Effect of Organizational Culture on Delays in Construction Industry of Pakistan

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DEDICATION

This dedication is directed towards my remarkable parents and esteemed educators, whose immense support and collaboration have guided me to this splendid achievement.

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ABSTRACT

This study aims to examine the intricate relationship between delays in the construction industry and organizational culture, with a specific focus on understanding how cultural factors influence project performance in Pakistan's construction industry. The construction industry holds significant importance in driving economic growth and infrastructure development, but delays in construction projects remain a persistent and pervasive challenge globally. Addressing this issue requires a detailed investigation of the various factors contributing to delays in the construction industry. One of the potential key factors may be the organizational culture. Organizational culture is conceptualized as a framework of shared beliefs, values, and norms that shape the interpretation and understanding of various factors within the organization. The research involved conducting an extensive online questionnaire survey among construction professionals, stakeholders, and project participants in the northern region of Pakistan. The survey comprehensively covered various aspects, including the identification of common causes of delays, an in-depth assessment of organizational culture such as the six key dimensions of the Organizational Culture Assessment Instrument (OCAI) including Dominant Characteristics, Organizational Leadership, Management of Employees, Organizational Glue, Strategic Emphases, and Criteria of Success., and the evaluation of their potential influence on project delays. The data collected from the survey were subjected to statistical analysis to identify patterns, correlations, and relationships between organizational culture and project delays. The findings revealed that Clan culture dominated the construction industry in the region, characterized by a strong sense of trust, collaboration, and shared values among individuals. However, the chi-square test results indicated that there was no significant association between the dominant organizational culture and the delays experienced in construction projects. This suggests that while organizational culture may influence project management practices, there are other external and project-specific factors that might significantly impact project timelines. Furthermore, there are several limitations that need acknowledgment. Firstly, the sample size was limited to construction organizations in the northern region of Pakistan, affecting the generalizability of the results. Future research may include a more diverse sample from various regions to strengthen findings. Additionally, an approach involving different statistical techniques

and qualitative methods, like focus groups, is essential to fully understand the link between organizational culture and project delays.

Key Words: *Construction industry, Organizational culture, Project delays, Project performance, Time Delay, Construction Industry of Pakistan, OCAI*

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CHAPTER 1 INTRODUCTION

This study seeks to examine the relationship between delays in the construction industry and organizational culture, aiming to understand how cultural factors influence project performance. By identifying strategies to cultivate a positive culture that minimizes delays, this research adds to the domain of engineering management and offers significant understandings for professionals in the industry, policymakers, and researchers.

1.1 Background of the Research

Construction can be defined at three levels within literature. On one side, it is perceived as an economic activity that spans the complete construction process, spanning all three economic sectors: primary sector (resource extraction), secondary sector (manufacturing building materials), and tertiary sector (providing consultancy services) (Pheng & Hou, 2019). This comprehensive perspective recognizes that construction starts prior to on-site work, involving various activities that transform materials and designs into completed structures. In contrast, a narrow definition views construction solely as the physical work carried out on the production site, excluding services like project management, planning, and design, as well as offsite manufacture and supply of materials. While convenient for statistical purposes, this limited perspective overlooks broader aspects of the construction process. A middle-ground approach defines construction as the production process of the built environment, encompassing activities from conception to execution. It includes firms and organizations providing consultancy, planning, design, supervision, management, and execution services, with close relationships with clients and financiers (Pheng & Hou, 2019). In the study conducted by Qifa (2013) in both China and the UK, the relationship between real growth in the construction sector and the national economy was examined. The findings highlight a significant correlation between the value and growth rate of the construction industry and the Gross Domestic Product (GDP) in both countries. The results suggest that the nature of construction and its high investment multiplier contribute to the strong interdependence observed between construction sector growth

and overall economic performance in both China and the UK. It is understood that industry holds significant importance in the economy. Its infrastructure projects enhance connectivity, stimulate trade, and contribute to GDP. Efficiency research in the construction industry is essential for cost savings, timely project completion, and increased productivity.

The construction industry holds great importance in driving economic growth and infrastructure development. Nevertheless, project delays in the construction sector pose a widespread obstacle that requires careful study and analysis. It is highlighted by Bent et all. (2014) that 9 out of 10 projects experienced overruns, with significant percentages of overruns being common occurrences. This trend has persisted over the past 70 years of available comparative data, regardless of geography. Understanding the causes and consequences of delays in the construction industry is essential for several reasons. By studying delays, researchers, practitioners, and policymakers can gain valuable insights and develop strategies to mitigate their impact. Understanding delays can help minimize project costs, optimize resource allocation, and promote timely project completion, ultimately fostering economic growth and stakeholder satisfaction. (Raza & Umer, 2020)

Organizations, as systems of shared meanings, require a sense of commonality and taken-for-grantedness to facilitate organized activity and streamline interactions. This notion becomes particularly relevant when examining the relationship between delays in the construction industry and organizational culture. Delays in construction projects often result from a multitude of factors, including miscommunication, inadequate teamwork, and ineffective decision-making processes. Organizational culture, as a framework of shared beliefs, values, and norms, shapes the interpretation and understanding of these factors within the organization. According to Smircich (1983), a sense of commonality in organizational culture enables interactions to occur smoothly without constant interpretation and reinterpretation of meanings.

1.2 Research Objective

The objective of this study is to explore the potential relationship between delays in the construction industry and organizational culture. This thesis aims to investigate how cultural factors might impact project performance. The study will focus on construction companies, professionals, and project participants involved in various

construction projects. The research will involve conducting surveys that cover different aspects, including identifying common causes of delays and assessing key dimensions of organizational culture such as dominant characteristics, organizational leadership, employee management, organizational cohesion, strategic priorities, and success criteria. The surveys will use a combination of Likert scale questions and multiple-choice questions to gather responses. By employing this data collection methodology, quantitative analysis will be facilitated, thereby enabling a statistical comprehension of the link between delays and organizational culture. Through this accomplishment, the study aims to offer insights that have the potential to improve project performance by identifying the appropriate organizational culture.

1.3 Research Problem

The construction industry holds immense promise for economic growth and development. However, its performance often falls short of expectations due to a myriad of contributing factors. A critical gap in knowledge persists regarding the influence of organizational culture on project performance within the context of Pakistani construction industry. To address this gap, the research aims to investigate the relationship between organizational culture and project success in the Pakistani construction industry, shedding light on culture's role in shaping project outcomes and efficiency.

1.4 Definition of Terms

OCAI (Organizational Culture Assessment Instrument): A tool used to assess and analyze an organization's culture based on the Competing Values Framework (CVF), providing insights into the prevailing cultural orientations and their impact on various aspects of the organization.

CVF (Competing Values Framework): A model used to understand and categorize organizational culture into four main quadrants, including Clan, Adhocracy, Market, and Hierarchy cultures, each representing different values and priorities.

GFCF (Gross Fixed Capital Formation): An economic metric measuring the total value of capital investments, including buildings, machinery, and infrastructure, made within a country over a specific period. It's a crucial factor in calculating a nation's GDP and assessing its economic development.

GDP (Gross Domestic Product): A standard economic indicator that measures the total value of goods and services produced within a country's borders over a specific time, reflecting the overall economic health and size of an economy.

RII (Relative Importance Index): A statistical measure used to assess the relative importance of different variables in a study by comparing their impact or contribution to the overall outcome.

SPSS (Statistical Package for the Social Sciences): A software tool widely used for statistical analysis and data management, offering a range of techniques for analyzing quantitative data in research studies.

Gross National Product (GNP): GNP is the total value of goods and services produced by a country's residents, including income from overseas investments and foreign worker remittances, within a specific period, typically a year. It reflects a nation's economic output by considering both domestic and international activities.

CHAPTER 2 LITERATURE REVIEW

2.1 Construction Industry

According to Giang et al. (2014), the construction industry plays a vital role in economic development, contributing to national income, employment opportunities, and infrastructure development. Government policies and dedicated agencies focused on the construction industry can address challenges and enhance competitiveness in the sector. The structure of the construction industry can vary between countries, with involvement from public and private firms, domestic and foreign players, and international contractors. Recognized for its economic significance, the construction industry has the potential to contribute significantly to overall development.

Furthermore, the construction industry's substantial output holds significant economic importance on a global scale. With a contribution of approximately 10% of the Gross National Product (GNP), equivalent to billions of dollars annually, it drives economic growth and development. However, the distribution of construction industry output varies across regions, with Western Europe, Asia, and North America leading in percentage shares. In Europe, construction output accounts for around 10% of GDP, with slight variations among countries. (Patricia, 2000). These findings emphasize the substantial impact of the construction industry on the overall economy, underscoring its role as a key economic driver.

Also in the current modern world, the role of the construction industry is vital. Adding to the importance of the construction industry, the role of the construction industry in achieving the Sustainable Development Goals (SDGs) has been extensively investigated by Wenmei et al. (2021). Their study employs a mixed-method approach to evaluate the impact of the construction industry on the SDGs. The findings demonstrate that the construction industry plays a critical role in the advancing world.

The importance of the construction industry in Pakistan is no different. It is one of the major drivers of the economy. The construction industry in Pakistan constitutes around 2.4% of the country's GDP. It is projected to have a value of approximately USD 4.2 billion by 2012, up from approximately USD 3.6 billion in 2009. The industry boasts a significant workforce, including 80,000 graduate engineers, 20,000 licensed contractors, and 1000 registered consultants. Employment generation in Pakistan is

closely linked to the construction industry, with around 30-35% of total employment opportunities affiliated with this sector. (Attiq, 2020)

The construction industry, despite its prominence as one of the largest sectors, often falls behind in cross-industry benchmarks for productivity and safety (Elfving & Seppänen, 2022). However, it excels in customer satisfaction, surpassing other industries. This discrepancy highlights the need for in-depth research to understand the underlying factors and develop strategies to improve productivity and safety while maintaining high customer satisfaction levels. Such insights can inform policymakers, industry practitioners, and stakeholders in enhancing overall performance within the construction industry. Dean et al (2005) also highlighted the performance issues in the construction industry, suggesting that there are problems with meeting deadlines and exceeding budgets. Therefore, the performance of the construction industry is not optimal.

One of the aspects of poor performance is delays in the construction industry and cost overruns. The study by Afredo et all (2016) reveals that despite the industry's growth across the globe, numerous challenges are encountered in delivering construction projects, both in developing and developed countries. The key findings indicate that, on average, 72% of projects experience delays, resulting in a significant 38% increase in the original contracted duration. Additionally, 63% of projects encounter cost overruns, with a corresponding 24% increase in the original contracted cost. The prevalence of rework also contributes to performance issues, accounting for a 6% increase in total project costs. Furthermore, customer satisfaction levels are reported to be low, and a substantial 90% of major issues leading to non-performance are attributed to human factors. Overall, these findings highlight the considerable challenges faced by the construction industry in meeting project timelines, adhering to budgets, and satisfying customer expectations.

2.2 Delays

Over the years, researchers have recognized the importance of studying delays in the construction industry and have extensively explored this topic in various contexts. Their findings consistently reveal significant delays in construction projects, regardless of whether they are conducted in developing or developed countries. For instance, in Iran, the construction industry grapples with substantial challenges in project

management, with a mere 7% of projects completed within budgets and only 8.5% completed on time (Gholamreza & Meghdad, 2019). Particularly, large urban construction projects encounter higher rates of cost overruns and delays. To address these issues, there is a pressing need for improved project management practices, including effective cost-control measures and efficient scheduling, to ensure timely and cost-effective project completion.

Similarly, the construction industry in Qatar faces notable challenges, as highlighted by Ahmed et al. (2016). New projects in Qatar experience a significant average cost overrun of 54% and a substantial average delay of 72%. Maintenance projects in the country also encounter an average cost overrun of 50% and an average delay of 50%. These statistics underscore the urgency for enhanced project planning, accurate cost estimation, and efficient management practices to mitigate cost overruns and delays.

Furthermore, a comprehensive study spanning multiple countries and continents conducted by Bent et al. (2014) uncovered distressing trends in project overruns. The study revealed that a staggering 9 out of 10 projects experienced overruns, with cost overruns ranging from 50% to 100% being a common occurrence. These patterns have persisted consistently over a 70-year period, as evidenced by available data. These findings underscore the significant challenges encountered by construction projects worldwide, emphasizing the imperative for improved project management practices and effective strategies to mitigate cost overruns.

An analytical study by Mohamad et al. (2019) explores the influence of construction delays on cost overruns. The research highlights the critical importance of effective time management in construction projects, emphasizing the detrimental effects of delays on project costs. It underscores the need for a systematic monitoring and analysis mechanism to comprehend the impact of delays on project completion and overall costs. The study introduces a comprehensive methodology for evaluating delay damages, facilitating the estimation of compensatory measures applicable to both parties involved in the contractual agreement.

In their literature review, Ravisankar et al. (2014) identifies four major types of delays in the construction industry: critical or noncritical delays, excusable or non-excusable delays, compensable or non-compensable delays, and concurrent or non-concurrent delays. The study highlights a range of significant delays experienced in construction projects, including shortages of skilled and unskilled labor, design changes

during construction, price fluctuations, waiting time for work teams, rework due to errors, delay in financial support from owners, geological problems, poor site management, equipment selection issues, and adverse weather conditions or natural disasters. The authors emphasize the importance of understanding the root causes of delays to mitigate their impact on project schedules and profitability. Their research includes a literature review and a questionnaire survey, with data analysis performed using SPSS software. The study presents a ranked list of delay factors based on mean scores, providing valuable insights into the most critical causes of delays in the construction industry. Key factors identified include shortages of skilled labor, design changes, price fluctuations, work team waiting durations, and rework stemming from errors, and poor site management.

