DEVELOPING A TOTAL QUALITY MANAGEMENT (TQM) RELATIONSHIP MODEL: THE MEDIATING ROLE OF ORGANIZATIONAL CITIZENSHIP BEHAVIOR IN ENHANCING PROJECT PERFORMANCE IN CONSTRUCTION PROJECTS

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ABSTRAK

Literatur terdahulu mencadangkan bahawa faktor-faktor TQM berkemungkinan meningkatkan prestasi sesebuah firma. Sebilangan besar literatur yang sedia ada telah mengkaji hubungan antara faktor-faktor TQM dan pelbagai dimensi prestasi seperti prestasi kualiti, prestasi perniagaan, dan kejayaan pemasaran dalam pelbagai sektor. Dengan itu, terdapat kekurangan literatur mengenai kesan faktor-faktor TQM dan institusi terhadap prestasi projek pembinaan, khususnya dalam industri pembinaan Oman yang menghadapi masalah kos berlebihan akibat kelewatan. Penyelidikan ini menilai pelaksanaan TQM dalam sektor pembinaan di Oman, dengan tujuan untuk mengurangkan kegagalan struktur projek-projek pembinaan yang sedang berjalan. Untuk mencapai objektif ini, kajian ini secara empirikal mengkaji hubungan antara faktor-faktor Total Quality Management (TQM)—fokus kepada pelanggan, peningkatan berterusan, komitmen pengurusan atasan, strategi projek, dan penglibatan pekerja—dan faktor-faktor institusi—tekanan normatif dan tekanan koersif—terhadap prestasi projek pembinaan di Oman, yang dimoderasikan oleh tadbir urus projek dan dimediasikan oleh Tingkah Laku Kewargaan Organisasi (OCB). Kajian ini menggunakan falsafah penyelidikan positivisme dan pendekatan penyelidikan kuantitatif. Populasi kajian ini melibatkan 338 projek pembinaan yang sedang berlangsung di Oman. Data dikumpul menggunakan soal selidik yang dijawab oleh 216 orang peserta yang terlibat dalam projek pembinaan tersebut. Teknik Partial Least Squares Structural Equation Modeling (PLS-SEM) digunakan untuk analisis data. Keputusan menunjukkan bahawa fokus kepada pelanggan, strategi projek, dan OCB mempunyai pengaruh yang signifikan terhadap prestasi projek pembinaan, manakala peningkatan berterusan, komitmen pengurusan atasan, dan penglibatan pekerja tidak mempunyai kesan yang signifikan. Selain itu, OCB memediasi sebahagian hubungan antara faktor-faktor TQM dan prestasi projek pembinaan, dan tadbir urus projek memoderasikan kesan TQM terhadap prestasi projek. Penemuan ini menawarkan implikasi praktikal untuk meningkatkan prestasi projek dalam industri pembinaan dan menyumbang secara teori kepada literatur mengenai faktor-faktor TQM dan institusi dengan memberikan bukti empirikal tentang keberkesanan mereka dalam meningkatkan prestasi projek pembinaan di Oman.

ABSTRACT

Past literature suggested that TQM factors are likely to enhance a firm's performance. A significant volume of existing literature has checked the relationship among TQM factors and different dimensions of performance such as quality performance, business performance and marketing success in various sectors. Therefore, there is a scarcity of literature on the impact of TQM and institutional factors in construction projects performance with respect to Omani construction industry which is facing cost overrun due to delays. This research evaluated the implementation of TQM in Oman construction sector, with a sight to minimize the structural letdown of ongoing construction projects. To obtain this objective, this study empirically examined the relationships between Total Quality Management (TQM) factors—customer focus, continuous improvement, top management commitment, project strategy, and employee involvement—and institutional factors—normative pressure and coercive pressure—on construction project performance in Oman, moderated by project governance and mediated by Organizational Citizenship Behavior (OCB). This research used positivism research philosophy and quantitative research approach to carry out this research. The population of this research were 338 ongoing construction projects in Oman. Data were collected using a self-administered survey from 216 participants engaged in ongoing construction projects. The Partial Least Squares Structural Equation Modeling (PLS-SEM) technique was utilized for data analysis. The results indicated that customer focus, project strategy, and OCB significantly influenced construction project performance, whereas continuous improvement, top management commitment, and employee involvement did not have a significant impact. Additionally, OCB partially mediated the relationship between TQM factors and construction project performance, and project governance moderated the impact of TQM on project performance. These findings offer practical implications for enhancing project performance in the construction industry and contribute theoretically to the literature on TQM factors and Institutional factors by providing empirical evidence of their effectiveness in improving construction projects' performance in Oman.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

TQM	Total Quality Management
SEM	Structural Equation Modelling
AVE	Average Variance Extracted
PLS	Partial Least Square
KPIs	Key Performance Indicators
OCB	Organizational Citizenship Behaviors
CBP	Competence based perspectives
CF	Customer Focus
CI	Continuous Improvement
EI	Employee Involvement
PS	Project Strategy
CP	Coercive Pressure
NP	Normative Pressure
PG	Project Governance
PP	Project Performance

CHAPTER 1

INTRODUCTION

1.1. Introduction

This chapter introduces the research topic and explores the major phenomena related to the study. This chapter 1 provides insights on the topic of this research. The major phenomenon related to current study is addressed in this chapter. It also explained the contribution and importance of this research to the existing body of literature associated with the ongoing construction projects' performance in Oman. In addition, this chapter intricated how this research is delineating the process. Section 1.1 provides the general introduction and background of this research is explained in section 1.2. The problem statement highlighted the major problems faced by construction projects in Oman in section 1.3 which is followed by section 1.4 where research questions are formulated. Section 1.5 presented the research objectives followed by scope of the study in section 1.6. The significance of current study is discussed in section 1.7 while expected results of this research are described in section 1.8 followed by section 1.9 where operational definitions are compiled. At the end of this chapter 1, the structure of overall thesis is summarized in section 1.10.

The 21st-century business environment has been marked by intense global competitiveness and uncertainty, necessitating the examination of previously unexplored factors. Many organizations, facing such uncertain conditions, have had to adopt appropriate technology, quality management tools, and a skilled workforce emphasizing the total quality of products and services and enhancing customer satisfaction (Sane, 2020; Sirisomboonsuk, Gu, Cao, & Burns, 2018; Htoo, Dodanwala, & Santoso, 2023). The success of projects directly impacts the business's overall success. For several decades, project-based management has been the focus, along with the adoption of new project management tools and techniques aimed at improving project performance. Historical challenges have compelled organizations to demonstrate their ability to sustain and gain a competitive advantage amidst technological, social, and political changes (Cancino, La Paz, Ramaprasad, & Syn, 2018).

Customer awareness and the increased demand for quality products in the international market have pressured companies to maintain high-quality products and services (Bajaj, Garg, & Sethi, 2018). In today's dynamic and demanding environment, organizations aim to focus on multiple significant strategies simultaneously to achieve their sustainability goals efficiently and effectively. This has led to a focus on various quality management approaches, coordinating all business functions to meet customer requirements and organizational objectives (Bajaj, Garg, & Sethi, 2018). Quality is a pivotal concept crucial to an organization's success and sustainability. By emphasizing quality, organizations can meet their customers' needs and position themselves competitively and successfully (Asante, & Ngulube, 2020; Zygiaris et al., 2022).

Over the past few decades, quality management has become prevalent among organizations aiming to meet customer requirements and achieve long-term success (Parast & Golmohammadi, 2019). The evolution of quality management, marked by the development of new systems and international standards such as ISO 9000, has seen a widespread issuance of quality management certifications. Since the 1970s, the focus on Total Quality Management (TQM) has increased, prioritizing quality control and assurance within organizations. TQM has been integrated across organizations and prioritized over other quality control approaches, recognized as a crucial management theory (Eniola, Olorunleke, Akintimehin, Ojeka, & Oyetunji, 2019b). The high adoption rate of TQM since the 1970s underscores its perceived benefits in enhancing project performance. However, project performance can be adversely affected if an organization exhibits incomplete project efficiency, quality, and limited probability of project success. Additionally, considering project governance as a significant factor is crucial as it provides a structured framework through which projects are established, operated, and evaluated.

