL) of the measure is more than 0.50, it is considered dependable (Hair et al., 2019). Factor loading on all research scales was greater than 0.70 (refer to figure 02 and table 02).

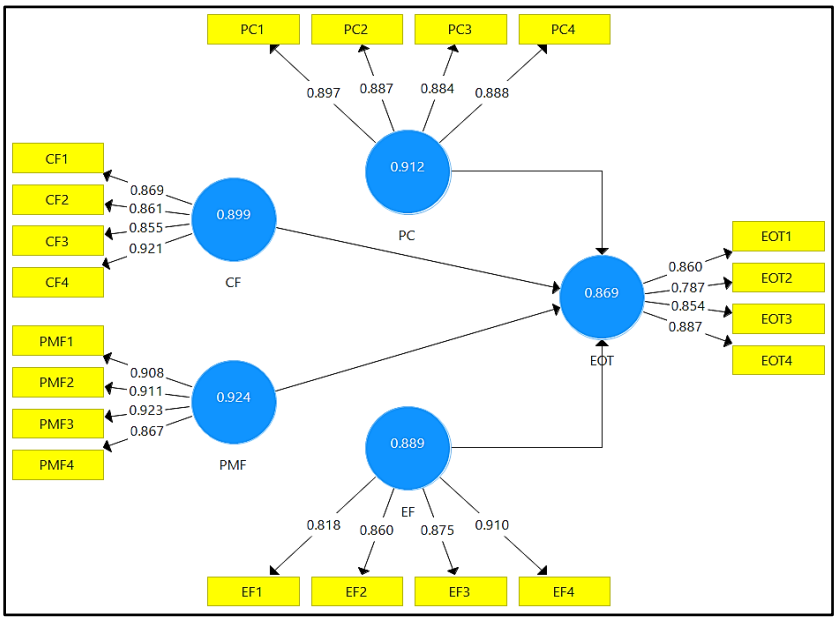

Figure 02: Measurement Model

Variable	CA	CR	AVE	H^2
EOT	0.869	0.911	0.719	0.522
PC	0.912	0.938	0.790	0.634
CF	0.899	0.930	0.769	0.600
EF	0.889	0.923	0.751	0.574
PMF	0.924	0.946	0.815	0.673

Table 02: Reliability, Validity and Quality of the Measurement Model

Cronbach's alpha, a measurement of a measuring scale's internal consistency, serves as the second assessment criterion for the measurement model. How closely related a group of goods is to each other. Our estimations passed the reliability requirement of > 0.7 scores of Cronbach's Alpha (CA) for all analyzed constructs (Hair et al., 2019), which is a very good result for all studied constructs (see table 02).

Examining metrics like composite reliability (CR) allowed for the third criterion, which required evaluating the construct's internal consistency and stability. Accurate estimation is a need of genuine reliability because of the underestimating issue with Cronbach's alpha (Garson, 2012)**.** The study's measurement model satisfied the appropriate CR values, i.e., > 0.7 for verifying, as indicated in table 02 (Hair et al., 2019).

The fourth criterion was the convergent validity of the measuring model. It describes the similarities and differences between a measure and the components that comprise the same variable. The degree to which an item has a positive association with the other items in the same variable is known as convergent validity. The Average Variance Extracted (AVE) approach was used to assess

convergent validity. For convergent validity to be shown, the average variance extracted, or AVE, must be more than 0.5 (Hair et al., 2019). The convergent validity of the constructs is demonstrated by table 02, where the AVE values are noticeably greater than the predetermined criteria.

Variable	CF	EF	EOT	PC
EF	0.655			
EOT	0.727	0.697		
PC	0.642	0.587	0.676	
PMF	0.350	0.360	0.547	0.395

Table 03: Discriminant Validity – HTMT Ratios

Discriminant Validity

According to Duarte & Raposo (2010), it is the extent to which a certain latent construction differs from other latent variables in each measurement model. Because all the HTMT values in table 03 are below 0.85, we determined that the research constructs had appropriate discriminant validity based on discriminant validity-based HTMT < 0.85 (Hair et al., 2019). Examining the research variable's squared AVE values about the correlations between study variables is another technique to guarantee discriminant validity.