Musa et all. (2012) conducted a comprehensive study to identify the major causes of construction delays and their effects on construction projects. Through a literature review and questionnaire survey, the research highlighted eight significant causes, including insufficient equipment, change orders, poor site management, material shortages, incompetent project teams, planning and scheduling issues, contractor financial difficulties, and external factors. These causes were ranked based on frequency, with management factors identified as the most influential. The study also emphasized the adverse effects of delays, such as time and cost overruns, impacting project schedules and budgets. The findings provide valuable insights for project stakeholders in mitigating delays and managing construction projects more efficiently.

Amílcar et al. (2015) conducted an extensive study on causes and impacts of delays in construction projects. Using the Relative Importance Index (RII) method, they identified key delay causes such as slow decision-making and impacts including time overruns and disputes. Their questionnaire-based approach, validated by experts, revealed correlations between latent causes and impacts. Their research contributes valuable insights into understanding delay dynamics and provides a foundation for effective mitigation strategies. Similarly, researchers globally have investigated the multifaceted causes and effects of delays in the construction industry across various regions and countries. Since our region of interest is Pakistan thus, the work done by researchers in the construction industry in Pakistan follows from here.

Furthermore, Tahir et al. (2013) conducted a comprehensive study to investigate the causes and effects of schedule overruns in the Pakistani construction industry. Through a survey questionnaire administered to construction industry professionals, the

research identified significant factors contributing to schedule overruns, such as paucity of funds, delay in progress payments, rapid market fluctuations, inefficiency in site management, delay in site mobilization, lack of modern design software, and delay in approvals of shop drawings and submittals. The study also highlighted the lack of client involvement in planning as a contributing factor. The effects of schedule overruns included reworks, scope creep, scrap, poor quality, frequent change orders, conflicts, and constructability issues during the execution phase.

Furthermore, ten major factors contributing to construction delays in Pakistan, including inadequate planning, financial issues, equipment breakdowns, and coordination challenges are prominent in the construction industry of Paksitan. (Baig et al., 2022)

Similarly, Haseeb et al. (2012) attempted to examine the causes and effects of delays in construction projects, with a particular focus on the context of Pakistan. The study identified various factors contributing to project delays, including natural disasters, financial and payment problems, inadequate planning, poor site management, limited experience, shortage of materials and equipment, equipment breakdowns, and labor disputes. These delays have significant implications, resulting in increased costs, conflicts, and project abandonment, thereby impeding the feasibility and progress of the construction sector. The research employed an appraisal of construction project time performance and utilized critical assessment criteria to assess the identified delay factors. The study revealed crucial insights into the most significant causes for different project stakeholders, such as regulatory factors and subsurface conditions for consultants, prioritization of construction time and material decision-making for clients, and the acquisition of outdated machinery for contractors. These findings provide valuable guidance for industry practitioners in addressing and mitigating delays in construction projects in Pakistan.

In their study, Syed et al. (2014) identified various causes of delays in the construction industry, including the law-and-order situation, design changes, improper availability of funds with the client, war and terrorism, poor site management, discrepancies between drawings and specifications, payment delays, inflation of local currency, unrealistic time durations, and political/bureaucratic influences. These factors significantly impact project timelines, resulting in time extensions and cost overruns. The research emphasizes that construction delays are a global phenomenon and have negative implications for project control aspects such as time, cost, quality, and safety.

However, research conducted on construction delays in Pakistan has identified distinctive causes of delays compared to other regions. These variations indicate the influence of cultural factors specific to Pakistan, resulting in a unique set of delay factors in the country's construction industry. Therefore, it is important to explore how these cultural elements shape the specific delay factors experienced in Pakistan. A review of the literature on organizational culture can provide valuable insights into the impact of cultural factors on project performance and contribute to our understanding of delays in the Pakistani construction context.

2.3 Organizational Culture

Organizational culture is not a simple thing to assess and understand, it consists of multiple factors and their interaction in different ways leads to different outcomes. First, we must understand what organizational culture is. According to Smircich, (1983) organizations exist as complex systems where individuals come together and share a common set of meanings and understandings. These shared meanings provide a sense of coherence and allow for smooth coordination and collaboration within the organization. Culture, in this context, refers to the collective knowledge and learning of a group over time as they confront challenges related to both their external environment and internal integration (Schein, 1990). It encompasses not only the behaviors and actions of individuals but also their cognitive processes and emotional responses.

The culture of an organization shapes the rules and norms that govern the cognitive and affective aspects of membership (Kunda, 1990). It defines the ways in which individuals perceive their roles, interpret information, and interact with one another. These shared rules and norms are developed and expressed through various communication channels, such as workgroup interactionsf, meetings, and even through material objects and artifacts present in the organization (Sveningsson & Alvesson 2003). Culture, therefore, goes beyond individual beliefs and resides in the collective experience and expression of symbols and meanings within the group.

Understanding the role of culture is crucial in the context of construction projects, as it influences the behaviors, attitudes, and decision-making processes of project stakeholders. The organizational culture with respect to construction delays was studied by various researchers as the study conducted by Arditi et al. (2017) aims to

explore the relationship between organizational culture and project delays in the construction industry. The research methodology involved administering a questionnaire to construction companies in both the United States and India. The questionnaire, developed based on an extensive literature review, consisted of two parts: one focusing on organizational culture using the Organizational Culture Assessment Instrument (OCAI), and the other collecting data on project delays. Statistical analysis, specifically the Mann-Whitney U test, was conducted to examine the differences in organizational culture between the two countries. The study findings highlight the importance of effective decision-making processes, a supportive work environment, and the involvement of all project team members in scheduling activities to mitigate delays. Additionally, the research reveals variations in delay patterns and organizational culture between the United States and India, emphasizing the need for context-specific approaches to managing project delays.

Similarly, Cheung et al. (2012) conducted a study investigating the relationship between organizational culture and performance in construction organizations in Hong Kong. The research methodology involved the use of a questionnaire to collect data from construction organizations. The questionnaire consisted of three parts, focusing on personal information, identification of organizational culture, and performance assessment. Participants were asked to rate their agreement on organizational culture identifiers and evaluate their company's performance using a Likert scale. The collected data was analyzed using Structural Equation Modeling to examine the relationship between organizational culture and performance. The study identified key dimensions of organizational culture, including goal clarity, coordination and integration, conflict resolution, employee participation, innovation orientation, performance emphasis, reward orientation, and team orientation. The findings indicated a positive relationship between certain dimensions of organizational culture and performance indicators, with innovation being identified as a pivotal cultural factor driving performance.

Furthermore, Gulcag et al. (2014) contribute to the understanding of organizational culture in the Turkish construction sector. The document explores various types of organizational culture, including hierarchy culture, clan culture, market culture, and adhocracy culture, and examines their characteristics and impact on organizational success. The study emphasizes the importance of organizational culture in achieving sustainable performance and highlights the relationship between culture and the success of construction companies. In the context of the construction industry

in Turkey, the document identifies high environmental uncertainty and financial risks, particularly for large-scale structure firms. These firms are noted for their willingness to make high-risk decisions, which can lead to short-term success. The document highlights the significance of understanding and managing organizational culture for enhancing competitiveness and achieving long-term success in the construction industry. It emphasizes that a strong organizational culture fosters unity and a positive impact on employees, instilling vitality, and a renewed spirit within the organization. The findings of this study provide valuable insights for employers and employees in the Turkish construction sector, underscoring the importance of cultivating a robust organizational culture to drive sustainable performance and achieve success.

The unique cultural factors inherent to the Pakistani construction industry can significantly influence the specific delay factors encountered within this context. Through a comprehensive examination of the industry's organizational culture, valuable insights can be gained into how cultural elements interact with project performance, potentially leading to the identification of specific delay triggers. This in-depth understanding opens avenues for the development of targeted strategies and interventions aimed at mitigating delays and optimizing project outcomes within the Pakistani construction sector. Despite the paramount importance of organizational culture on performance, limited research has been undertaken in the context of Pakistan's construction industry. Addressing this research gap, Liaqat et al. (2007) embarked on an endeavor to explore the intricacies of organizational culture in Pakistan's construction sector and its profound impact on overall performance. Their study underscored the industry's continued reliance on traditional practices and rules, influencing not only employee efficiency but also shaping managerial beliefs and concepts. The researchers emphasized the significance of organizational culture in various facets of the industry, ranging from the crucial aspects of recruitment and training to the intricacies of reward systems and organizational design. By shining a spotlight on these critical areas, the study lays the groundwork for future research that can unravel the nuanced interplay between organizational culture and project performance, ultimately fostering the development of tailor-made strategies to propel the construction industry towards higher levels of efficiency and success.

In their research, Liaqat et al. (2007) provided a comprehensive definition of organizational culture as a pattern of fundamental assumptions collectively developed by a group to effectively navigate external challenges and ensure internal integration

within the construction industry in Pakistan. To gain a deeper understanding of this organizational culture, the researchers utilized a well-structured questionnaire to collect data on various dimensions, including vision and mission statements, decision-making patterns, organizational structure, recognition systems, information management, employee development, customer/client relationship, and the competitive market.

While the study shed valuable light on the prevailing state of organizational culture in the construction industry of Pakistan, a notable research gap exists concerning the examination of the specific relationship between organizational culture and project performance, particularly concerning delays. Therefore, further investigation is imperative to unveil the intricate ways in which organizational culture impacts delays in construction projects within the unique context of Pakistan. This in-depth research holds the promise of offering valuable insights and well-informed recommendations to improve project performance and effectively tackle the challenges related to delays in the construction industry. By understanding the nuanced influence of organizational culture on project delays, construction companies in Pakistan can adopt tailored strategies that lead to enhanced performance, productivity, and overall success in their projects.

2.3.1 Organizational Culture Assessment

Organizational culture, as a complex and influential aspect of a company's identity, has garnered significant attention from researchers seeking to understand and measure its dimensions. Various studies have proposed theoretical models and measurement tools to study organizational culture.

One approach is the Organizational Profile Questionnaire (OPQ) developed by Askanasy et al. (2000). This instrument aims to assess an organization's culture by focusing on its behavioral norms, values, and assumptions. The OPQ gathers data through self-report questionnaires that participants complete, allowing them to reflect on their organization's cultural traits. It offers a structured framework to evaluate cultural dimensions, enabling a comprehensive analysis of the prevailing organizational culture. The questionnaire is particularly useful in revealing employees' perceptions of cultural attributes and can guide organizational leaders in making informed decisions to align culture with strategic goals.

Another notable contribution comes from Glover et al.'s (1994) Cultural Assets Profiles (CAPS). CAPS aims to measure cultural characteristics by examining the organization's tangible and intangible assets. This approach acknowledges that organizational culture is not solely shaped by abstract concepts but also by concrete resources, practices, and symbols. The CAPS methodology entails a systematic assessment of these assets, providing a holistic view of an organization's culture. By considering both material and immaterial aspects, CAPS offers a unique perspective that captures the intricate interplay between physical artifacts, rituals, and cultural values.

O'Reilly et al.'s (1991) Organizational Culture Profile (OCP) offers another lens through which to analyze organizational culture. The OCP focuses on identifying cultural attributes through the measurement of seven dimensions: innovation, attention to detail, outcome orientation, people orientation, team orientation, aggressiveness, and stability.

Maull et al.'s (2001) Personal, Customer Orientation, and Cultural Issues (PCOC) framework takes a multi-dimensional approach to assessing organizational culture. It encompasses three core components: the individual's personal values, the organization's customer orientation, and broader cultural issues. This approach recognizes the interconnectedness of personal values and broader societal influences with organizational culture. The PCOC methodology enables a deeper exploration of how individuals' beliefs align with the organization's cultural attributes, shedding light on potential sources of alignment or dissonance.

Another prominent instrument, the Organizational Culture Assessment Instrument (OCAI) developed by Cameron and Quinn (1999) is rooted in the Competing Values Framework, designed to assess organizational culture. It categorizes culture into four main types—Clan, Adhocracy, Market, and Hierarchy—each characterized by distinct values and norms. Through a structured questionnaire, participants rate statements reflecting their organization's culture, resulting in a cultural profile indicating the dominant type. This approach offers a quantitative measurement of culture. The OCAI's practicality and versatility have led to its widespread use in diagnosing, monitoring, and shaping organizational culture.

Numerous studies have undertaken the investigation of organizational culture within the construction industry, utilizing methodologies such as the Organizational Culture Assessment Instrument (OCAI). For instance, in China, Zhang and Liu (2006)

explored the organizational culture of construction companies using the OCAI framework. Similarly, Nummelin (2006) examined the cultural dimensions of construction organizations in Finland, while Oney-Yazici et al. (2006) investigated the organizational culture of construction firms in the United States. In Turkey, Giritli et al. (2006, 2013) and Oney-Yazici et al. (2007) employed the OCAI to delve into the cultural characteristics of construction companies. Fong and Kwok (2009) extended this research to Hong Kong, Naoum et al. (2015) investigated the United Arab Emirates, and Jaeger and Adair (2013) focused on the Gulf Cooperation Countries. Yong and Pheng (2008) explored organizational culture within the construction sector of Singapore, while Ankrah and Langford (2005) conducted a similar inquiry in Scotland. In Sri Lanka, Rameezdeen and Gunarathna (2003) utilized the OCAI to assess organizational culture in the construction industry. Furthermore, the application of the OCAI extended to international construction contexts, with studies conducted by Ozorhon et al. (2008a, 2008b) and Low et al. (2015). These investigations validate the usage of OCAI as an established method of assessing the culture of the organizations in the construction industry, leading this study to adopt the OCAI as an instrument.