This thesis aims to investigate the roles of Total Quality Management and Institutional factors, along with project governance as a moderator, in enhancing the performance of construction companies in Oman. It also examines the role of Organizational Citizenship Behavior (OCB) as a mediator. This section is organized into nine sub-sections for a detailed discussion.

1.2. Background of the study

Construction projects often face hurdles like delays and defects, which are seemingly inevitable compared to the controlled environment of manufacturing. Total Quality Management (TQM) has been extensively applied in manufacturing and service industries and has increasingly been associated with construction projects due to the demand for high standards of delivery for complex buildings and projects. The construction industry is inherently project-based, focusing on critical infrastructure. Consequently, construction projects are typically complex and large-scale, attracting numerous studies about their extensive scope (Alawag et al., 2023). In Oman, the success of construction projects is measured by traditional metrics such as cost, schedule, quality, and safety. In project management, quality is a critical component throughout a project's lifecycle. Construction projects entail unique challenges due to their complexity, uniqueness, and detailed design requirements. Stakeholder pressures further compound the intricacies faced within this sector (Egwunatum et al., 2022). It is crucial, therefore, to develop a model that accurately represents the multidimensional and complex nature of construction projects to enhance their management and performance effectively.

In today's competitive environment, quality is not only a virtue but a necessity for the survival and success of any organization, sector, or company. It must be ingrained as a fundamental aspect of strategic business plans to address the challenges posed by the global business landscape (Al-Dhaafri & Alosani, 2021). Survival in the dynamic marketplace necessitates that both contractors and companies continually improve their project management capabilities, operational processes, and project quality. Performance measurement is central to ongoing improvement efforts.

Many companies have adopted quality management systems that establish key performance indicators (KPIs) to monitor project performance. TQM is aimed at enhancing performance and quality to meet or exceed customer expectations, making it a prevalent choice among quality systems in project management (Tambare et al., 2021). TQM represents an advanced approach to quality management and continuous improvement. Numerous companies and organizations have adopted it to enhance client satisfaction, operational performance, employee satisfaction, and financial results (Psomas & Antony,

2017).

The economy of the Sultanate of Oman, traditionally reliant on oil revenues, has diversified into different sources of income while promoting sectoral investments. The Ninth Five-Year Plan (2020), developed by The Economic Diversification Plan Board, emphasized a robust government contribution to five key industries: logistics, manufacturing, tourism, fisheries, and mining. The construction market in Oman is segmented into commercial, residential, industrial, energy, and transport sectors.

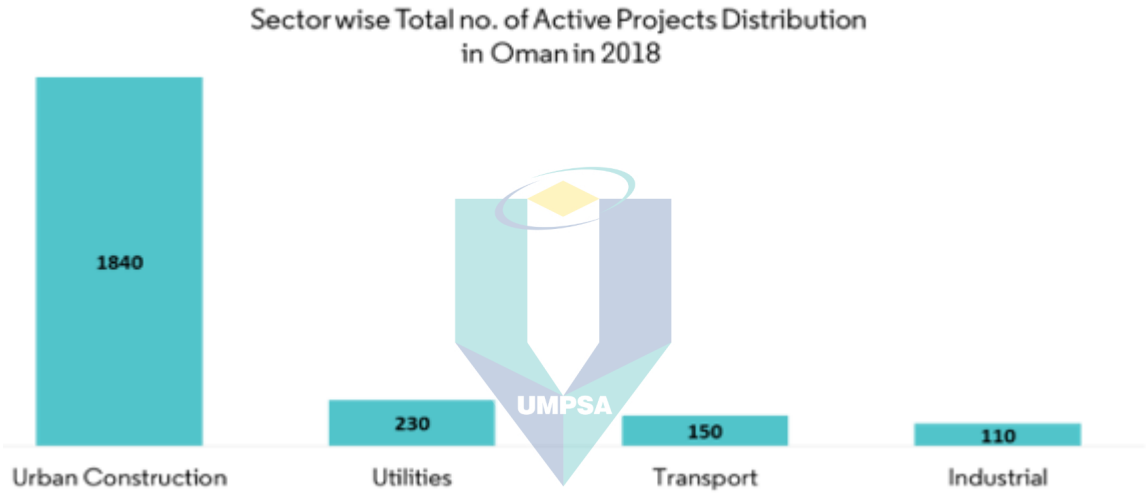


Figure.1.1: Sector-wise ongoing construction projects in Oman

This research focuses on how TQM can enhance the performance of the construction industry in Oman, with Organizational Citizenship Behavior (OCB) serving as a mediator. TQM factors significantly influence the internal behavior of organizations, which in turn affects project performance. The commitment and involvement of every employee and manager are critical in the implementation of TQM. TQM is strategically used to improve customer satisfaction and overall firm performance (Amin, Aldakhil, Wu, Rezaei, & Cobanoglu, 2017). For effective implementation, TQM should not be viewed as a short-term initiative but as a continuous, long-term effort aimed at boosting the construction industry's performance. TQM encompasses two key practices: soft TQM, which includes leadership, customer focus, and employee participation; and hard TQM, which involves planning, process management, and information systems (Ali & Johl, 2022).

This analytical research investigates the extent of TQM implementation in the Oman construction industry and its impact, along with institutional factors such as normative pressure and coercive pressure, on project performance. Various TQM elements were examined to determine their influence. The relationships between these constructs will be analyzed using the Structural Equation Modeling (SEM) approach. The following section (1.2) will outline the research problem.

1.3. Research Problem

The construction industry in Oman contributes around 9-10% of the country's GDP, underscoring its economic significance. The market was valued at approximately $14.4 billion in 2021 and is projected to reach $19.4 billion by 2025 (National Centre for Statistics and Information Oman, 2023). Between 2016 and 2021, the industry saw a compound annual growth rate of about 6.5% (Business Monitor International, 2023). However, the sector contracted by 13.4% in 2020 due to the COVID-19 pandemic, which disrupted economic activities and supply chains. Expatriate labor makes up over 90% of the workforce, reflecting a heavy reliance on foreign workers.

Approximately 70% of construction projects in Oman face delays, with an average delay of 30-40% beyond the original timeline. Moreover, 60% of these projects experience cost overruns, with an average increase of 20-30% over the initial budget (Deloitte, "Middle East Real Estate Predictions: Oman 2023."). Oman has committed over $120 billion to infrastructure projects as part of its Vision 2040 plan, which aims to diversify the economy (Oman Vision, 2040). In 2022, the number of building permits issued decreased by 5.8% compared to 2021, indicating a slowdown in new construction activities. The housing market accounts for about 40% of the construction sector, with numerous projects underway to meet the growing population's housing needs (Ministry of Housing and Urban Planning, Oman).

The economic contributions of the construction industry in Oman are indeed promising but have not yet reached their full potential. The most significant challenge identified is enhancing the construction industry's role as a major contributor to national income. Studies have been conducted to ensure that construction projects can expand their businesses both internationally and locally, rather than stagnating at their current levels of performance. Over past decades, quality improvement has been a key strategy for gaining a competitive edge.

Evidence from previous studies (Chen, 2024; Baidoun, Salem, & Omran, 2018; Jong, Sim, & Lew, 2019b; Yuliansyah, Gurd, & Mohamed, 2017) suggest that the effective implementation of Total Quality Management (TQM) is likely to enhance long-term profitability and project success. Similarly, Khatatbeh (2023) examined the relationship between TQM and aspects such as organizational, financial, and business performance.