Indicator	CF	EF	EOT	PC	PMF
CF1	**0.869**	0.527	0.575	0.456	0.292
CF2	**0.861**	0.499	0.543	0.506	0.284
CF3	**0.855**	0.492	0.549	0.501	0.278
CF4	**0.921**	0.540	0.590	0.581	0.269
EF1	0.454	**0.818**	0.484	0.402	0.289
EF2	0.504	**0.860**	0.531	0.484	0.301
EF3	0.516	**0.875**	0.529	0.461	0.258
EF4	0.556	**0.910**	0.576	0.491	0.286
EOT1	0.585	0.545	**0.860**	0.511	0.411
EOT2	0.516	0.496	**0.787**	0.502	0.437
EOT3	0.507	0.526	**0.854**	0.485	0.378
EOT4	0.571	0.512	**0.887**	0.547	0.441
PC1	0.558	0.522	0.577	**0.897**	0.369
PC2	0.520	0.431	0.504	**0.887**	0.309
PC3	0.455	0.447	0.518	**0.884**	0.279
PC4	0.536	0.484	0.544	**0.888**	0.340
PMF1	0.274	0.310	0.446	0.297	**0.908**

PMF2	0.288	0.304	0.433	0.359	**0.911**
PMF3	0.326	0.320	0.484	0.386	**0.923**
PMF4	0.263	0.240	0.407	0.273	**0.867**

Table 04: Discriminant Validity – Fornell-Larcker Criterion

The Forenell-Larcker criteria are those that go by this (Fornell & Larson, 1981). To prove discriminant validity, each associated correlation must be smaller than the Forenell-Larcker values. The table 04 demonstrates that this study satisfies the criterion for discriminant validity as well. According to Hair et al. (2019), a minimal condition for establishing discriminant validity is a difference of 0.2 between the major variable and all other aligned variables in the model.

Variable	CF	EF	EOT	PC	PMF
CF	**0.877**				
EF	0.587	**0.866**			
EOT	0.644	0.613	**0.848**		
PC	0.583	0.532	0.604	**0.889**	
PMF	0.320	0.327	0.492	0.366	**0.903**

Table 05: Discriminant Validity – Cross-Loadings

Examining cross-loading is another criterion to support this claim. Once more, the assumption of discriminant validity was satisfied, as demonstrated in table 05 by the fact that none of the cross-loadings had a difference of less than 0.2.

Structural Model Assessment

Following a thorough examination of the measurement model's validity and dependability, we performed evaluations of structural model. The objective of this stage was to scrutinize the relationships between the exogenous and endogenous variable constructs.

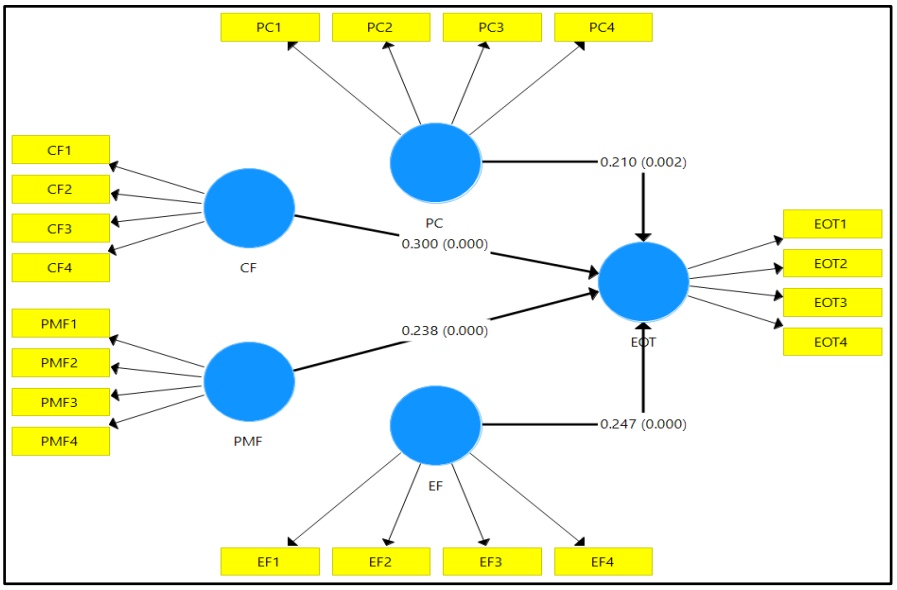

Figure 03: Model Assessment

Path	Estimate	t values	p values	Decision
H1=PC → EOT	0.210	3.82	0.002	Supported
H2=CF → EOT	0.300	5.192	0.000	Supported
H3=PMF → EOT	0.238	5.416	0.000	Supported
H4=EF → EOT	0.247	3.966	0.000	Supported