Grzegorz (2018) conducted a study to validate the Organizational Culture Assessment Instrument (OCAI) questionnaire in a Polish context. The research assessed the psychometric properties of OCAI, including accuracy, reliability, and discriminatory power. The study confirmed the conceptual accuracy of Cameron and Quinn's Competing Values Framework, on which OCAI is based. Results from a Polish research sample demonstrated alignment with the creators' assumptions. OCAI scale scores showed normal distribution, enabling percentile or standard ten-based scoring. This precise scoring facilitated accurate conclusions and recommendations. Validity was assessed through factor analysis and correlations between OCAI scales and related constructs. Reliability was measured using Cronbach's Alpha. Discriminatory power of items was evaluated by correlating with overall scale scores and comparing extreme quartile variances. Findings supported OCAI's psychometric properties, validating it for Polish conditions. The Quinn and Cameron model is consistently reliable in assessing organizational culture. The complete work of this model is summarized as follows.

2.3.2 Competing Values Framework

The Competing Values Framework (CVF), developed by Robert E. Quinn and Kim S. Cameron (1999), stands as a robust and comprehensive model aimed at understanding and evaluating various dimensions of organizational effectiveness and culture. Rooted in the belief that inherent tensions and competing values within organizations significantly impact their performance, the CVF offers a pragmatic approach to categorizing and analyzing organizational cultures, providing a roadmap for enhancing overall effectiveness.

At the core of the CVF are two fundamental dimensions: Internal-External and Flexibility-Control. These dimensions serve as the foundation for classifying organizational cultures into four distinct types, each representing specific values, beliefs, and behavioral patterns.

The Internal-External dimension signifies an organization's primary focus and orientation. On one end of the spectrum lie Clan and Adhocracy cultures, which prioritize internal dynamics. The Clan culture fosters a collaborative environment that values teamwork, employee empowerment, and a sense of belonging. Organizations embracing Clan culture prioritize employee development through mentorship and continuous learning, championing open communication, trust, and decentralized decision-making. Exemplifying this culture are renowned companies like Google and Zappos, where employee well-being is at the forefront of their organizational identity.

On the other end of the Internal-External dimension, Market and Hierarchy cultures emphasize external factors. Market culture is results-driven, aiming for peak performance and customer satisfaction. Companies such as Amazon and Walmart exemplify Market culture, where competitiveness, accountability, and data-driven decision-making are paramount. These organizations prioritize meeting external demands and leveraging their prowess to excel in the market.

Hierarchy culture, another facet of the External focus, places a premium on stability and adherence to established norms. In such cultures, roles are clearly defined, processes are formalized, and decision-making is centralized. Hierarchy culture often finds its home in government agencies and multinational corporations, which rely on disciplined and efficient operations to achieve their objectives.

The second dimension, Flexibility-Control, delves into how organizations manage and respond to change. Adhocracy culture thrives in this dimension, valuing

innovation and risk-taking. Organizations that embrace Adhocracy culture encourage employees to explore new ideas and embrace adaptability. Apple Inc. serves as a prime example of an Adhocracy culture, renowned for its pioneering technologies and a willingness to take bold risks that have transformed entire industries.

An essential aspect of the Competing Values Framework is its integration with the Organizational Culture Assessment Instrument (OCAI), developed by Cameron and Quinn. The OCAI operationalizes the concepts of the CVF, providing a practical and structured tool for assessing an organization's dominant and preferred culture.

The OCAI consists of 24 items distributed across six key dimensions, which align with the CVF framework:

1. Dominant Characteristics: This dimension sheds light on the prevailing traits that define an organization's cultural orientation. It helps stakeholders understand the core of the organization's identity.

2. Organizational Leadership: This dimension explores the prevailing leadership style within the organization. It reveals whether the leadership places emphasis on mentorship, risk-taking, performance, or a structured hierarchy.

3. Management of Employees: Assessing the approaches employed for managing employees, this dimension reveals whether the organization nurtures a family-like atmosphere or rewards performance as a means of motivation.

4. Organizational Glue: This dimension evaluates the factors that bind the organization together. Whether through shared values or a commitment to stability, organizational glue helps identify the forces that shape and maintain the culture.

5. Strategic Emphases: Examining the organization's strategic priorities, this dimension delves into aspects such as growth and market competitiveness. It provides insights into how the organization's culture aligns with its strategic objectives.

6. Criteria of Success: This dimension measures how success is defined within the organization. Whether through employee satisfaction, innovation, financial achievement, or adherence to established processes, the criteria of success illuminate the overarching goals pursued by the organization.

The OCAI methodology encompasses several key steps that contribute to its effectiveness in assessing and managing organizational culture. Central to its success is the commitment from organizational leadership, ensuring that the assessment process is supported and embraced at the highest levels. Additionally, the selection of

participants from diverse levels and departments within the organization ensures a comprehensive and holistic perspective.

The survey itself employs a Likert scale, which gauges participants' perceptions of both the current and preferred cultures within the organization. The responses are then meticulously analyzed and scored, generating a cultural profile that highlights the dominant culture while identifying gaps that may require attention and improvement. This profile serves as a valuable tool for decision-makers, enabling them to make informed choices regarding cultural alignment and transformation initiatives.

The real-world applicability of the Organizational Culture Assessment Instrument (OCAI) is evident through its successful utilization across a multitude of industries. Researchers have leveraged the OCAI to gain a deeper understanding of organizational cultures.

2.4 Research Gap Analysis

This study identifies critical gaps in the existing literature concerning organizational culture and its influence on project delays within Pakistan's construction industry. Firstly, there is a dearth of research specific to Pakistan, necessitating a focused investigation into the unique cultural factors shaping delay dynamics in the country. Secondly, while the Competing Values Framework (CVF) and the Organizational Culture Assessment Instrument (OCAI) have been applied to assess culture, a more detailed analysis of the four cultural types within CVF within Pakistan's construction organizations is required. Additionally, the literature lacks a quantitative approach, warranting comprehensive data analysis methods. Addressing these gaps shall contribute significantly to optimizing project performance and efficiency in Pakistan's construction sector.

2.5 Theoretical Framework

In this study, the independent variable is organizational culture, which encompasses different cultural types within an organization, namely Clan, Adhocracy, Market, and Hierarchy. These cultural types represent distinct sets of values, beliefs, and behaviors that shape how the organization functions and interacts. The dependent variable, on the other hand, is project delays. Project delays are measured as the extent

of time deviation from the schedule baseline for individual projects as well as the cumulative delays experienced across various projects.

The study aims to explore the causation between organizational culture and project delays. The theoretical framework based on the Competing Values Framework provides a structured approach to categorize and analyze different dimensions of organizational culture, while the use of non-parametric tests, particularly the Chi-Square test, allows for a robust examination of potential associations between cultural types and project delays.

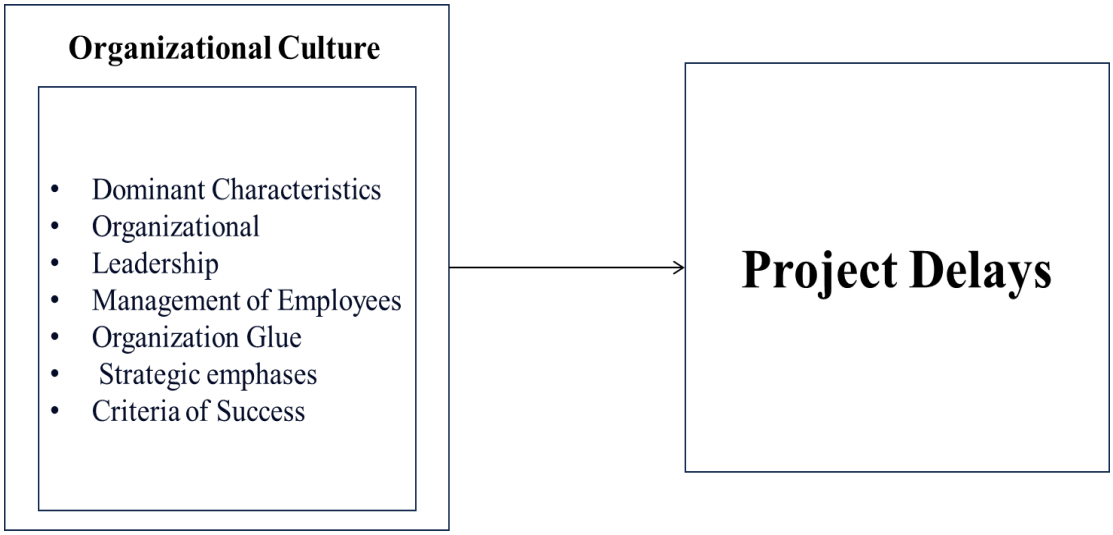

Figure 2.1 Theoretical Framework Block Diagram

2.6 Research Question

This study aims to address two fundamental questions pertaining to the construction industry of Pakistan. Firstly, it seeks to uncover the prevailing type of organizational culture that dominates within this sector. Specifically, the study aims to identify whether the construction industry in Pakistan predominantly exhibits a Clan, Adhocracy, Market, or Hierarchy culture. Secondly, the research delves into the potential role of organizational culture in influencing time delays within the same industry.

2.7 Research Preposition

In this study, we propose the research hypothesis that a substantial relationship exists between organizational culture and delays within the construction industry. This

hypothesis suggests that variations in organizational culture may be significantly associated with the occurrence of delays in construction projects. This assertion finds support in the work of Arditi et all. (2017), who investigated the correlation between organizational culture and project delays within the construction sector. Their findings imply that specific attributes of organizational culture can potentially contribute to the occurrence of delays.

CHAPTER 3 RESEARCH METHODOLOGY

The research methodology employed in this study is based on a quantitative approach, utilizing a confirmatory research design. Confirmatory research is a type of research design that tests specific hypotheses or theories through quantitative methods to provide definitive answers to research questions (Tukey, 1977). In this case, the research aims to validate the relationship between organizational culture and delays in the construction industry. To gather data for the study, a web-based survey was utilized as the primary data collection method. The survey was distributed among managers, team members, and project planners within construction organizations, considering them as the unit of analysis. The survey garnered a total of 164 responses, representing approximately 36.44% of the targeted population. To ensure a diverse and relevant sample, purposive and snowball sampling techniques were employed. Purposive sampling involves selecting participants based on specific criteria to target the most relevant individuals for the study. Snowball sampling, on the other hand, relies on referrals from initial participants to recruit additional respondents. (Alvi, 2016) These sampling techniques allowed the study to access a wide range of perspectives from key stakeholders in the construction industry, contributing to a comprehensive and robust analysis of the relationship between organizational culture and delays in construction projects.

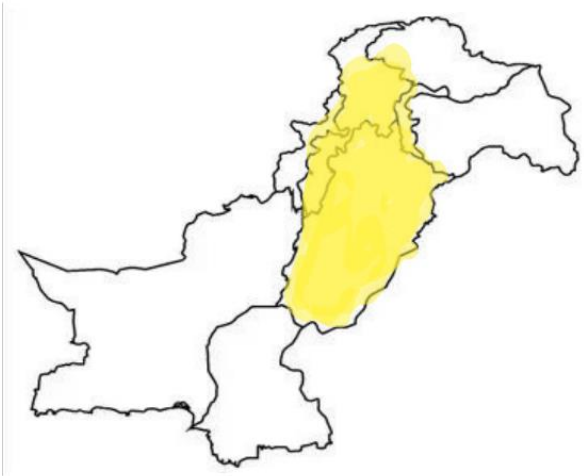

Figure 3.1 Population Sample Distribution

3.1 Research Paradigm

This study employed a quantitative research methodology to thoroughly examine the underlying connection between delays in the construction industry and organizational culture. The research utilized the Organizational Culture Assessment Instrument (OCAI) along with the Quinn and Cameron model to evaluate the organizational culture within diverse construction companies engaged in multiple projects. Through systematic data gathering and analysis, this research aimed to detect potential significant correlations between distinct facets of organizational culture and the occurrence of project delays.

The OCAI, Quinn and Cameron model (1999) provided a comprehensive framework to measure and evaluate the prevailing culture within these construction organizations. The instruments enabled us to understand the dominant cultural preferences and values shaping their daily operations and influencing decision-making processes.

By utilizing a quantitative research approach, this study could objectively quantify and analyze the data, thereby enhancing the reliability and validity of the findings. The statistical analysis allowed for examining the relationships between different cultures of organizations and the occurrence of delays in construction projects. The research design allowed for rigorous testing of causation, determining whether specific cultural elements have a direct influence on the likelihood of experiencing delays.

The research study employed a structured and comprehensive online questionnaire consisting of nine sections to collect extensive data on various aspects related to the construction industry and its organizational culture. Leveraging the convenience and accessibility of Google Forms, this questionnaire was disseminated through an online link to efficiently reach a wide range of participants. The initial two sections were dedicated to data validation and demographic information, covering essential details such as names, ages, genders, educational backgrounds, total years of experience, and the organization's characteristics. Additionally, participants were asked about their experiences with delays, including the number of delays encountered as per the schedule baseline and overall, in their projects.

A crucial aspect of the study was the exploration of percentage delays and the underlying causes, drawing on insights from the work of Muhammad et al. (2019). This

section comprised 19 items aimed at gaining a comprehensive understanding of the factors contributing to delays in construction projects. However, the primary focus of this research was to investigate the potential correlation and causation between organizational culture and delays in the construction industry. To achieve this, the remaining six sections of the questionnaire were dedicated to assessing organizational culture, utilizing the well-regarded Quinn Model's Organizational Culture Assessment Instrument (OCAI). This section encompassed 24 items strategically designed to measure different cultural attributes, as outlined in the Quinn Model. By exploring the organizational culture within construction organizations, this study aimed to shed light on how specific cultural elements influence project performance, particularly in relation to delays. The comprehensive questionnaire design facilitated a holistic investigation, providing valuable insights into the factors that influence project delays and the potential impact of organizational culture on delay occurrences in the construction industry.