The concept of TQM started in manufacturing sector and a significant body of literature on TQM has explored around the globe. Researches were done to check the role of TQM in different performance dimensions, consisting of operational performance, innovation performance, firm performance, customer satisfaction, financial and market performance and quality performance (Ebrahimi & Sadeghi, 2013). Multiple studies have been conducted in Oman on TQM particularly in manufacturing (Khalfan, Jamaluddin & Widyarto, 2022; Al Busaidi, Usman, & Kassim, 2022; Al Sinawi, & Anil, 2022; Panigrahi, Al Ghafri, Al Alyani, Ali Khan, Al Madhagy, & Khan, 2023; Panigrahi et al., 2023).

However, research which particularly concentrates on TQM and ongoing construction projects performance is still lacking in Oman (Saleh & Alalouch, 2020; Khalfan, Jamaluddin, & Widyarto, 2022). Hamad, Tayeh, and Al Aisri (2021) has specified that very few studies have been done on TQM and construction sector but TQM practices along with institutional factors are the areas which need to be explored and are suggested to excel the performance of ongoing project.

Very few studies have been conducted in the region in the construction sector. TQM implementation was conducted on Palestinian construction sector (Altayeb & Alhasanat, 2014), meanwhile TQM implementation of construction sector in general was conducted by Harrington, Voehl, Wiggin, and Sinha (2012), while the relationship between project management and project success was examined by Mir and Pinnington (2014) in UAE and in Taiwan, Kuo and Kuo (2010) checked the relationship between TQM, Corporate culture and project success. Therefore, all these studies are region specific where the practices and features are very distinctive from Oman. Remarkably, none the research concentrated on the relationship between TQM and construction projects performance of the firms.

A very few Omani researches have been carried out on the construction sector. Hamad, Tayeh, and Al Aisri, (2021), studied the critical success factors of Omani construction sector,

Al Maktoumi, Khan, and Al Maktoumi, (2020), explored the factors affecting project delays of construction industry and Shah, Al Shereiqi, and Borthwick (2021) investigated the challenges and benefits of lean construction in Omani construction sector. None of the evidence found that any statistical and empirical research checked the relationship between TQM factors and institutional factors and ongoing construction project performance in Oman. Therefore, the empirical research needs to be conducted on TQM and Institutional factors which still lags far behind particularly in construction projects in Oman.

However, there is a research gap found in the existing body of knowledge in the context of Omani construction sector. Hence, this research concentrates on describing the empirical mark for the association among TQM factors, institutional factors and performance of ongoing construction projects in Oman. Attached with the recent compression to enhance the quality and minimize the delays in construction projects in Oman, no doubt, it is significant and urgent need for the research to investigate whether TQM practices as well as institutional factors affect the performance of ongoing construction projects. This research study not only determines the role of TQM and institutional factors impact on performance but it also providing more detailed and refined explanation on how links between TQM factors, institutional factors possibly contribute to the firms engaged in construction projects in terms of elevating the performance of their projects by TQM and institutional implementation.

However, the influence of TQM and institutional factors on project governance and performance, especially within the Omani context, remains underexplored. Although institutional pressures are considered significant performance factors (Yue, Huo, & Ye, 2023; Ahmed, Najmi, & Khan, 2019; Desender & Epure, 2021; Majid, Yasir, Yasir, & Javed, 2020), Chaudhry and Amir (2020) found that such pressures do not significantly impact performance. The inconsistency in results suggests that institutional pressures can be costly for firms, often curtailing their investment in construction projects (Sriyakul, Umam, & Jermsittiparsert, 2019), necessitating further investigation in the Omani context.

In the construction sector, the definition of project success varies significantly. The implementation of TQM has been seen as an innovative approach to enhancing operational performance (Kebede, Adem, & Virdi, 2021), yet applying TQM in the heavy construction

projects presents operational challenges that require deeper exploration with the aid of Organizational Citizenship Behavior (OCB) (Bell & Menguc, 2002; Podsakoff & MacKenzie, 1994; Sugianingrat et al., 2019). Studies on TQM in Oman have been conducted across various sectors including oil and gas (Al Busaidi, Usman & Kassim, 2022), manufacturing (Ashrafi, Bashir, & Management, 2011), service (Mohammed, Ahmed, Anantharaman, & Development, 2017), pharmaceutical (Modgil, Sharma, & Management, 2017), and construction (Khalfan, Jamaluddin & Widyarto, 2022). However, research specifically focusing on TQM, project success, and the mediating role of OCB, as well as the moderating role of project governance in the construction sector is notably lacking in Oman.

Further illustrating the role of organizational culture, Jung and Hong (2008) used OCB to assess its impact on TQM implementation and management performance, finding that the intrinsic motivations of employees significantly influenced TQM outcomes, more so than just training and education. Similarly, Fok, Morgan, and Zee (2021) revealed that employees must embrace the challenges related to quality management and participate actively for the organization's benefit. OCB benefits individuals either directly or indirectly by fostering a positive social and psychological work environment and enhancing job performance (Gilbert, Laschinger, & Leiter, 2010).

OCB represents a voluntary commitment of an individual within an organization to fulfill their tasks and participate as a team member to enhance project success. Behaviors not formally part of an individual's role contribute to completing their tasks while maintaining a good organizational reputation (Risa & Purba, 2019). Therefore, it is anticipated that OCB will improve the implementation of TQM in construction project operations and their overall performance. However, it is not guaranteed that firms that have successfully implemented TQM can easily replicate this success elsewhere. In the current economic and competitive climate, projects are either abandoned or restructured after encountering financial crises.

Yousef and Yousef (2017) noted that lack of top management commitment, customer awareness, financial resources, and employee involvement are key issues leading to project failure. Meanwhile, Sila and Ebrahimpour (2005) observed that addressing and resolving these issues does not necessarily guarantee improved project performance. Moreover, a study

by Merrow and Yarossi (1994) found that only four out of 47 mega projects were completed within budget, with the remainder experiencing cost overruns and failing to meet the organization's profit objectives. Flyvbjerg et al. (2003) investigated large infrastructure project performance and found that cost overruns and benefit overestimation have been persistent issues despite advances in project management tools and techniques.

Although various countries have explored the TQM framework within their construction sectors, such as Taiwan (Pheng & Ke-Wei, 1996), Malaysia (Jong, Sim, & Lew, 2019a), and Turkey (Shoshan & ÇelİK, 2018), the cultural and governance contexts of these studies differ significantly from those in Oman. For example, the influence of Confucian values, which emphasize hierarchy, respect for authority, and collective harmony, plays a significant role. These values often shape organizational behavior and management practices, affecting how TQM principles are adopted and integrated. For instance, the hierarchical nature may impact decision-making processes and the extent to which feedback is encouraged within organizations.

Moreover, Turkey's cultural context is influenced by a mix of traditional values and modern business practices. The importance of relationships and personal connections, known as "ayi", can affect managerial styles and organizational dynamics. Additionally, Turkish businesses may blend traditional approaches with contemporary TQM practices, which can influence the adoption and adaptation of quality management systems. Limited research has focused specifically on the relationship between TQM, project management, and construction sector performance in Oman. This research gap in the Omani construction sector is evident in the existing TQM literature.

This study aims to empirically investigate the relationships among TQM factors, institutional factors, project governance, and project performance in Oman, contributing to the enhancement of project performance within the construction sector. Despite the mixed benefits observed in various organizations, TQM implementation has shown potential benefits for performance, although it may not always yield satisfactory results if not properly managed. This research seeks to guide Oman's construction industry towards improving their performance and completing projects efficiently and effectively.

1.4. Research Questions

RQ1: To what extent do TQM factors affect construction project performance in Oman?

RQ2: To what extent do institutional factors influence construction project performance in Oman?

RQ3: What is the role of organizational citizenship behavior towards improving construction project performance in Oman?

RQ4**:** Is there any mediating effect of organizational citizenship behavior between TQM factors, institutional factors and construction project performance in Oman?

RQ5: Is there any moderating effect of project governance between TQM factors and construction project performance in Oman?