Table 06: Path Coefficients

Path coefficients, p-values, and t-statistics were used to determine the outcomes. H_1: In Pakistani construction projects, the probability of requesting an extension of time is influenced by the project's complexity. PC significantly and favorably affected EoT (B =.210, t = 3.082, p =.012). This indicated that H_1 was supported. The table 06 and figure 03 also provide evidence that the EoT grows in tandem with the PC. H_2: Contractual factors and the frequency of requests for time extensions are significantly correlated in Pakistani construction projects. In a similar vein, CF significantly and favorably affected EoT (B =.300, t = 5.192, p <.001). Thus, H_2 was also endorsed, showing that an enhancement in CF would increase EoT (see table 6 and figure 3). H_3: There is a positive correlation between efficient project management factors and requests for extensions in Pakistani construction projects. Similarly, PMF significantly and favorably affected EoT (B =.238, t = 5.416, p <.001). indicating that H_3 was clearly supported as well. It was clear from H3's approval that more PMF would result in higher EoT (see also table 6 and figure 3). H_4: In Pakistani construction projects, the frequency of requests for extensions of time is greatly influenced by external factors. EF would result in an increase in EoT; Table 06 and Figure 03 further support this. Since EF significantly and favorably affected EoT (B =.247, t = 3.966, p <.001), H_4 was likewise supported. As shown in the table 06, the path coefficients have a positive impact on the hypothesis testing. The P value for the path coefficients is under tolerance P<0.01 as mentioned above in the table, so all the hypotheses H_1, H_2, H_3 & H_4 are approved.

Discussions

The results of this study highlight some key factors that influence the timely completion of the projects, leading to Extension of Time (EoT) requests in the projects. These results particularly attribute lack of planning, poor schedule management, inadequate resource provision and management, communication breakdowns are the key factors that lead to EoT requests in the construction industry projects. Besides, the other factors that hamper project timely completion include objective issues, weather conditions, political instability and economic fluctuations. Our findings are consistent with some prior studies such as Nguyen et al. (2023) and Aljohani et al. (2019) who found that the occurrence of internal events beyond the control of the contractors are among the reasons behind delays in a project. Moreover, as discussed by Babar & Jamil (2020), the level of political instability in the Pakistani context is also a reason for the delays. Our study also supports these findings by demonstrating that the external factors and situations such as political and social instability negatively impact the successful completion of a project, leading to time overruns.

According to Qazi et al. (2019), to mitigate the risks of time delays and their subsequent impact on a project objective, the project must undergo strong contingency planning. In support of this,

Hamzah et al. (2019) suggested that it is imperative to write a clear and comprehensive contract and its mutual agreement by the parties involved. This is because the terms of agreement between the parties sometimes become unclear due to technicalities or ambiguities involved, including the lack of clarity in the terms of the contract which results in a confusion or conflict at a later stage, leading to delays in the project completion. These findings also support the work of Gidado (2021) and Gidado & Odubiyi (2020) which highlight that complexities in a project raise the probability of coordination problems, misunderstandings and technical issues that are typically associated with EoT. Thus, a contractual clarity is important when it comes to reducing conflicts and avoiding delays (Sambasivan & Soon, 2022). Our results are also consistent with Iqbal & Choudhry (2022) and Javed & Ismail (2021) who emphasized that the efficient project management practices can minimize the probability of EoT requests. To this end, this research suggests to adopt sound project management practices, especially emphasizing on mitigating project risks and managing key stakeholders (such as through systematic risk planning and communications management) to avoid occurrence of EoT requests in the construction projects.

Research Implications

Implications for Theory

This research empirically tested the relationship between the independent variables (project complexity, contractual factors, external factors and project management practices) and the dependent variable (Extension of Time requests). It contributes to the theoretical literature by presenting a research model that demonstrates the influence of these factors and their role in leading to time extension requests in construction projects.