3.2 Research Methods

3.2.1 Reliability of Data

Cronbach's alpha was utilized as a measure of internal consistency to assess the reliability and validity of the data collected through the Organizational Culture Assessment Instrument (OCAI) questionnaire and other related variables present in the questionnaire such as percentage delays and total delays of the projects.

The calculation of Cronbach's alpha involves analyzing the inter-item correlations among the items in the questionnaire. A higher value of Cronbach's alpha indicates greater internal consistency, meaning that the items in the scale are highly correlated and effectively measure the same construct. On the other hand, a lower value suggests that the items are not consistently related to each other and may not be measuring the intended construct accurately. For this study, Cronbach's alpha was applied to the OCAI questionnaire to determine the reliability and validity of the organizational culture assessment.

The relevance and effectiveness of Cronbach's alpha in assessing the validity of the OCAI questionnaire in this study are further supported by previous research. Mishra et al. (2018) conducted a comprehensive study that explored various statistical methods

for data validation, including Cronbach's alpha, in the context of organizational research. Their work demonstrated the significance of Cronbach's alpha as a reliable measure of internal consistency and its wide applicability in assessing the validity of organizational questionnaires.

3.2.2 Nature of Variables

One common classification of variables is based on their scale of measurement, which includes four types: nominal, ordinal, interval, and ratio. This classification was first introduced by Stevens (1946) and has since become a fundamental concept in research methodology. This thesis investigates specific dimensions of organizational culture, encompassing Clan, Market, Adhocracy, and Hierarchy. The variable representing organizational culture in this study takes the form of a Nominal Variable. Furthermore, project delays are studied from dual perspectives. Firstly, the delays experienced by individual projects concerning their scheduled baselines. Additionally, the broader spectrum of delays spanning diverse projects is evaluated. These multifaceted delay dimensions are converted into ordinal data, structured according to percentage ranges.

Moreover, the study incorporates a comprehensive organizational classification within the construction domain. This classification divide entities into three categories: Clients, Contractors, and Consultants. This distinction adds an extra layer of exploration, shedding light on the distinctive roles assumed by these entities within the construction industry. It also investigates the potential influence of varying organizational cultures on the different types of organizations. This multifaceted approach aims to study organizational culture, project delays, and the diverse roles of entities in the construction sector.

3.2.3 Data Analysis Technique

According to Arora and Arora (2019), Parametric testing and non-parametric testing are two broad categories of statistical tests used to analyze data and draw conclusions in research studies. The choice between these two types of tests depends on the nature of the data and the assumptions that can be made about the population from which the data is drawn. Parametric tests are used for the continuous data

meanwhile the non-parametric testing is used on the categorical data i.e., nominal, ordinal.

There are various methods to investigate relationships and draw conclusions from data. Parametric tests include, the t-Test is one such tool, facilitating the comparison of means between two distinct groups. For scenarios involving more than two groups, the ANOVA (Analysis of Variance) comes into play, enabling the comparison of means across multiple groups. The Pearson Correlation examines linear relationships between two continuous variables, while Linear Regression predicts one continuous variable based on another. Another parametric technique is the Paired t-Test, used to compare means between two related samples. Parametric tests rely on assumptions of normal distribution, homogeneity of variance, independence, interval/ratio data, linearity, absence of outliers, and adequate sample size. Non-parametric tests, on the other hand, are valuable when the data violates the assumptions of parametric tests. The Mann-Whitney U Test takes center stage, enabling the comparison of medians between two independent groups. To extend this comparison to more than two independent groups, the Kruskal-Wallis Test comes into play, assessing medians across multiple groups. The Spearman Correlation evaluates monotonic relationships between variables, offering insights beyond linear connections. When dealing with categorical variables, the Chi-Square Test assesses associations, while the Wilcoxon Signed-Rank Test compares medians within two related samples. Non-parametric tests offer robust analysis when parametric assumptions are violated. They operate without stringent assumptions like normality and homogeneity of variance. Instead, they require nominal or ordinal data, making them suitable for skewed distributions or smaller sample sizes. These tests still demand independence of observations and appropriate measurement scales for accurate results. (Todd and Karen, 2007).

3.2.4 Chi-Square test

The selection of non-parametric tests and chi-square more specifically in this research is underpinned by its alignment with our data type. This approach is reinforced by the work of Adeyemi & Masalila (2016), who employed the chi-square test in Botswana to ascertain statistically significant delays. Similarly, Edwards et al. (2017) harnessed the Chi-Square statistic for hypothesis testing in their examination of

financial distress and highway infrastructure delays. Notably, Wutthipong & Chotchai (2003) utilized the chi-square test to effectively identify shared delay factors within the context of the Thai construction industry.

Franke et al (2012) in their work have described several ways of using the chi-square as follows.

3.2.4.1 Chi-Square Test for Independence

One of the primary applications of the chi-square test is to determine whether there is a significant association between two categorical variables. This test for independence is utilized to investigate the relationship between the two variables, and it is particularly useful when examining survey data or data from cross-sectional studies.

The null hypothesis for the chi-square test for independence states that there is no association between the two variables, implying that they are independent of each other. Conversely, the alternative hypothesis suggests that there is a significant association between the variables, indicating that they are dependent on each other.

To perform the chi-square test for independence, a contingency table is constructed to display the observed frequencies of the different categories of both variables. The expected frequencies in each cell of the table are then calculated under the assumption of independence. The chi-square test statistic is obtained by comparing the observed and expected frequencies in each cell, and it measures the discrepancy between the observed and expected values.

The degrees of freedom for the chi-square test for independence are determined by $(r - 1) \times (c - 1)$, where "r" represents the number of rows and "c" denotes the number of columns in the contingency table. The test statistic is then compared to the critical value from the chi-square distribution at a specified level of significance.

3.2.4.2 Chi-Square Test for Goodness of Fit

Another application of the chi-square test is the test for goodness of fit. This test is employed to determine whether the observed frequencies in one categorical variable match the expected frequencies from a theoretical distribution or a specified model.

For instance, researchers may use the chi-square test for goodness of fit to assess whether the distribution of responses to a survey question matches a theoretical distribution or if the data follows a specified pattern.

To conduct the chi-square test for goodness of fit, the observed frequencies in each category are compared to the expected frequencies, which are either obtained from external sources or derived from theoretical assumptions. The test statistics are computed by comparing the observed and expected frequencies and measuring the discrepancy between them.

The degrees of freedom for the chi-square test for goodness of fit is equal to the number of categories minus one. The test statistic is then compared to the critical value from the chi-square distribution at the chosen level of significance to determine if the observed frequencies fit the expected distribution.

3.2.4.3 Chi-Square Test for Homogeneity

The chi-square test for homogeneity is used to investigate whether the distribution of frequencies in one categorical variable is the same across different groups or populations.

This test is commonly used in comparative studies, where researchers aim to assess whether the distribution of preferences or behaviors differs significantly among various subgroups. The null hypothesis for the chi-square test for homogeneity states that the distributions are the same across all groups, while the alternative hypothesis suggests that there are significant differences in the distributions.

To perform the chi-square test for homogeneity, a contingency table is created to display the observed frequencies in each category for each group or population being studied. The test statistics are then computed by comparing the observed and expected frequencies in each cell of the table.

The chi-square test employed for homogeneity assessment derives its degrees of freedom as calculated by $(r - 1) \times (c - 1)$, where "r" signifies the count of rows, and "c" indicates the count of columns present in the contingency table. Following this, the test statistic is contrasted with the critical value derived from the chi-square distribution at the selected significance level. This comparison is performed to ascertain the presence of noteworthy dissimilarities in the distributions among the various groups or populations.

The chi-square test for Independence is the most relevant test that is suitable for the kind of analysis that we are conducting. The assumptions and calculations of the chi-square are described in the following section.

3.2.4.4 Assumptions and Methods of Calculations Chi-square test

The chi-square test serves as a robust statistical tool to evaluate the presence of a notable connection between two categorical factors. However, the validity and reliability of its outcomes hinge on adherence to specific assumptions. McHugh (2013) clarifies several essential considerations. Firstly, the data employed in the chi-square test should encompass raw frequencies or counts, rather than percentages or alternative transformations. This prerequisite is pivotal as the test relies on unaltered count data for accurate assessment of variable relationships. Transforming data into percentages or alternate formats may distort results and compromise analytical integrity.

Secondly, a fundamental requirement is the presence of mutually exclusive categories for the variables under examination. Each case or observation must unequivocally belong to a singular category per variable, devoid of ambiguity or overlap. This stipulation ensures a clear and meaningful interpretation of test outcomes.

Moreover, the assumption of independence among study groups or observations is paramount. It ensures that the outcomes of one group do not exert influence on another, guarding against bias and unwarranted conclusions. The significance of independence is accentuated in experimental and observational studies, where the autonomy of each case from external influences is crucial.

Furthermore, the chi-square test is optimally suited for scenarios involving two categorical variables. These variables are typically assessed at the nominal level, denoting the absence of inherent category order. However, it is pertinent to acknowledge the potential presence of ordinal data in certain cases.

Importantly, the variables investigated in our study—Organizational Culture, Type of Organization, and Delays—adhere to each of these assumptions, thereby affirming the appropriateness of employing the chi-square test in our analytical framework.

Lastly, for the chi-square test to be applicable, it is necessary that the anticipated frequency within each cell of the contingency table should equal or exceed 5 in at least 80% of the cells. Furthermore, no cell should possess an expected frequency lower than one.. This condition ensures that the test is not overly sensitive to small sample sizes and that the estimated frequencies are reliable for statistical analysis. Having adequate expected cell frequencies allows for more robust statistical inferences and enhances the test's validity and accuracy. While most of the assumptions for the chi-square test were

met with the available data, there was a challenge with the expected count assumption. To address this issue and ensure the statistical validity of the analysis, an approach of merging categories was adopted as suggested by Agresti (2002). Specifically, categories that initially represented smaller intervals, such as "0%-10%" and "11%-20%", were combined to form a broader category labeled "0%-20%". By merging adjacent categories in this manner, it was possible to achieve expected frequencies greater than the recommended threshold of 5 for over 80 percent of the data points.

Chi-square tests employ a distinct formula to compute the test statistic, denoted as chi-square (X^2). This statistic is expressed as:

$$X^2 = \sum \frac{(O - E)^2}{E} \quad (1)$$

In this Equation (Tallarida et all., 1987) (1):

- X^2 represents the chi-square test statistic

- Σ denotes the summation operator, indicating that we need to sum the calculated values for each category in the data

- O refers to the observed frequency, which represents the actual count of occurrences in each category

- E stands for the expected frequency, which represents the count of occurrences that we would anticipate based on a theoretical distribution or hypothesis.

The chi-square test statistic is obtained by computing the squared differences between the observed (O) and expected (E) frequencies for each category, and then dividing these squared differences by the corresponding expected frequency (E). These values are then summed across all categories.

The magnitude of the chi-square test statistic (X^2) is directly influenced by the differences between the observed and expected frequencies. Larger differences between O and E result in higher values of X^2, indicating a stronger association or deviation from the expected distribution.

To determine whether the observed differences are statistically significant, researchers compare the calculated chi-square value (X^2) to a critical value from the chi-square distribution. The critical value is based on the chosen significance level and the degrees of freedom, which depend on the number of categories in the data. If the calculated X^2 value exceeds the critical value, it suggests that the observed data

significantly deviate from the expected distribution, leading to the rejection of the null hypothesis.

The chi-square test is a significant statistical method employed to assess the association between two categorical variables. However, manual execution of the test can be intricate, particularly when dealing with extensive datasets or complex contingency tables. To address these challenges within the context of our research, we utilized software tools such as SPSS (Statistical Package for the Social Sciences) to provide valuable assistance. SPSS offered an accessible interface and automated computations, streamlining the execution of chi-square tests and enhancing the comprehension of the resultant outcomes.

During our study, we efficiently integrated data into SPSS by either manually entering it or importing it from external sources. Subsequently, the software promptly generated a contingency table that embodied the cross-tabulation of the two categorical variables that were the focal point of our investigation. Notably, SPSS also undertook the calculation of expected frequencies by considering the data distribution and adhering to the fundamental assumption of independence between the variables – a prerequisite integral to the chi-square test. Subsequently, SPSS provides the associated p-value, a critical indicator of the statistical significance of the chi-square test. The p-value indicates the probability of observing the observed association between the variables under the assumption that there is no real association (null hypothesis). Comparing the p-value to the chosen significance level (typically 0.05) according to Biau et al (2010) enables researchers to determine the statistical significance of the observed association. If the p-value is less than the significance level, researchers reject the null hypothesis, concluding that there is a significant association between the two variables.

Additionally, in SPSS, the determination of degrees of freedom (df) for the chi-square test is automated and depends on the row and column count within the contingency table. These degrees of freedom play a crucial role in determining the critical value from the chi-square distribution table, aiding in defining the region for test rejection. Through the comparison of the computed test statistic with the critical value, we can determine whether to accept or not accept the null hypothesis.

CHAPTER 4 RESULTS AND ANALYSIS

4.1 Data Cleaning and Preprocessing

In this research study, the collected data underwent several important steps to be ready for analysis using IBM SPSS software. The data initially collected was in a raw form, and it needed to be converted into a numeric format that could be read by the software. This conversion was essential as SPSS requires numeric data for statistical analysis. Once the data was transformed into a suitable format, it was imported into the IBM SPSS software. During the data import process, it was taken care to ensure that the data was properly labeled, and variables were defined appropriately. Labeling the data allows for better understanding and interpretation of the variables, making the analysis more efficient. Defining the variables with their respective data types and measurement levels ensures that the software accurately treats the data during computations and statistical tests.