1.5. Research Objectives

The primary aim of this research is to ascertain how Total Quality Management (TQM) factors and institutional factors influence the performance of ongoing construction projects in Oman. While considerable research has explored the impact of TQM factors on project performance, studies that simultaneously consider both TQM and institutional factors in relation to the performance of ongoing construction projects are scarce. Additionally, there is a lack of consensus among the few studies that do exist. Given these gaps in the existing research, this study seeks to achieve the following specific objectives based on the problems identified:

RO1: To examine the impact of total quality management (TQM) factors on construction project performance in Oman.

RO2: To determine the influence of institutional factors on the construction project performance in Oman.

RO3: To investigate the influence of organizational citizenship behaviour on construction project performance in Oman.

RO4: To investigate the mediating role of organizational citizenship behaviour (OCB) between total quality management (TQM) factors, institutional factors and construction project performance in Oman.

RO5: To investigate the moderating role of project governance between TQM factors and

construction project performance in Oman.

1.6. Scope of the Study

This research investigates the impact of Total Quality Management (TQM) factors and institutional factors on project performance, with Organizational Citizenship Behavior (OCB) serving as a mediator and project governance acting as a moderator. The study specifically targets ongoing construction projects within Oman, focusing on companies in the main governorate. The types of construction projects examined are primarily involved with manufacturing, supplying, and retailing of goods. These projects have been chosen because they represent a significant portion of the construction sector that deals directly with production and distribution, providing clear insights into quality management practices and their outcomes.

The primary respondents for this study include project managers, owners, and top management personnel within these companies. These individuals are key decision-makers and are directly involved in the strategic implementation of TQM and adherence to institutional regulations, making their insights invaluable for this research. Service and trading companies were explicitly excluded from the scope of this study. This exclusion is due to their operational and managerial differences from manufacturing and supply-focused construction projects, which are not within the primary focus of this investigation. By delineating the boundaries of this study, it aims to provide a focused analysis on the specific impact of TQM and institutional factors on construction project performance in a well-defined segment of the Omani construction sector.

1.7. Significance of the Study

The Omani government has identified several core strategies, including the introduction of 12 key economic zones, aimed at achieving the status of a developed country by 2040. A crucial element in this strategy is the belief that enhancing sustainability in the country's manufacturing sector will significantly contribute to the economic development and overall sustainability of the nation. And manufacturing sector facilities can only be started with initial state of the art infrastructure development. Such infrastructure includes logistics centers, transportation systems and industrial facilities.

1.7.1 For Companies and Entrepreneurs

This study aims to elucidate the critical factors that enhance the performance of construction projects, with a particular focus on Total Quality Management (TQM) and its mediation through Organizational Citizenship Behavior (OCB). The findings are intended to inform management techniques that can transform current construction projects into world-class operations. Moreover, for entrepreneurs, this research highlights opportunities for identifying and creating value in the construction industry, thereby facilitating expansion into new markets or business areas as industry performance improves.

1.7.2. For University Leaders and Academia

The results of this study are beneficial for university leaders and academics, especially those focusing on management and agricultural studies. The insights gained can help in developing better curricula or strategies aimed at building the capabilities of future graduates. Understanding how TQM and OCB impact organizational performance, particularly in construction projects, will enable educational institutions to better prepare students for the challenges of the industry.

1.7.3. For Researchers

Researchers interested in enhancing performance across industries, especially in the construction sector, will find this study valuable. In a globally competitive environment, the survival of companies increasingly depends on their ability to deliver high-quality goods and services. This study contributes to the body of knowledge by emphasizing the importance of quality management as a fundamental strategic component. Researchers are encouraged to delve deeper into how the attitudes, behaviors, and personalities within organizations can influence quality management practices, thereby enhancing organizational performance.

1.8. Expected Results

This research is expected to elucidate the relationships between Total Quality Management (TQM) factors and institutional factors on construction project performance, with Organizational Citizenship Behavior (OCB) acting as a mediator. Additionally, the results are anticipated to reveal the significant influence of OCB on the performance of construction projects. It will also highlight OCB's role as a mediator in enhancing the

relationship between TQM factors and construction project performance. Furthermore, project governance is expected to act as a moderator in the relationship between TQM factors and construction project performance. These findings should provide valuable insights for project management practitioners and managers, particularly in varying governance contexts. All of these results are believed to strengthen the understanding among firms with ongoing construction projects of the critical importance of TQM and OCB in enhancing project performance. Consequently, these insights may lead to the formulation of new strategies aimed at improving both the quality and the organizational culture, thereby enhancing overall project performance.

1.9. Operational Definitions

The variables used in researches are defined differently by researchers according to the aim of their researches. The variables which are used in this research are defined in the comprehensive table with complete reference to make sure the meanings of these variables in the perspective of current research. Therefore, these definitions are summarized in a table format.

Table 1.1. Operational Definitions

Sr. No.	Name of Variable	Definition	Reference
1	Total Quality Management (TQM)	The system that is based on the management principles is committed to maintain the high level of standards in company's operations	(Amin et al., 2017).
2	Organisational Citizenship Behaviour (OCB)	An individual's commitment to perform organizational tasks with positive attitude and behaviour	(Oplatka & Stundi, 2011)
3	Project governance	The framework that covers all the aspects on how the project decisions are performed as per the activities performed by the responsible individuals	(Derakhshan, Turner, & Mancini, 2019).

Table1.1 Continued

Sr. No.	Name of Variable	Definition	Reference
4	Project Performance	To the fulfilment of the tasks associated an objective of improving project effectiveness and efficiency	(Derakhshan, Turner, & Mancini, 2019)
5	Construction Projects	Company that constructs variety of buildings, infrastructure, and developments.	(Unterhitzenberger & Bryde, 2019)
6	Customer Focus	The activities of the companies are intended to benefit the customer but the customer is seen from the companies' own perspective.	Lagrosen, (2001)
7	Continuous Improvement	It is the "a company–wide process of focused and continuous incremental innovation"	(Bhuyan & Baghel, 2005)
8	Top Management Commitment	"It is a commitment of corporate resources, including the executives' 'own time' to the improvement of processes. In fact, substantial amounts of executive time, particularly that of the CEO, are necessary to successfully implementing TQM"	(Jablonski, 1994)
9	Project Strategy	"The project perspective, direction, and guidelines on what to do and how to do it, to achieve the highest competitive advantage and the best value from the project"	(Shenhar, Poli & Lechler, 2001).

Table 1.1 Continued

Sr. No.	Name of Variable	Definition	Reference
11	Coercive Pressure	"The pressures which stem from institutions in a firm's environment which directly formulate rules that a firm need to comply with one of them."	(DiMaggio & Powell 1983)
12	Normative Pressure	"Influences arising from professionalization; they originate from professional standards and norms held in common by employees through their industry, professional associations, and education."	(Combs *et al.*, 2009)

1.10. Thesis Structure

Chapter 1: Introduction This chapter introduces the thesis by providing a background on the research and outlining the key issues related to the concept and idea of the study. It details the key research questions and discusses the expected significant findings. Additionally, this chapter explains the operational definitions and the theoretical framework suggested for this study.

Chapter 2: Literature Review This chapter examines the literature to deepen understanding of the roles of Organizational Citizenship Behavior (OCB) and Leader-Member Exchange (LMX) as mediators in enhancing the performance of construction projects. It explores the depth and penetration of these concepts within the context of the research.

Chapter 3: Methodology This chapter provides detailed information on the research methodology, including the population, sampling technique, data collection techniques, and data analysis tools and techniques. It also offers insights into the key statistical analysis to be conducted for the study.

Chapter 4: Data Analysis Here, the analyses using descriptive analysis, reliability analysis, factor analysis, and path analysis are explained. The results from these analyses are then discussed, providing insights into their implications for the study.