Implications for Construction Managers and Contractors

Construction managers & contractors should ensure that legal contracts are accurately prepared, with well-defined terms, conditions and risk distribution plans as the ill-defined time schedules, contract compensation and responsibilities can lead to confusion and conflicts. Therefore, an active involvement in contract discussions, clarification of task distribution and a thorough understanding of contractual terms can help minimize Extension of Time (EoT) requests. Internal factors, such as regulatory modifications, economic conditions, weather conditions and supply chain issues, can impact project timeliness. As in any field, construction project managers must be prepared to manage unexpected challenges and incorporate flexibility into the project plans. Complexity, whether in design, construction size or technological integration, can contribute to time overruns. Thus, the contractors & managers should consider complexity during the planning phase. To mitigate risks, contractors and managers should enhance staff capabilities and adopt best practices in project risk management, develop clearly defined project schedules and implement effective communication strategies.

Implications for Designers and Consultants

Designers, consultants and their clients should ensure that the contractual documents are concise and clear. Unclear or unsuitable designs, absence of definite requirements and provisions and

unsuitable risk division result in Extension of Time (EoT) claims. Project management best practices should be imperative for designers and consultants, focusing on progress evaluations, effective communication and relevant adjustments. Fund disbursement should follow established project management guidelines. Utilizing enhanced project management tools and methodologies can improve project completion efficiency. Designers and consultants should adopt approaches that simplify project division into stages with detailed structures and interaction indicators. Large, complicated designs or inadequate collaboration between design teams and contractors increase delay risks. External factors like political influences, weather conditions and regulatory changes are often beyond stakeholders' control. However, designers and consultants can develop schedules and designs that accommodate these factors. Proper risk identification at the planning stage can minimize EoT requests.

Implications for Clients

Complex construction projects, especially those employing sophisticated technology or extensive structures, are prone to delays. Clients should recognize that complex projects require more resources and precise planning. Engaging competent consultants and project managers can ease process complications. The Pakistani construction industry is vulnerable to external environmental factors like economic fluctuations, political unrest, change of government and environmental conditions (such as natural disasters, extreme climate conditions etc). To achieve project objectives, clients should employ qualified project managers and adhere to project management principles. Strategies include regular project checks, good communication and utilizing advanced project management tools to minimize EoT requests. Clear contract provisions regarding project timelines, risk allocation and EoT can help avoid extended project timelines.

Implications for Government Regulatory Authorities

Extension requests often originate from something outside the company such as politics, regulation or the environment. The regulatory authorities must strive to develop more effective policies for the construction industry that can effectively minimize such risks. These include fast-tracking approvals of permits, political stability and other measures against environmental issues like risk factors. Government authorities must fast-track the formation and implementation of contracts by setting the proper type and timeline of the contract, especially regarding time bar clauses, extension clauses and dispute settlement clauses. This can minimize uncertainties that cause bottlenecks as well as legitimate challenges. With more complex construction projects being proposed and executed, governments need to adjust their policies to allow for more complicated designs, technologies and scales of projects. Governments should support capacity enhancement activities on project planning and risks for such large initiatives. The study also calls for authorities to enforce standards, training and certification of the project managers involved in such projects, particularly public projects. Government agencies could set standards for hiring certified project managers and encourage the industry to adopt standard project management practices to ensure timely completion of the projects.

Limitations & Future Research Recommendations

This study evaluated some key factors that caused delays in the project's completion. It is still prone to the following limitations.

1. First, there might be some factors, such as the ones related to project execution, that are not evaluated in this study. Future researchers should evaluate other important factors to fill the research gap.
2. Second, while this research only considers the factors in which all the stakeholder delays are incorporated, future studies may evaluate factors like client/sponsor-related delays that could potentially contribute to overall delays in any construction project.
3. Third, the study participants were mostly from the Sindh region. Therefore, future studies may include participants from all over Pakistan to better understand the nature of delays faced to the construction industry of the country.

Conclusions

This research identifies and evaluates the key factors that contribute to the delays in the construction projects. It underscores the importance of adopting comprehensive strategies to address the underlying factors that affect the project schedules and hamper the successful completion of the construction projects. By identifying critical areas for improvement, this study suggests some proactive project management approaches coupled with best practices governing the efficient scheduling and management of the construction industry projects in Pakistan. Future research should explore additional dimensions influencing the project timelines and develop integrated frameworks to support timely and cost-effective completion of the projects, thereby achieving the satisfaction of all the stakeholders.

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