However, not all responses were eligible for further analysis. Out of the initial 164 responses, 153 remained after removing entries with erroneous answers and incomplete responses. These exclusions were necessary to maintain the authenticity and precision of the data. Erroneous answers and incomplete responses could introduce bias and inaccuracies in the analysis, potentially leading to unreliable results. Through removal of such entities, it was ensured that only high-quality and reliable data was used for the subsequent analysis. The data cleaning and preparation process played a crucial role in ensuring the validity of the results obtained from the statistical analysis using IBM SPSS.

After completing the data preparation phase, the dataset was refined and contained 153 valid responses, ready for further analysis in IBM SPSS. The initial step in utilizing IBM SPSS software was to import the data, which was in Excel format as it was downloaded from the online questionnaire. The data import process ensured that the dataset was correctly loaded into the software, preserving its integrity for subsequent analysis. Once the data was imported, the next step involved data labeling. Labeling the data was essential for better understanding and future references. Meaningful labels were assigned to variables, providing descriptive names that aided in comprehending the nature of each variable within the dataset. Following data labeling, variable definition was carried out to ensure clarity and understandability. This

step involved specifying the data types and measurement levels of variables. Variables were categorized as continuous, categorical, or ordinal, depending on their nature. Continuous variables, such as age or income, have a range of possible values with meaningful intervals. Categorical variables, like gender or ethnicity, have distinct groups with no inherent order. Ordinal variables, such as Likert scale responses, have categories with a natural order but inconsistent intervals. Accurate variable definition enabled precise computations during subsequent statistical tests. Data cleaning was a crucial process to maintain data quality and accuracy. It involved identifying and removing erroneous and incomplete responses from the dataset. Missing values, outliers, and inconsistencies were checked and addressed during data cleaning. By conducting data cleaning, the researchers ensured that the dataset was free from errors that could potentially compromise the validity and reliability of the results.

Having completed these detailed steps, the dataset was now ready for exploratory data analysis, hypothesis testing, and various other statistical procedures using IBM SPSS. Exploratory data analysis allowed the researchers to gain insights into the dataset, identify patterns, and explore relationships between variables. Hypothesis testing involved performing statistical tests to assess the significance of associations between variables and to test research hypotheses.

4.2 Demographics

4.2.1 Gender

In the research data, the gender distribution within the construction sector revealed that 95.7% of the respondents were male, while the remaining respondents identified as female.

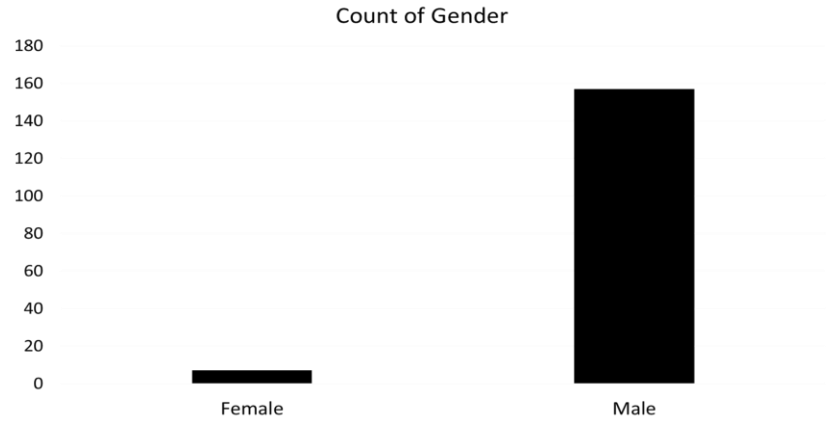

Figure 4.1 Gender Distribution of the Respondents

In the construction sector, the gender disparity revealed in the research data is significant, with 95.7% of the respondents being male. This overwhelming representation of males in the industry indicates that the construction sector is predominantly male-dominated. Such gender disparity can have a considerable impact on the perception of organizational culture within construction companies. In male-dominated environments, there is a higher likelihood of traditional gender norms and stereotypes being reinforced, which can influence the overall organizational culture. The prevalent masculine culture may foster certain behaviors and attitudes that align with traditional notions of masculinity, such as assertiveness, competition, and a hierarchical leadership style. These disparities can contribute to differences in how men and women perceive and experience the organizational culture. The male-dominated nature of the construction sector can create a culture that prioritizes attributes and values traditionally associated with men, potentially neglecting, or undervaluing the perspectives and contributions of women. Furthermore, the presence of a predominantly male workforce may also influence communication patterns, team dynamics, and the overall work environment.

4.2.2 Size of the Organization

The data on the size of organizations within the construction sector reveals valuable insights into the diversity of companies operating in this industry. Out of the total 164 responses, 64% of the organizations are classified as large, while 29.3% are categorized as medium-sized. The remaining organizations are characterized as small. This distribution indicates a significant presence of large companies in the construction sector, followed by a notable proportion of medium-sized firms. Such a distribution can have implications for the organizational culture within these companies.

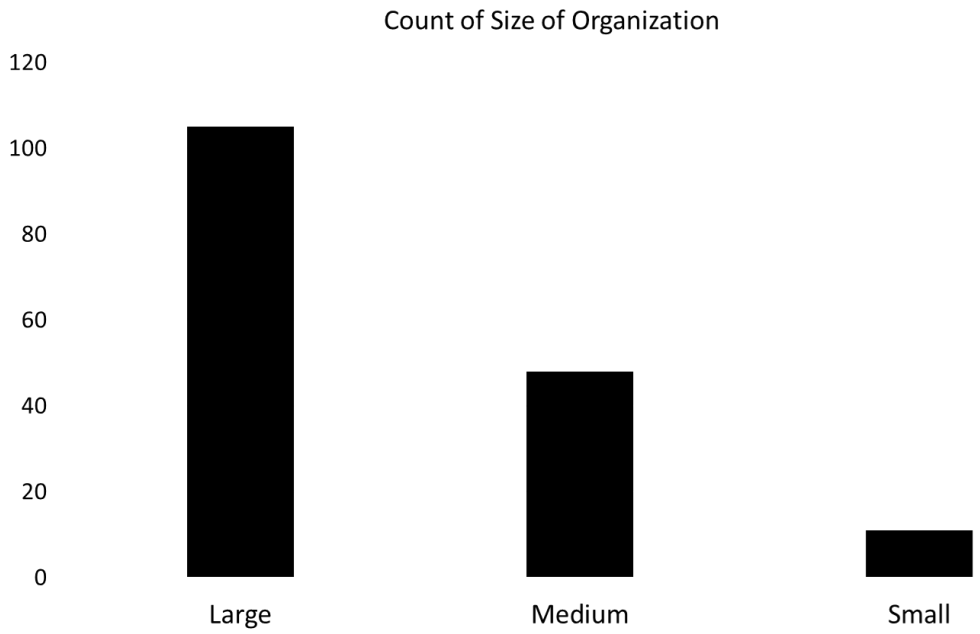

Figure 4.2 Distribution of the Size of the organization of the Respondents

Large organizations often have more extensive resources, hierarchies, and complex systems compared to smaller ones. This might lead to the development of hierarchical and bureaucratic organizational cultures, where decision-making processes might be more centralized, and there could be a focus on stability and standardization. On the other hand, medium-sized organizations might strike a balance between the characteristics of large and small companies, fostering more flexibility and adaptability in their culture. Small organizations, while constituting a smaller proportion of the dataset, could exhibit a more personalized and family-like culture. With fewer hierarchical layers and a closer-knit workforce, these companies may prioritize employee empowerment, teamwork, and open communication.

4.2.3 Experience of the Respondents

The data provided depicts the distribution of respondents' total years of experience within the context of this research. The responses reveal a diverse range of experience levels among the participants in the construction sector. A significant percentage of respondents (15%) reported having 8 years of experience, signifying a considerable number of professionals with a considerable amount of industry exposure and expertise. Similarly, 7% of the respondents indicated having 5 years of experience, representing a substantial segment of individuals who have crossed the initial stage of

their careers and are now building on their knowledge and skills in the construction industry.

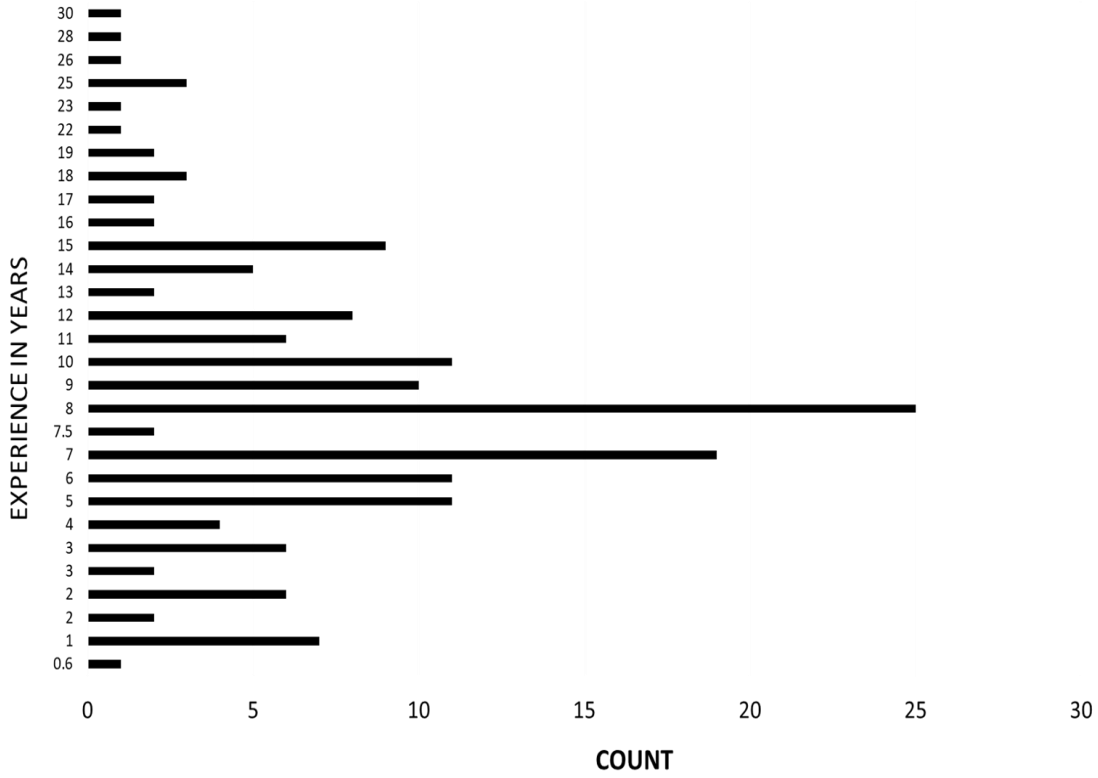

Figure 4.3 Bar chart of the total experience of the respondents in years.

Interestingly, the data also shows a notable proportion of respondents (12%) with 7 years of experience, suggesting a group of professionals who have reached a pivotal point in their careers. This could indicate that many individuals in the construction sector have attained a level of experience that impacts their decision-making and leadership capabilities.

Furthermore, the data indicates that a significant number of respondents (6%) have 9 years of experience, which is another significant milestone in their professional journey. Additionally, 4% of respondents have 11 years of experience, representing another group of professionals with considerable knowledge and expertise. The data also reveals varying percentages for other experience levels, ranging from 1% to 5%. These percentages likely represent individuals at different stages of their careers, from entry-level positions to mid-level management and senior leadership roles. Overall, the distribution of respondents' experience in this research context highlights the diverse composition of professionals in the construction sector, with varying levels of expertise and knowledge. The range of experience levels is indicative of a workforce that

comprises individuals with different backgrounds, skills, and capabilities. Such diversity in experience can influence the organizational culture within construction companies, as it may be associated with distinct leadership styles, decision-making processes, and perspectives on industry-related challenges.

4.2.4 Education Level

The data in the fig is the education levels of the respondents. The results indicate a diverse educational background among professionals in the construction sector. The majority of respondents (58.5%) reported having a bachelor's degree, showing a significant proportion of individuals with a foundational level of education in their respective fields. This substantial number of bachelor's degree holders suggests a pool of professionals equipped with fundamental knowledge and skills, potentially contributing to various roles within the construction industry.