Chapter 5: Conclusion and Recommendations This chapter recapitulates the study and discusses its implications, conclusions, limitations, and recommendations. It synthesizes the findings and suggests how they contribute to the field, along with guidance for future research.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter encompasses the literature review, which is pivotal for analyzing research sources and literature pertinent to the specified topic. It employs a systematic process to provide a summary, classification, comparison, and evaluation of the existing literature. This approach not only lays the foundational basis for the research but also aids the researcher in gaining a deeper understanding of the study's nature. Section 2.1 introduces the chapter and outlines the variables of the study, setting the stage for a detailed examination of each. Discussion of section 2.2 revolves around TQM and its critical role in enhancing project performance. This section delineates how TQM practices are applied within construction projects to drive efficiency and quality which is followed by section 2.3 that discusses quality management system.

Section 2.4 elaborates on the theories related to the study's variables, providing a theoretical backdrop for the hypothesis development. Literature related to the study's variables, including TQM and Organizational Citizenship Behavior (OCB), and hypotheses development in 2.5. It also explores the relationship between these variables and project performance, supported by insights from previous studies. The theoretical framework of the research is presented in section 2.6, summarizing the integration of TQM and OCB within the context of construction project performance. Section 2.7 also serves as the summary of the chapter, encapsulating the key points discussed and setting the groundwork for the empirical investigation.

Throughout this chapter, the focus is on the concept of quality within construction projects, extending beyond mere product quality to encompass organizational productivity, design, strategies, market share, and functions aligned with the products or services. It highlights various philosophies that define quality from both organizational and customer perspectives. TQM is spotlighted as a feasible approach for reducing costs, improving quality, and enhancing productivity. Notable definitions include TQM as "a set of tools and

techniques that helps to reduce wastes and variation in the production and service process" (Ebrahimi & Sadeghi, 2013), and its application in organizations to boost process efficiency, quality, cost management, overall project performance, and productivity (Diana, Mirela, & Sorin, 2017; Sawaean & Ali, 2020; Zwain, Lim, & Othman, 2017). Furthermore, TQM's role in meeting customer expectations through integrated quality management systems is discussed (McAdam, Miller, & McSorley, 2019; Sinha & Dhall, 2018).

2.2. Total Quality Management (TQM)

Why it quality important? Dale, Van Der Wiele, and Van Iwaarden (2007) stated that understanding the importance of quality by reflecting on experiences with unsatisfactory services and poor-quality products—the associated frustrations, reactions, the spread of negative feedback, and outcomes. Sterman, Repenning, and Kofman (1997) predict that TQM adoption will soon reduce costs, improve quality, and enhance productivity, aligning with Deming and Edwards's (1982) perspectives on achieving quality. TQM, developed as a combination of management philosophies and practices, aims for continuous development, customer satisfaction, reduced reworks, improved teamwork, employee involvement, long-term rethinking, effective benchmarking, process reformation, continuous outcome measurements, team-based problem-solving, and strong external relationships (Rahman, 2004).

It has been crucial at the organizational level for over two decades, enhancing overall performance and aiding organizations in achieving world-class status (Sahoo, 2020; Soltani, Lai, & Gharneh, 2005). This philosophy necessitates a comprehensive organizational effort to satisfy customer needs and improve quality (Androwis, Sweis, Tarhini, Moarefi, & Amiri, 2018). Berry (1991) defines TQM as an organization's total focus on meeting and exceeding customer demands by reducing costs associated with poor quality processes through a new company culture and management system. According to Sahoo (2020), TQM is a "management philosophy and a way of thinking" aimed at transforming a company to a premier level. The implementation generally follows Deming's 14 points, Crosby's 14 steps, and Juran's 10 steps, categorized into 'soft TQM' (philosophical aspects) and 'hard TQM' (practical tools and techniques) (Egwunatum, Anumudu, Eze, & Awodele, 2021).

Various companies have relied on TQM to improve quality and performance over the past decades (Donate, Ruiz-Monterrubio, de Pablo, & Peña, 2019; Wiklund, Klefsjö, Wiklund, & Edvardsson, 2003). Effective TQM implementation requires integrating technical tools, fundamental management techniques, and new developments (Talukder & Ghosh, 2004). The management's role is crucial in ensuring that waste is significantly reduced, and quality is maintained across all organizational activities (Hassan & Jaaron, 2021). TQM stresses the involvement of employees and the role of customers/suppliers in ensuring continuous improvement (Berhe, 2021; Hilman, Ali, & Gorondutse, 2019). Prajogo and Sohal (2003b) note that a fully implemented TQM provides a platform for quality management, aiding organizations in building capabilities that bring a multidimensional competitive advantage. Moreover, TQM serves as a source of innovation and modernization, fostering a new organizational culture and offering a competitive edge (Tenji & Foley, 2019).

Despite its broad acceptance and documented benefits, TQM's full implementation faces various challenges. The methods and theoretical foundations of TQM support its application in both service and manufacturing sectors. However, literature often differentiates between the service and product sectors in discussing TQM applications. Nevertheless, the principles of quality management are considered universal, applicable to all sectors. Quality awards have played a significant role in raising awareness and interest in quality improvements across sectors.

The construction industry, characterized by its high level of differentiation and fragmentation, requires a specialized environment. Research by Building Research Development in the United Kingdom indicated significant quality issues in construction, with faults arising from design deficiencies, poor employee participation, and product failures (Pheng & Ke-Wei, 1996). Escrig-Tena (2004) highlighted that the competitive nature of TQM significantly impacts firm performance, supporting the competence-based perspective (CBP) that TQM's unique value helps achieve and sustain a competitive position by facilitating the creation of performance standards and routines that promote continual knowledge and improvement.

2.3. Quality Management System

The BS EN ISO 9000 (2000) standard defines a Quality Management System (QMS) as "a management system to direct and control an organization with regard to quality," as cited by Dale et al. (2007). A QMS consists of a collection of business processes specifically aimed at achieving quality policy objectives and meeting the demands of customers. For a QMS to be considered effective, comprehensive, and operational, it must cover all organizational activities and be executed in alignment with the organization's strategic goals. It guides companies to achieve the quality levels demanded by their stakeholders and customers through the ISO series standards. These standards encompass organizational rules, procedures, arrangements, practices, and processes that ensure consistency in delivering products and services. The official website of the International Standards Organization (ISO) further describes the ISO 9000 family as covering a range of quality management aspects and containing some of the best-known ISO standards. These provide companies and organizations with the tools and guidance needed to maintain consistency in products and services, thereby meeting international regulatory standards and customer expectations.

Figure 2.1 Quality Improvement and the ISO 9000 series

Source: Dale et al (2007)

A Quality Management System (QMS) is essential for organizing Total Quality Management (TQM) to ensure that any developments or improvements achieved by an organization are permanently maintained, as noted by Dale et al. (2007). Research by

Arumugam, Ooi, and Fong (2008b); Lau and Tang (2009); and Taskov and Mitreva (2015) indicates that organizations recognizing the principles of TQM as an opportunity to develop and arrange their core processes are better positioned for successful implementation. These organizations evaluate customer requirements beyond mere compliance with regulations, viewing them instead as a platform for innovation beyond the regulatory scope. This mindset facilitates a smoother transition to implementing TQM, allowing organizations to integrate these principles more effectively and sustainably into their operations.

A project is defined by the Project Management Body of Knowledge (PMBOK, 2008) as a temporary effort undertaken to create a unique product, service, or result, involving consistent work to achieve a specific target within defined constraints such as time, cost, and resources. The International Organization for Standardization (ISO) further describes a project as a set of coordinated and controlled activities with start and finish dates, aimed at achieving an objective that meets specific performance requirements, including constraints of time, cost, and resources. Over the years, project management has evolved from focusing merely on administrative functions to encompassing comprehensive strategies that include methods, tooling, and staffing (IPMA, 2006). This evolution reflects its growing significance in the global economy, with methodologies that have become more refined, especially in the latter half of the 20th century (Lock, 2003).