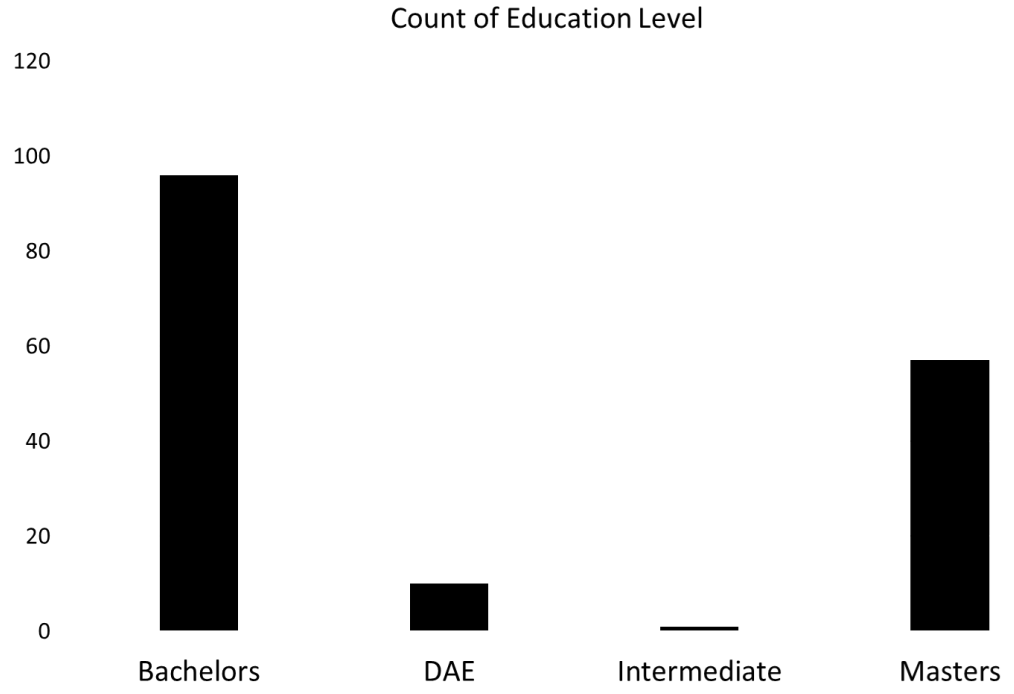

Figure 4.4 Distribution of the Education level of the respondents

Additionally, the data reveals that 34.8% of respondents possess a master's degree, indicating a considerable group of individuals with advanced education and expertise in specialized areas. This master's degree percentage signifies a segment of professionals who have pursued further academic and professional development, potentially holding key positions in leadership, management, and specialized technical roles. Moreover, the data shows that 6.1% of respondents have completed a Diploma

of Associate Engineering (DAE). This subset of professionals represents a specialized group with technical knowledge and skills, likely contributing to specific technical aspects of construction projects. Furthermore, the data indicates that a small percentage (0.6%) of respondents have an intermediate level of education. This diversity in educational qualifications can significantly impact the organizational culture within construction companies, as it may reflect varying levels of technical expertise, problem-solving abilities, and strategic thinking among the workforces.

4.2.5 Type of Organization

The distribution of respondents based on the type of organization they belong to provides valuable insights within the context of this research on organizational culture and its relationship with the perception of delays in the construction sector. The data reveals that 41.5% of respondents are affiliated with client organizations, while 39% are associated with contractor firms. Additionally, 19.5% of respondents identified themselves as consultants in the construction industry.

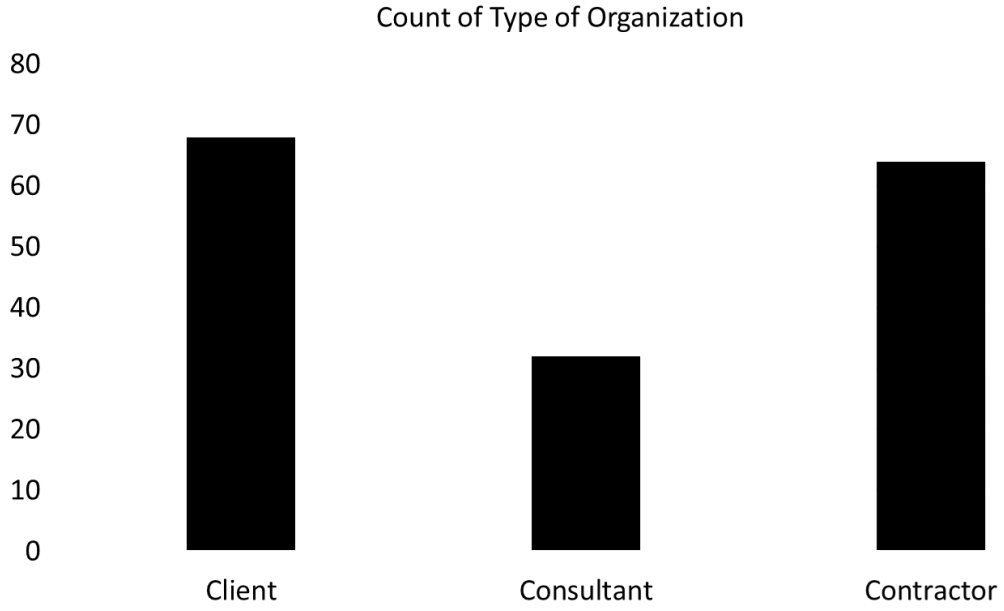

Figure 4.5 Distribution of the type of organization of the respondents

The significant representation of respondents from client organizations indicates their prominent role in shaping and influencing construction projects. Clients play a pivotal role in project initiation, funding, and decision-making, which can significantly impact project timelines and outcomes. Their involvement in the construction process can contribute to the perception of delays, as they set project

milestones, approve project plans, and demand adherence to strict timelines. On the other hand, the substantial proportion of respondents from contractor firms signifies the significance of this group in the construction sector. Contractors are directly responsible for executing construction projects, and their efficiency, coordination, and workforce management are vital factors in completing projects on time. The organizational culture within contractor firms can impact how efficiently they manage resources, handle unforeseen challenges, and mitigate potential delays. Furthermore, the presence of respondents from consultant backgrounds adds another layer of complexity to the research. Consultants offer specialized expertise and advisory services to construction projects, influencing design, planning, and execution. Their cultural dimensions can encompass factors such as innovation, problem-solving approaches, and collaboration with various stakeholders.

The variation in organizational types represented in the data underscores the dynamic and interconnected nature of the construction sector. Different types of organizations work collaboratively in construction projects, each contributing its unique perspectives, priorities, and working styles. By examining the organizational culture of client organizations, contractor firms, and consultants, potential areas of alignment or divergence in perceptions of delays within the construction industry can be identified.

4.3 Project Performance

In this research study, the data analysis provided significant insights into the percentage of projects facing delays in the construction sector, as reported by the respondents. The results revealed that a considerable number of projects experienced delays, with varying degrees of impact. Approximately 13.4% of respondents reported that less than 10% of the projects they encountered faced delays, while 14% observed delays in 10% to 20% of the projects. Moreover, 24.4% of participants witnessed delays in 21% to 30% of the projects, and 12.2% faced delays in 31% to 40% of their projects. Furthermore, 23.8% of respondents encountered a substantial number of delays exceeding 50% of the projects they have been involved in.

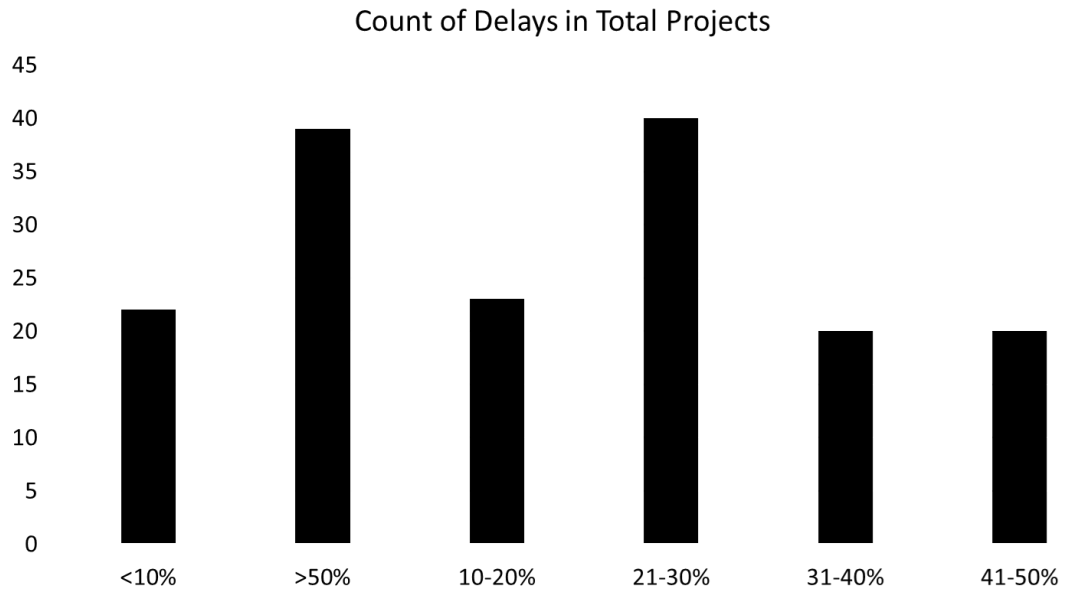

Figure 4.6 Distribution of the delays in total projects faced by the respondents.

These findings reaffirm the literature review's observations that project delays are a prevalent and challenging issue in the construction industry. The data's alignment with existing research highlights the consistency of the problem and its impact on project performance. The overwhelming percentage of projects facing delays in various categories emphasizes the urgency for the construction sector to address the factors contributing to project delays. The research's findings underscore the significance of effective project management practices in mitigating and minimizing delays in construction projects. Understanding the distribution of delays among projects provides valuable insights into the industry's current state and serves as a catalyst for improving project management strategies. By identifying and addressing the root causes of delays, the construction sector can work towards enhancing project timelines, reducing costs, and delivering successful projects.

As reported by the respondents in the construction sector, the results revealed a significant distribution of delays among the projects. Approximately 13.4% of respondents experienced delays of less than 10% as per the schedule baseline, while 14% observed delays in the range of 10% to 20%. Moreover, 28% of participants encountered delays in the range of 21% to 30%, and 20.1% faced delays in the range of 31% to 40% compared to the scheduled baseline. Additionally, 7.9% of respondents reported delays of 41% to 50%, while a staggering 26.5% faced delays exceeding 50% of the schedule baseline. These findings echo the concerns raised in the literature review, further substantiating that overwhelming delays are a persistent challenge in

the construction industry. The data's alignment with existing research reinforces the urgency to address the issue of delays and its profound impact on project performance. The prevalence of delays across various percentage categories indicates a critical need for the construction sector to proactively address the underlying causes of project delays.

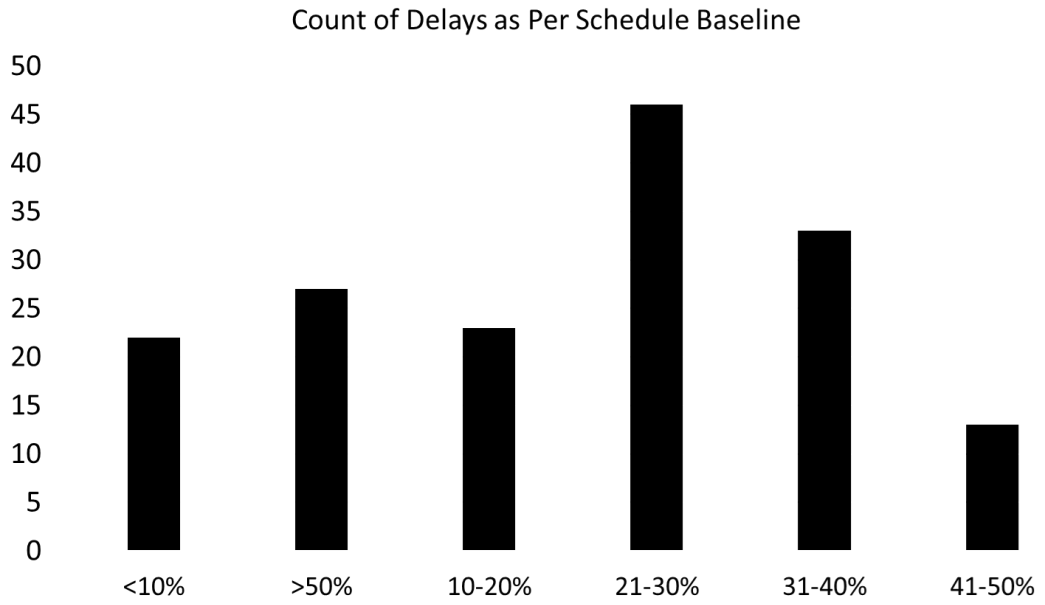

Figure 4.7 Distribution of the delays as per schedule baseline in projects faced by the respondents.

4.4 Reliability Test

The Cronbach's alpha test was performed to assess the internal consistency and reliability of the two variables in the study. For the organizational culture variable, Cronbach's alpha coefficient was found to be 0.868, indicating strong internal consistency among the items that measured different aspects of organizational culture. Similarly, the variable related to the percentage of delays and their causes yielded a Cronbach's alpha coefficient of 0.88, confirming high internal consistency among the items measuring the factors contributing to delays in construction projects. These high Cronbach's alpha values suggest that the items within each variable were coherent and consistent in measuring their respective constructs. The robust internal consistency of both variables enhances confidence in the reliability and accuracy of the data collected.

Table 4.1 Cronbach reliability test results

Organizational Culture

Reliability statistics	
Cronbach's alpha	**No of items**
0.868	4

Percentage Delays and Their Causes

Reliability statistics	
Cronbach's alpha	**No of items**
0.88	19

4.5 Dominant Culture in the Construction Industry of Pakistan

In this research study, the analysis of organizational culture in the construction sector revealed interesting insights into the dominant culture types present within the organizations. The Competing Values Framework (CVF) was used to categorize the organizations into four main culture types: Clan, Adhocracy, Market, and Hierarchy. These culture types represent different approaches to organizational structure, decision-making, and employee behavior.