The Project Management Institute outlines nine key areas of knowledge necessary for effective project management: integration, scope, time, cost, quality, human resources, communication, risk management, and procurement. However, measuring the success of a project involves more than just adhering to the traditional 'iron triangle' of time, budget, and quality; it also includes evaluating customer satisfaction and compliance with the project's requirements. Project success varies among stakeholders, who may have differing interests and perceptions about what constitutes success (Wateridge, 1998). To address these complexities, Belassi and Tukel (1996) proposed a framework that includes the quality of project management, performance leadership, and stakeholder satisfaction, thus expanding the traditional measures of project success to provide a more comprehensive overview.

Despite the sophisticated nature of performance measurement via the iron triangle, practitioners and academicians have moved away from this traditional method, adopting new

direct and indirect measures to assess project performance. According to the PMBOK Guide published by the Project Management Institute (PMI), project success criteria must include the golden triangle (time, cost, and quality) and key stakeholder satisfaction. Pheng and Chuan (2006) concluded that project success measurements should not be limited to the conventional iron triangle but should extend to encompass project management success, product achievement, or both. This perspective is supported by several scholars who emphasize various factors influencing project success. For example, Dweiri and Kablan (2005) highlighted that while the iron triangle addresses some gaps, additional measures are necessary to accurately gauge project success in areas covered by performance management.

Project managers face significant challenges in handling complex and unpredictable projects while ensuring timely and quality completion. Numerous studies have identified key project capabilities as critical to project success. For instance, Ramasubbu, Mithas, Krishnan, and Kemerer (2008) identified process-based learning and work dispersion as key factors in project achievement. Similarly, Hui, Davis-Blake, and Broschak (2008) noted that the absence of project outsourcing and complexity often results in poor project performance. The challenge of delivering quality products and services to end customers necessitates an exploration of the role of TQM and OCB in project design and timely implementation. Extensive research has demonstrated that the implementation of TQM improves market share, productivity, and customer satisfaction (Fening, Pesakovic, & Amaria, 2008).

Some studies, such as those by Mehralian, Nazari, Zarei, and Rasekh (2016), have revealed short-term correlations between TQM and performance. Additionally, a meta-analysis by Cândido and Santos (2011) examined factors causing TQM failure in organizations. Abd and Al Manhawy (2013) found that TQM implementation leads to increased motivation at both top and bottom management levels and is directly linked to high performance. Numerous studies have also confirmed the benefits of TQM at the service level. For instance, Kumar, Choisne, De Grosbois, and Kumar (2009) demonstrated that TQM enhances a company's image, employee satisfaction, and customer satisfaction. Similarly, Lam, Lee, Ooi, and Phusavat (2012) found that TQM significantly impacts market orientation and service quality in the Malaysian service sector. Baird, Hu, and Reeve (2011) concluded that TQM elements, such as process management, supplier quality

management, and effective information reporting, contribute to operational effectiveness in an organization.

2.4. Underpinning Theories

Previous studies have suggested that organizational theories help to understand the diffusion of innovation within organizations. Factors such as organization size, culture, strategy, product differentiation, specialization, and the intensity of administration influence the diffusion of innovation in tasks (Damanpour, 1987). Weber (2009) further stated that organizational theories address scientific and fundamental issues, thereby improving management efficacy. Consequently, it is believed that organizational theories have the potential to enhance TQM implementation in construction projects. The justification for the diffusion of TQM can be supported through the use of contingency theory (Jayaram, Ahire, & Dreyfus, 2010; Silvestro, 2001) and institutional theory (Dubey et al., 2018; Sila, 2007). The organizational theories and corresponding TQM literature utilized in previous research are summarized in Table 2.1:

Table 2.1 Organizational Theories used in TQM studies

Organizational theories	Literature
Resource based theory	(García-Bernal & García-Casarejos, 2014; Powell, 1995; Ruiz-Carrillo & Fernandez-Ortiz, 2005; Tena, Llusar, & Puig, 2001)
Institutional Theory	(Ahmad et al., 2014; Carmona-Márquez, Leal-Rodriguez, Leal-Millán, & Vazquez, 2018; Corredor & Goñi, 2011; Sila, 20
Contingency Theory	(Sila, 2018; Talapatra, Uddin, Antony, Gupta, & Cudney, 2019; Yas, Alsaud, Almaghrabi, Almaghrabi, & Othman, 2020)
Agency Theory	(Gyan, 2017; van Kemenade, 2019; Zu & Kaynak, 2012)

According to Barney (1991), the Resource-Based View (RBV) theory helps organizations gain a competitive advantage by leveraging various strategic resources and capabilities. Similarly, Dubey et al. (2018) and Powell (1995) noted that TQM is not typically aligned with RBV theory, casting doubt on its potential to provide a competitive advantage through TQM. However, Kiatcharoenpol, Punnakitikashem, and Laosirihongthong (2010) suggested that organizations could gain a competitive edge by implementing TQM. Ling-Yee (2007) argued that RBV might struggle to identify the appropriate resources and capabilities suited to different circumstances. In the context of contingency theory, Granlund and Lukka (2017) emphasized that an appropriate environmental condition is essential for the effective use of resources.

Gemünden, Lehner, and Kock (2018) highlighted that under uncertain conditions, organizations must select process characteristics that fit the uncertainty. Institutional theory, as discussed by Sila (2007), enhances stakeholder legitimacy and indicates that organizations might be compelled by government pressure to conduct their business in certain ways. Government policies are crucial for easing business operations under competitive pressures, but organizations must still comply with standards set by regulatory agencies.

For TQM, it is critical to have appropriate guidelines for implementation, as there is no concrete certification provided by regulatory bodies (Ferdousi, Baird, Munir, & Su, 2018a). Obamen, Solomon, Gabriel, and Eluka (2019) suggested that TQM adoption must be environmentally friendly and align with customer requirements. Kennedy and Fiss (2009), following the Tolbert and Zucker (1983) proposed a two-stage model using institutional theory to examine the diffusion of innovation strategies. They contended that early adopters of innovation are likely to enhance efficiency by capitalizing on opportunities, whereas late adopters encounter threats to their survival in a competitive market from both economic and social perspectives.

2.4.1. Resource Based Theory

For firms, strategies are essential for examining the connections between resources, competition, and profitability. Companies need to employ comprehensive and suitable resources to secure their survival. Grant and Baden-Fuller (1995) introduced a resource-

based theory of competitive advantage, which is closely related to the Resource-Based View (RBV). which serves as a foundation for the competitive advantage of enterprises primarily involved in the exchange of valuable tangibles (Ruiz-Carrillo & Fernández-Ortiz, 2005). Executives need to analyze the relationship between their resources and company performance. To achieve this, they must formulate appropriate strategies that reflect the role of resources in performance, using techniques and theories to structure their analysis.

Valentin (2001) mentioned that deploying productivity enhances firms' abilities, necessitating core competencies and collective learning. Similarly, Penrose (1959) highlighted core competencies as essential resources for improving company performance. Studies by Burgelman (1994), Christensen et al. (2018), and Lei et al. (1996) confirmed that a firm's competence evolves within the firm, contributing to its development and should not be considered a separate strategy. It is also important for managers to focus on strategizing competencies and relating resources to firm performance. One well-established technique for this purpose is the value chain analysis proposed by Porter (1985), which breaks down a firm's value creation system into individual, linked activities. This approach closely connects the management of individual activities across the business.

Burt and Soda (2021) proposed a network-based resource conception to gain a competitive advantage and strategically pursue organizational strategies. The resource-based theory for competitive advantage gained renewed interest from scholars such as Barba-Sánchez and Atienza-Sahuquillo (2010) and Grant (1991), who revisited some older theories. This theory advanced on many fronts, analyzing competitive imitation, the suitability of returns on innovation, and the role of imperfect information in creating profitability, thereby exploring the relationships between resources, competition, and profitability. It highlights a five-phase strategy formulation procedure: analyzing resources, examining the capabilities of the company, analyzing the profit potential of the resources and capabilities, choosing a strategy, and extending and upgrading the resources and capabilities of the company. The following diagram illustrates the stages involved in achieving success in firm performance according to this theory.