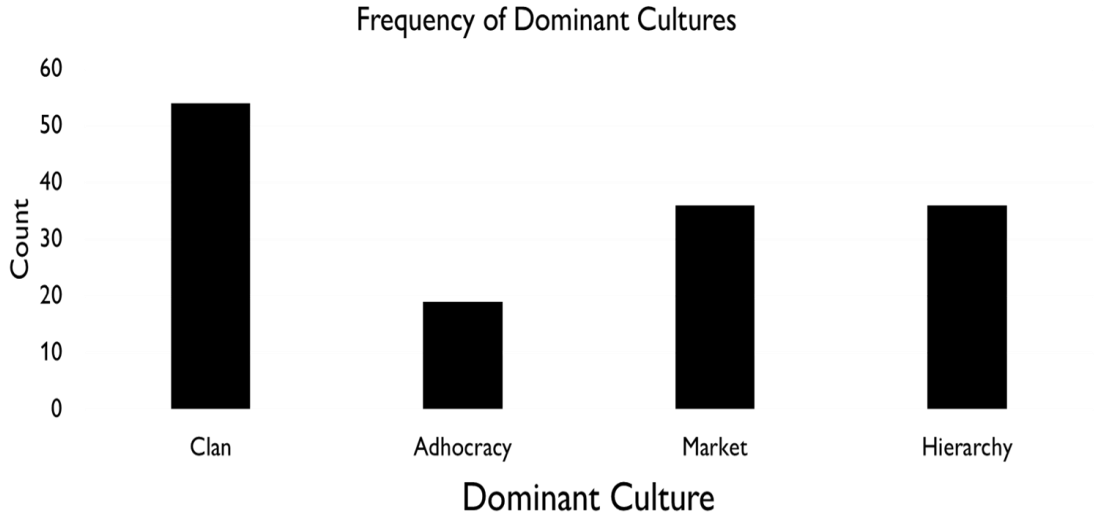

Figure 4.8 Frequency distribution of Dominant Culture perceived by the respondents.

Upon analyzing the responses from approximately 164 participants it was evident that Clan culture emerged as the dominant culture type within the construction organizations, with around 50 responses indicating its prevalence. Clan culture is

characterized by a strong emphasis on collaboration, teamwork, and employee empowerment. Organizations with Clan culture prioritize employee development, mentorship, and a family-like atmosphere. Decision-making is often decentralized, and there is a high level of trust and communication among team members. The nurturing and supportive environment of Clan culture fosters a sense of belonging and commitment among employees.

On the other hand, Market and Hierarchy cultures emerged as joint second dominant culture types within the construction sector, with a considerable number of responses each. Market culture is results-driven and focused on achieving competitive advantage. Organizations with a Market culture prioritize performance, goal attainment, and customer satisfaction. They emphasize competitiveness, accountability, and meeting external demands. In a Market culture, decisions are often based on data and performance metrics, and employees are motivated to achieve targets and outperform competitors.

Hierarchy culture, on the other hand, is characterized by stability, control, and adherence to rules and procedures. Organizations with a Hierarchy culture have well-defined roles, clear reporting structures, and formalized processes. They value stability, predictability, and efficiency and often follow established guidelines and standard operating procedures. In a Hierarchy culture, decision-making authority is typically centralized, and there is a strong emphasis on maintaining order and discipline.

Interestingly, Adhocracy culture emerged as the least dominant culture type among the construction organizations, with relatively fewer responses indicating its prevalence. Adhocracy culture is characterized by innovation, risk-taking, and a focus on entrepreneurship. Organizations with an Adhocracy culture emphasize creativity and flexibility, encouraging employees to experiment with new ideas and approaches. They are adaptable and open to change, constantly seeking new opportunities and exploring different ways to achieve their goals. Such organizations value learning and are often at the forefront of innovation in their industries.

The distribution of these culture types within the construction sector offers valuable insights into the prevailing organizational dynamics and values. The dominance of Clan culture highlights the significance of collaboration and employee empowerment within the industry. This focus on nurturing and supportive environments can foster a positive organizational climate, leading to increased employee satisfaction and engagement.

The joint prevalence of Market and Hierarchy cultures indicates a balanced approach to results-driven performance and stability within the construction sector. Organizations with Market culture may prioritize efficiency and customer satisfaction, while those with Hierarchy culture may focus on maintaining order and discipline. Striking the right balance between these two culture types can enhance operational efficiency while ensuring adherence to established standards and procedures.

However, the limited prevalence of Adhocracy culture suggests that innovative and risk-taking approaches may not be as commonly embraced in the construction industry. This finding highlights the potential areas for improvement and the need to cultivate a more innovative and forward-thinking culture within the sector. Encouraging experimentation and learning can drive continuous improvement and position organizations to stay competitive in a rapidly changing business environment.

Furthermore, examining the relationship between organizational culture and other parameters, such as the size of the organization and gender distribution, can provide additional insights into the dynamics of the construction sector. For instance, understanding how the dominant culture types vary across organizations of different sizes can offer valuable information for strategic decision-making and resource allocation. Additionally, exploring the impact of male dominance on organizational culture can shed light on gender dynamics within the construction industry and potential opportunities for promoting diversity and inclusion.

Furthermore, the perspective of clients, consultants, and contractors on the dominant culture types can offer different viewpoints on organizational values and practices. Clients may value organizations with a strong Clan culture for their customer-centric approach and personalized service. Consultants, on the other hand, may appreciate organizations with an Adhocracy culture for their innovative and flexible solutions. Contractors may prioritize organizations with a Market culture for their performance-driven focus and ability to meet deadlines and deliver results.

In the context of Pakistan, the dominance of Clan culture in the construction sector can be attributed to the country's rich cultural values and its close-knit society. Pakistan is a diverse nation with multiple ethnic groups, each having its unique cultural practices and traditions. Within such a context, Clan culture aligns well with the strong emphasis on family ties, loyalty, and interpersonal relationships that are deeply ingrained in Pakistani culture.

One of the key aspects of Clan culture is the value it places on collaboration and teamwork. In Pakistani society, the concept `of working together as a collective unit is highly cherished. People in Pakistan often prioritize group harmony and unity over individual interests. This value is reflected in the construction industry, where organizations with a Clan culture foster a collaborative and team-oriented approach to project management. Decision-making in such organizations may be decentralized, allowing for greater involvement of team members, and fostering a sense of ownership and commitment among employees.

Furthermore, the nurturing and supportive environment of Clan culture resonates with the cultural values of Pakistan, where the well-being and harmony of the community are highly regarded. In the construction sector, this can lead to the establishment of strong working relationships between employees, creating a sense of camaraderie and shared purpose. This, in turn, can improve team cohesion, communication, and overall productivity. The cultural value often extends to the workplace, where employees may prefer a more private and close-knit environment. Clan culture, with its emphasis on fostering a family-like atmosphere within organizations, can align well with these cultural norms and provide employees with a sense of comfort and security.

Moreover, Pakistan is known for its collectivist culture, where people tend to prioritize the needs of the group over their individual interests. Clan culture, which emphasizes teamwork and cooperation, is well-suited to this collectivist mindset. In the construction industry, this can result in greater cooperation among team members, leading to improved project outcomes and a stronger sense of belonging within the organization.

It is also essential to consider the influence of Islamic values on Pakistani culture and society. Islam, as the predominant religion in Pakistan, plays a significant role in shaping cultural norms and practices. Islamic teachings emphasize the importance of unity, cooperation, and mutual support among members of the community. These values are consistent with the principles of Clan culture, which encourages a supportive and collaborative work environment.

However, while Clan culture may dominate in the construction sector, it is essential to recognize the presence of other cultural orientations as well. Pakistan's diverse society includes individuals from various cultural backgrounds and belief

systems. As such, organizations may also exhibit characteristics of other organizational cultures, such as Market culture, Hierarchy culture, or Adhocracy culture, depending on the specific context and leadership style.

Market culture, for instance, may be evident in some construction organizations that prioritize results-driven performance and competitiveness. Hierarchy culture could also be present in organizations that emphasize stability, control, and adherence to established procedures. Adhocracy culture may be more prevalent in innovative and dynamic construction firms that encourage risk-taking and experimentation. Furthermore, the construction sector in Pakistan faces various challenges, including issues related to project delays, resource management, and quality control. While Clan culture's focus on collaboration and teamwork can positively impact these challenges, it is essential to strike a balance between different cultural orientations to address complex issues effectively.

4.6 Organizational Culture and Type of Organization

The hypothesis posited that these two variables are dependent, implying that the dominant culture of an organization would influence its type. The chi-square test was employed to test this hypothesis by analyzing the association between the dominant culture and the type of organization. However, the results of the chi-square test indicated that the research hypothesis was rejected, as the calculated p-value was found to be less than 0.05, which is the significance level chosen for the study.

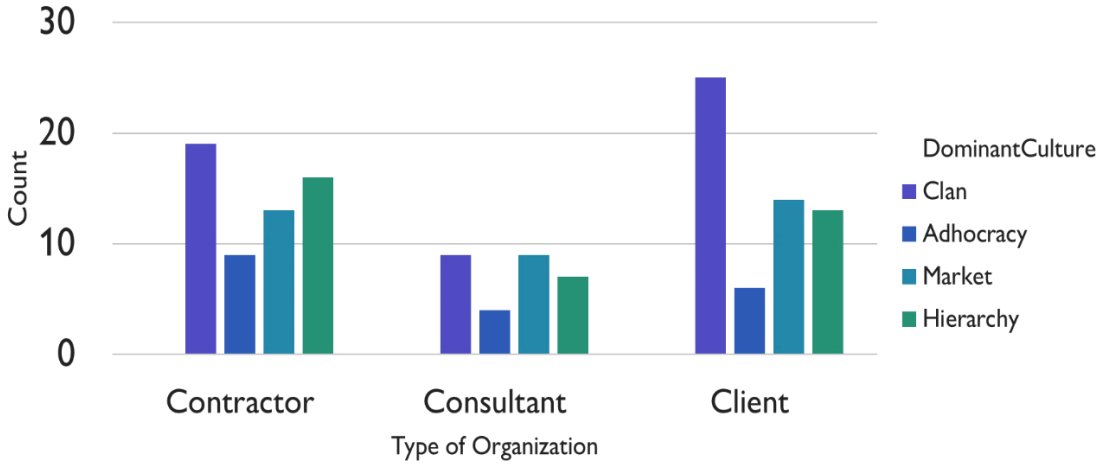

Figure 4.9 Frequency Distribution of Type of organization with respect to dominant culture

The chi-square test is a statistical technique employed to establish if there exists a noteworthy correlation between two categorical variables. In this context, the two categorical variables under consideration were the prevalent culture (with classifications like Clan, Market, Hierarchy, and Adhocracy) and the organizational type (with designations such as Large, Medium, and Small). The purpose of this test is to assess whether the observed distribution of responses within the contingency table substantially deviates from the anticipated distribution, operating on the assumption that the two variables are unrelated.

Table 4.2 Chi-Square expected value and actual value of Type of Organization vs Dominant Culture

			Dominant Culture				
			Clan	Adhocracy	Market	Hierarchy	Total
Type of Organization	Contractor	Count	19	9	13	16	57
		Expected Count	21	7.5	14.3	14.3	57
	Consultant	Count	9	4	9	7	29
		Expected Count	10.7	3.8	7.3	7.3	29
	Client	Count	25	6	14	13	58
		Expected Count	25	6	14	13	58
Total		Count	53	19	36	36	144
		Expected Count	53	19	36	36	144

Table 4.3 Chi-Square test statistics result of Type of Organization vs Dominant Culture

	Value	df	Asymptotic Significance (2-Sided)
Pearson Chi-Square	2.658	6	0.85
Liklihood Ratio	2.658	6	0.854
Linear-by-Linear Association	0.76	1	0.383
N of Valid Cases	144		

The research hypothesis suggested that the dominant culture of an organization would influence its type. For example, it was hypothesized that organizations with a Clan culture might be more likely to be of a certain type (e.g., Medium-sized) compared to organizations with a Market or Hierarchy culture. Similarly, organizations with a

Market culture might have a different distribution of types compared to organizations with an Adhocracy culture.

However, the chi-square test results did not support this hypothesis. The calculated p-value, which represents the probability of obtaining the observed results if the null hypothesis (independence of the two variables) is true, was found to be less than the chosen significance level of 0.05. This indicates that the observed distribution of responses in the contingency table is unlikely to occur by chance alone, leading to the rejection of the research hypothesis. The finding that dominant culture and type of organization are not significantly associated in the construction sector of Pakistan has important implications. It suggests that the cultural orientation of an organization does not necessarily determine its type (e.g., Large, Medium, or Small). Instead, the type of organization may be influenced by a variety of other factors, such as organizational goals, management style, market conditions, and resource availability.

In the context of Pakistan, where the construction sector is characterized by a dominant Clan culture, this result may indicate that organizations with a Clan culture can exist in various forms, regardless of their size or structure. Similarly, organizations with other dominant cultures (e.g., Market or Hierarchy) may also exhibit a diverse range of types. The lack of significant association between dominant culture and type of organization also highlights the complexity and diversity within the construction sector. Pakistan's construction industry encompasses a wide range of organizations, each with its unique characteristics and operational practices. Factors such as historical context, regional influences, and individual leadership styles may play a more significant role in determining the type of organization than its dominant culture. Moreover, the finding emphasizes the need for a nuanced understanding of organizational dynamics in the construction sector. Organizations in the same cultural orientation can differ significantly in their structure, approach to project management, and overall performance. It is essential for stakeholders in the construction industry to recognize and appreciate this diversity to develop tailored strategies for organizational improvement and growth.

4.7 Organizational Culture and Percentage of Total Delayed Projects

Furthermore, we examined the relationship between the dominant culture within construction organizations and the total delays experienced in projects. Our hypothesis proposed that these two variables are dependent, meaning that the prevailing organizational culture would significantly influence the number of delays encountered during projects. However, the results from the chi-square test led us to reject this hypothesis, as the p-value was found to be less than 0.05.

Table 4.4 Chi-Square expected value and actual value if Dominant Culture vs Total Delays

			Dominant Culture				
			Clan	Adhocracy	Market	Hierarchy	Total
Total Delays	0-20%	Count	13	4	7	8	32
		Expected Count	1 1 .8	4.2	8	8	32
	21-40%	Count	23	7	13	12	55
		Expected Count	20.2	7.3	1 3.8	1 3.8	55
	>40%	Count	1 7	8	1 6	16	57
		Expected Count	21	7.5	1 4.3	1 4.3	57
Total		Count	53	19	36	36	1 44
		Expected Count	53	1 9.0	36	36	1 44.0

Table 4.5 Chi-Square test statistics result of Dominant Culture vs Total Delays

	Value	df	Asymptotic Significance (2-Sided)
Pearson Chi-Square	2.12	6	0.908
Liklihood Ratio	2.159	6	0.905
Linear-by-Linear Association	1.045	1	0.307
N of Valid Cases	144		

The chi-square test revealed that there is no significant association between the dominant culture and the total delays in projects. This finding implies that the dominant culture within construction organizations may not directly impact project delays in a substantial manner. Instead, other external and industry-specific factors might play a more significant role in determining project timelines and delays in the construction sector.