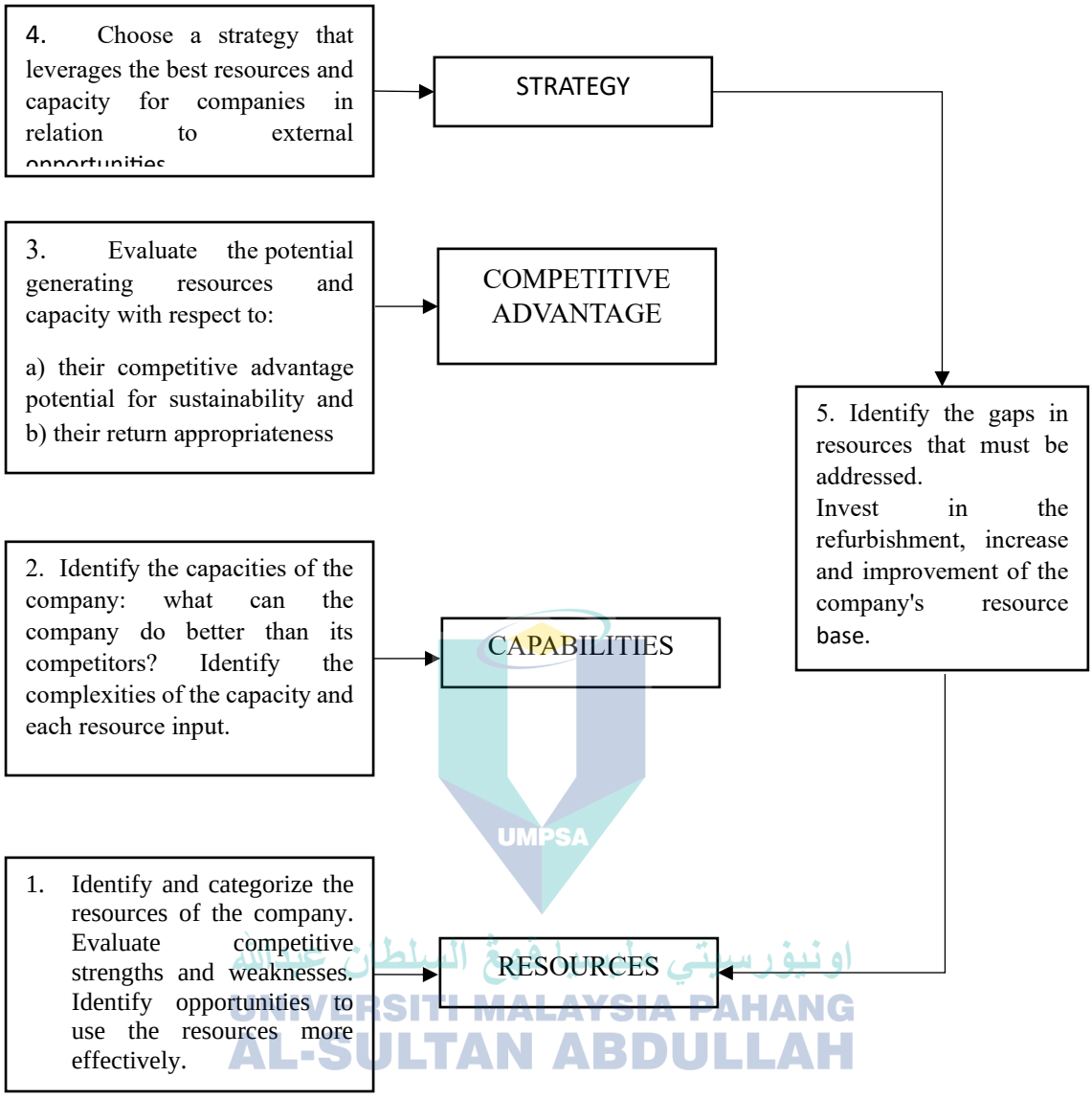


Figure 2.2 A Resource Based Approach to Strategy Analysis: A Practical Framework

Source: Wernerfelt (1984)

This theory identifies and distinguishes between resources and capabilities. Resources are inputs into the production process and hold market power. Both resources and capabilities provide the fundamental direction for a firm to formulate its strategy and are also sources of the firm's profit potential. While resources are essential, it is the firm's capabilities that give rise to competitive advantage by enabling various measures such as cost advantage, differential advantage, and bargaining power. Capabilities facilitate unique product or service offerings and create barriers to entry, thereby providing the best business operations and practices to achieve competitive advantage over other firms. Capabilities

involve coordinating resources with people, people with people, and a combination of resources and people with external sources to enhance the firm's profitability. The resource-based competitiveness theory highlights four key characteristics of resources and capabilities that are crucial for sustaining competitive advantage: durability, transparency, transferability, and reproducibility. The core of a resource-based strategy approach is to understand the relationships among resources, skills, competitive advantage, and profitability.

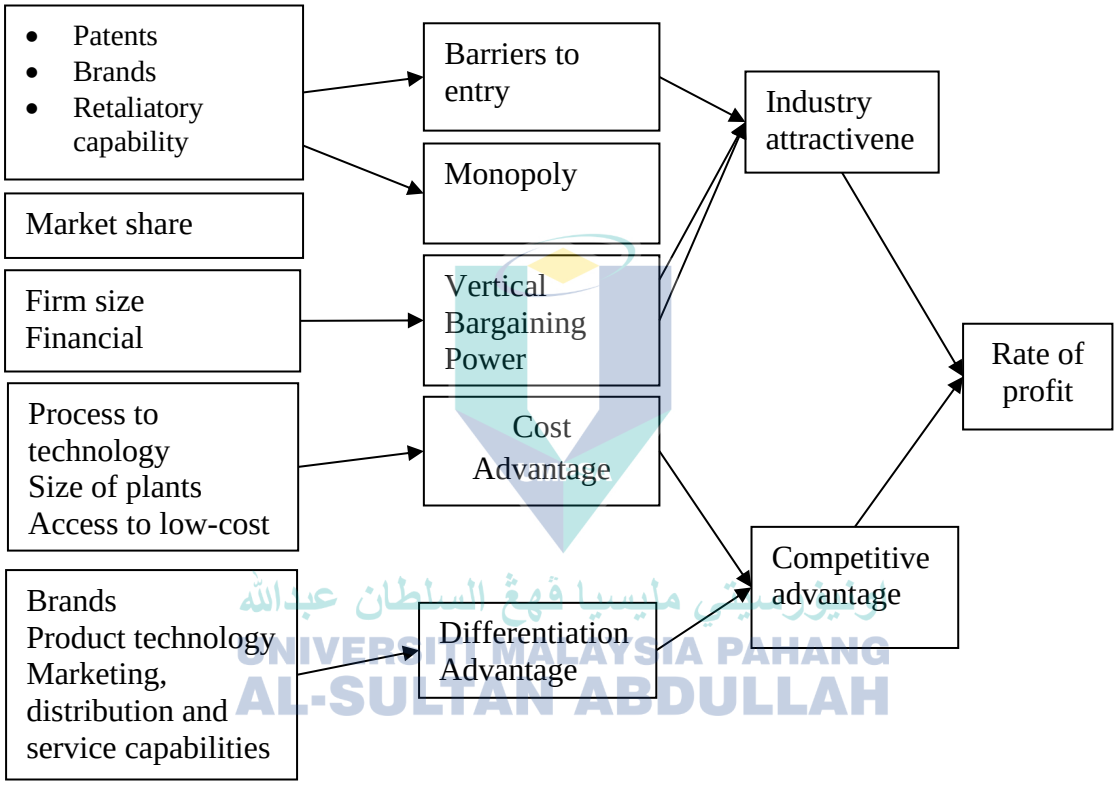


Figure 2.3 Resources as the Base for Profitability

The resource tools for entry barriers include patents, brands, and retaliatory skills. A high market share often equates to monopoly power due to product or service differentiation. Additionally, company size and financial resources enhance negotiation power. Cost-effective technological processes, large production plant sizes, and access to low-cost units further bolster a firm's competitive edge. The capacity to differentiate production through brands, product technology, marketing, distribution, and service capabilities allows firms to perform distinctively compared to their nearest competitors. Barriers to entry, monopoly power, and vertical bargaining power contribute to industry attractiveness, while cost and

differential advantages feed into competitive advantage. Together, cost advantage and industry attractiveness determine the rate of profits.