The dominance of Clan culture in the construction industry of Pakistan, which emphasizes collaboration and teamwork, might have certain positive effects on project management practices. However, our results suggest that these positive effects might not directly translate into reducing project delays. It is possible that other challenges and complexities, such as inadequate infrastructure, regulatory issues, resource limitations, and political instability, have a more significant influence on project timelines. The rejection of the research hypothesis also highlights the need to consider various external factors that can affect project performance in the construction industry. Factors like decision-making processes, industry-specific challenges, and the hierarchical nature of construction projects may play a more prominent role in determining delays than the organizational culture itself.

These findings have significant implications for project management practices in the construction industry of Pakistan. Project managers and construction organizations need to be aware that addressing delays in projects requires a comprehensive understanding of the multiple factors influencing project performance. Simply focusing on organizational culture alone may not lead to significant improvements in reducing delays.

To enhance project management practices and reduce delays, construction organizations should consider a holistic approach that takes into account both internal cultural aspects and external industry-specific challenges. Effective resource allocation, risk management strategies, timely decision-making, and addressing industry-specific hurdles are essential components of improving project performance. Furthermore, the results of this study align with existing literature on the construction industry, which suggests that delays are a common and overwhelming issue in the sector. The prevalence of delays in construction projects is not unique to Pakistan but is a global challenge faced by construction industries worldwide. The complexities of construction projects, combined with external factors, make it imperative for the industry to adopt effective project management practices that can mitigate and minimize delays.

Organizational Culture and Delays as per schedule baseline of projects:

Continuing our analysis, we also investigated the relationship between organizational culture and the total delays experienced in projects, specifically focusing on the scheduled baseline. The hypothesis proposed that there would be a significant dependency between these two variables, indicating that the prevailing organizational culture would have a substantial impact on the total delays encountered during projects. However, similar to the previous analysis, the results from the chi-square test led us to reject this hypothesis as the p-value was found to be less than 0.05.

The chi-square test once again indicated that there is no significant association between organizational culture and the total delays in projects as per the scheduled baseline. This reaffirms the earlier finding and suggests that the dominant culture within construction organizations may not directly influence project delays in a significant manner.

Table 4.6 Chi-Square expected value and actual value of Dominant Culture vs Delays as per Schedule Baseline

			Dominant Culture				
			Clan	Adhocracy	Market	Hierarchy	Total
Type of Organization	0-20%	Count	17	5	6	5	33
		Expected Count	12.1	4.4	8.3	8.3	33
	21-40%	Count	24	9	20	20	73
		Expected Count	26.9	9.6	18.3	18.3	73
	>40%	Count	12	5	10	11	38
		Expected Count	14	5	9.5	9.5	38
Total		Count	53	19	36	36	144
		Expected Count	53	19	36	36	144

Table 4.7 Chi-Square test statistics result of Dominant Culture vs Delays as per Schedule Baseline

	Value	df	Asymptotic Significance (2-Sided)
Pearson Chi-Square	5.158	6	0.524
Liklihood Ratio	5.219	6	0.516
Linear-by-Linear Association	3.471	1	0.062
N of Valid Cases	144		

The dominance of Clan culture, which emphasizes collaboration and teamwork, may have positive effects on project management practices, but our results indicate that

these positive effects do not directly translate into reducing total project delays. Instead, the data suggest that other external and industry-specific factors play a more influential role in determining project timelines and delays. The rejection of the research hypothesis reinforces the need for a comprehensive approach to address project delays in the construction industry of Pakistan. Construction organizations should consider a combination of internal cultural aspects and external industry-specific challenges to effectively manage and reduce delays.

CHAPTER 5 CONCLUSION AND FUTURE RESEARCH

5.1 Discussion of Results

The research study provided valuable insights into the organizational culture and its potential impact on project delays in the construction industry of Pakistan. The data analysis revealed that Clan Culture was the dominant culture within construction organizations. This culture emphasized trust, teamwork, and close-knit relationships among employees, often found in family-owned and operated companies where employees were often related. Additionally, Clan networks facilitated informal information and resource exchange, offering financial capital, land, and skilled labor.

Regarding the perception of delays in projects, the data highlighted that delays were prevalent in the construction sector of Pakistan. A significant percentage of respondents reported experiencing delays in varying degrees. While around 13.4% of respondents witnessed delays in less than 10% of the projects, 23.8% reported delays in more than 50% of the projects they encountered. These results underscored the overwhelming nature of delays in the industry, aligning with existing literature that identifies project delays as a common and challenging issue faced by construction industries worldwide.

The research hypothesis proposed that the dominant organizational culture would significantly influence the total delays experienced in projects. However, the chi-square test results led to the rejection of this hypothesis, indicating that there was no significant association between the dominant culture and project delays. This finding suggests that while Clan Culture promotes positive values such as trust and collaboration, it may not be the sole determinant of project timelines and delays.

The implications of these results are critical for the construction industry in Pakistan. While Clan Culture may foster positive values, the prevalence of delays in construction projects may be influenced by various external and industry-specific factors. Economic fluctuations, regulatory constraints, issues with suppliers, and adverse weather conditions are some of the external factors that can hinder project success. Additionally, project-specific constraints such as equipment failures, labor shortages, missing or incorrect data, and conflicts can also contribute to delays.

To enhance project management practices and reduce delays, construction organizations must consider a comprehensive approach that addresses both internal cultural aspects and external industry-specific challenges. While Clan Culture may create a conducive environment for collaboration and teamwork, it may not directly translate into reducing project delays. Effective resource allocation, risk management strategies, timely decision-making, and addressing industry-specific hurdles are essential components of improving project performance. These results are not only relevant to the construction industry in Pakistan but also have implications for the global construction sector. The prevalence of delays in construction projects is a common challenge faced by construction industries worldwide. Therefore, the research highlights the need for a holistic approach to address project delays, taking into account the interplay of internal organizational culture and various external and project-specific factors affecting project performance.

5.2 Limitation and Recommendations

The acknowledgement of limitations in research is essential to provide a balanced perspective and to identify areas where improvements or further investigations can be made. In this study, several limitations should be acknowledged to ensure the accuracy and reliability of the findings. One of the main limitations of this research is the sample size. The data were collected from a limited number of construction organizations in the northern region of Pakistan, which might limit the generalizability of the results. The findings may be influenced by regional variations and may not fully represent the entire construction industry in the country. To address this limitation, future research could be conducted with a larger and more diverse sample of construction companies from different regions of Pakistan. A larger sample size would increase the study's statistical power and enhance the ability to draw more robust conclusions about the relationship between organizational culture and delays in the construction sector.

Another limitation of this study is the use of a single method of analysis, relying solely on chi-square analysis to examine the associations between categorical variables. While chi-square is a valuable statistical tool for exploring these associations, it may have limitations in capturing the complexities of the relationship between organizational culture and delays. Employing additional statistical techniques, such as

regression analysis or structural equation modeling, could provide a more in-depth understanding of the factors influencing delays in the construction industry. Additionally, the use of qualitative methods, such as focus groups or in-depth interviews, could complement the quantitative findings by providing a deeper exploration of organizational culture and its impact on project delays. A mixed-methods approach would offer a more comprehensive view of the cultural factors influencing delays and allow for a more nuanced interpretation of the results.

The reliance on the Organizational Culture Assessment Instrument (OCAI) introduces another limitation in this research. The OCAI measures participants' perceptions of organizational culture, which can be subjective and subject to individual biases. Different individuals within the same organization may perceive and interpret the culture differently, leading to discrepancies in the reported results. Additionally, the OCAI provides a snapshot of the current organizational culture, but it may not capture the dynamic nature of culture over time. To mitigate this limitation, future research could consider using multiple methods of assessing organizational culture, such as interviews, observations, or content analysis of organizational documents. These methods would provide a more comprehensive and objective understanding of the culture within construction organizations.

Furthermore, while the study focused on organizational culture as a potential factor contributing to delays in construction projects, it is essential to acknowledge that delays can be influenced by a multitude of external and project-specific factors. External influences, such as economic fluctuations and regulatory constraints, can significantly impact project timelines. Project-specific constraints, such as equipment failures, labor shortages, or conflicts, can also outweigh the direct influence of organizational culture on project delays. Therefore, future research should consider examining the interaction of organizational culture with these external and project-specific factors to gain a more comprehensive understanding of the delays in the construction industry.

To enhance the validity and reliability of the findings, researchers could gather data from multiple sources. Collecting feedback from employees, supervisors, and other stakeholders within a single organization would offer a more comprehensive view of the organizational culture. Understanding the perspectives of various stakeholders would provide a more holistic understanding of how culture influences delays in construction projects. Additionally, conducting a longitudinal study over an extended

period would provide insights into the dynamic nature of the relationship between organizational culture and delays. Tracking changes in culture and delays over time would enable researchers to identify trends and patterns and assess the long-term impact of interventions aimed at improving organizational culture and reducing delays.

5.3 Conclusion

In conclusion, this research study delved into the relationship between organizational culture and project delays in the construction industry of Pakistan. The investigation provided valuable insights into the dominant culture within the sector and its potential influence on project timelines. The findings revealed that Clan culture emerged as the dominant culture in the construction industry of Pakistan. This cultural orientation fosters a strong sense of trust, collaboration, and informal networks among individuals. In such organizations, employees often have familial connections, leading to a close-knit and supportive work environment. Clan culture's emphasis on mutual assistance and cooperation has the potential to positively impact project management practices and overall project performance.

However, despite the prevalence of Clan culture, the study's results showed no significant association between the dominant culture and the total delays experienced in construction projects. This finding suggests that while organizational culture may play a role in shaping certain aspects of project management, other external and project-specific factors have a more substantial influence on project timelines and delays. These factors include economic fluctuations, regulatory constraints, issues with suppliers, weather conditions, and project-specific challenges like equipment failures and labor shortages.

The complexity of project delays in the construction industry necessitates a comprehensive approach to project management. While organizational culture can set the tone for certain work behaviors and practices, it is only one of the many factors contributing to project outcomes. The interplay of various internal and external factors underscores the need for a multi-dimensional perspective in addressing project delays.

The implications of these findings extend to construction organizations, project managers, and policymakers in the Pakistani construction sector. While Clan culture fosters collaboration and teamwork, organizations should also address other external and project-specific challenges to enhance project performance. Emphasizing effective

resource allocation, risk management, timely decision-making, and adherence to best practices are crucial aspects of successful project management.

One of the main limitations of this research is the sample size. The findings are based on data collected from a limited number of construction organizations in the northern region of Pakistan. Consequently, the results may not fully represent the entire construction industry in the country, and caution should be exercised when generalizing the findings to other regions or construction companies.

To overcome this limitation, future research could be conducted with a larger and more diverse sample of construction companies from different regions of Pakistan. A larger sample size would enhance the statistical power of the study and increase the generalizability of the findings. Including multiple organizations with varying characteristics would provide a more comprehensive understanding of the relationship between organizational culture and delays in the construction industry. Another limitation of this research is the use of a single method of analysis, relying solely on chi-square analysis. While chi-square is a valuable statistical tool for examining associations between categorical variables, it may have limitations in capturing the complexities of the relationship between organizational culture and delays. Employing additional statistical techniques or qualitative methods could provide a more in-depth understanding of the factors influencing delays in the construction industry.

To address this limitation, future research could consider employing multivariate analysis techniques, such as regression analysis or structural equation modeling. These approaches would allow for the examination of multiple variables simultaneously, enabling researchers to identify the relative importance of organizational culture compared to other factors contributing to delays. Additionally, a mixed-methods approach that combines quantitative analysis with qualitative research methods would be beneficial. Conducting qualitative exploration of organizational culture through focus groups or in-depth interviews would complement the quantitative findings and provide a richer understanding of the cultural factors influencing delays.

Furthermore, the study's reliance on the Organizational Culture Assessment Instrument (OCAI) introduces limitations. The OCAI measures participants' perceptions of organizational culture, which can be subjective and subject to individual biases. Different individuals within the same organization may perceive and interpret the culture differently, leading to discrepancies in the reported results. Additionally, the OCAI provides a snapshot of the current organizational culture, but it may not capture

the dynamic nature of culture over time. To address this limitation, future research could consider conducting qualitative research, such as focus groups or in-depth interviews, to explore organizational culture in more depth. Qualitative methods would help capture the nuances, values, and underlying mechanisms of the cultural factors contributing to delays. Additionally, future research could explore the possibility of incorporating longitudinal study designs to track changes in organizational culture and delays over time.

The dominant Clan culture, characterized by trust, collaboration, and informal networks, offers a supportive work environment, but the study did not find a direct association between this culture and project delays. This underscores the importance of considering various external and project-specific factors that influence project outcomes. To enhance project performance and reduce delays, construction organizations should adopt a multi-dimensional approach to project management that considers both internal cultural aspects and external influences. Effective resource allocation, risk management, timely decision-making, and addressing industry-specific hurdles are essential components of improving project performance. By acknowledging and addressing the limitations of this research, future studies can build on these insights and contribute to the growth and development of Pakistan's construction sector. The complexities of delays in the construction industry require ongoing research and continuous efforts to improve project management practices and ensure successful project outcomes.

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