The fundamental argument of resource dependency theory posits that organizations rely on resources, which ultimately originate from their external environment. This environment includes other organizations to a significant extent. The resources an organization needs are often controlled by others, highlighting the power dynamics in resource dependency. The theory suggests that the power of organization A over organization B is directly proportional to organization B's dependence on organization A's resources. Thus, power is relational, situational, and potentially mutual. Organizations depend on various multidimensional resources such as labor, capital, and raw materials. They cannot develop comparable initiatives for all these resources simultaneously. Therefore, they must navigate using the principles of criticality and scarcity, focusing on operating critical resources. For example, a burger outlet cannot function without bread. Organizations can adopt countervailing strategies, such as vertical or horizontal integration with more suppliers, to manage resource dependency effectively.

Resource dependency extends beyond external organizations providing, distributing, financing, and competing with a company. While management decisions typically have more immediate impact, the cumulative effect of non-management decisions is significant. Managers throughout the company understand that their success is linked to customer demand. When customer demand increases, managers' careers thrive, positioning customers as the ultimate resource for businesses. Although this may seem obvious in terms of revenue, management views customers as a resource through the lens of organizational incentives.

2.4.2. Agency Theory

Agency theory suggests that the structure of a corporation is designed so that managers (agents) prioritize the interests of the shareholders and principals. Neoclassical economist Milton Friedman argued that corporate activities enhance the performance of both managers and employees. These activities improve their efficiency and overall effectiveness. Over the past few decades, various theories have been developed to explain the roles of corporations at different levels. The neoclassical view of the firm suggests that corporate activities constitute an agency problem, as they can be seen as a misallocation of resources that should

be used to enhance employee efficiency. This approach has been criticized for suggesting that management teams might misappropriate company assets instead of using them to build internal capabilities (Banerjee, Bergen, Dutta, & Ray, 2012).

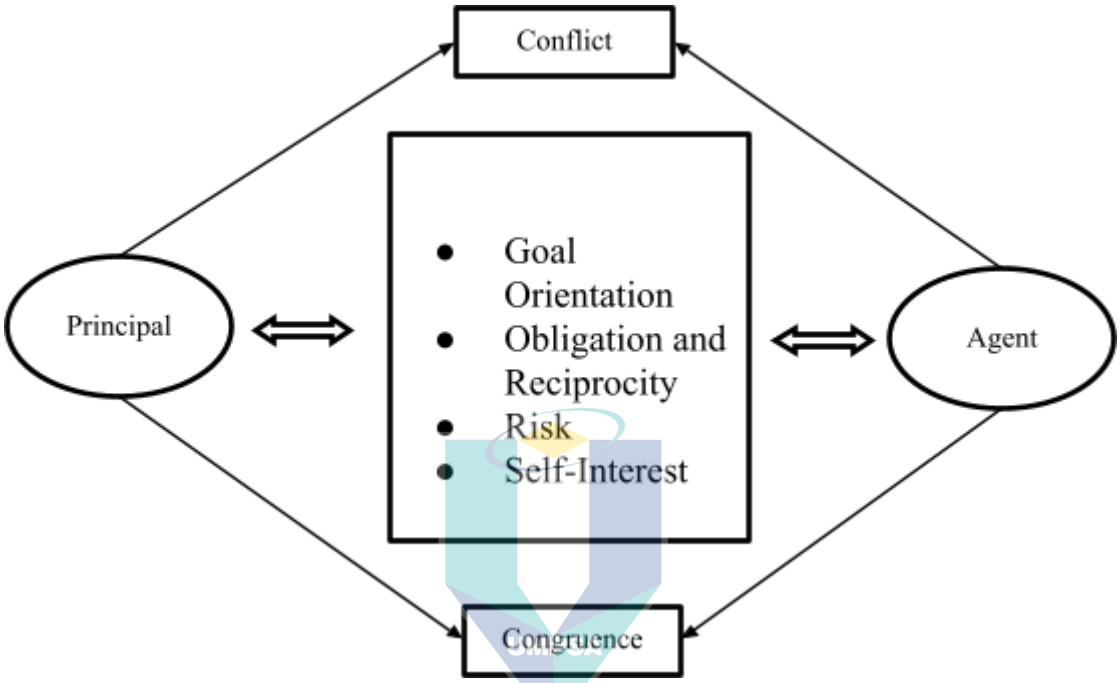


Figure 2.4 Conflict Management through the Agency Theory

Source: Hill and Jones (1992)

The agency relationship is crucial in social responsibility, referring to the principal-agent dynamic. Traditionally, this relationship between managers and employees poses a risk that agents may not act in the principal's best interests. Eisenhardt (1989) highlighted the agency view of corporations, noting the potential conflicts between managers' and employees' interests. Agency theory emphasizes pursuing corporate activities with the aim of maximizing stakeholder value. In the context of construction contracts, clients and contractors involved in principle-agent relationships often have different goals and attitudes toward risk (Osipova, 2015). However, this focus on maximizing value can conflict with modern corporate responsibilities, which encompass improving working conditions, maintaining positive customer and supplier relations, and addressing environmental concerns.

2.4.3. Institutional Theory

Decision making in any organization is very complex and dynamic, particularly regarding planning and operational decisions. Institutional theory is based on the behavioral actions taken by organizations within their institutional context (Shonk & Bravo, 2010). As suggested by previous studies, institutional theory involves social expectations that are appropriate to organizational operations, behavior, structure, and practices. It is crucial for firms to maintain legitimacy in operations management to ensure access to scarce resources. When adopting innovation, firms should gather information related to norms and social expectations to appraise potential benefits and position themselves against environmental or economic uncertainties.

Understanding the degree and type of pressure placed on organizations within certain business environments, known as isomorphism pressure, is crucial. Isomorphism is a concept based on norms and practices that organizations must follow within an environment (Johnston, 2013). The dynamic nature of the environment significantly affects organizational decision making. Effective decision-making processes require identifying potential institutional pressures evident within the environment and their impact on the organization.

Institutional theory suggests that organizational legitimacy depends on the organization's structure, beliefs, and behavior, along with social and cultural pressures from the external environment. Based on widespread expectations and behavioral interpretations, decision makers can position their organizations to focus on institutional standards and actions. Understanding and analyzing the concept of an institution is essential before discussing institutional theory factors. Barley and Tolbert (1997) established joint rules that identify relationships between social actors, based on process-action relationships and conditions for action. Rules and standard procedures become institutions linked to norms and cultural beliefs (Gough & Scott, 2001).

For example, Washington and Patterson (2011) explained the concept of an institution by identifying a handshake as a widely shared institution with social and shared understanding of actions and representations. The institutional context significantly influences organizational actions and behavior. The components of culture in the institutional environment are deemed appropriate for organizational behavior. Compelling arguments

exist in research related to institutional environments (Soelton, 2023). Shonk and Bravo (2010) mentioned that institutional theory is based on the notion that organizations within the same institutional environment might adopt similar structures, behaviors, cultures, and activities.

Early studies on institutional theory focused on understanding the reasons behind the striking similarities between similar organizations, how organizations respond to pressures and demands from their business environment, and how institutions in a given environment tailor their structures and strategies (Washington & Patterson, 2011). Recent studies (Acquah, Essel, Baah, Agyabeng-Mensah, & Afum, 2021; Suddaby, Elsbach, Greenwood, Meyer, & Zilber, 2010) have focused on why certain institutions adopt specific structures and practices. The achievement of organizational legitimacy is a primary component of institutional theory. Dacin, Oliver, and Roy (2007) noted that an organization's activities and behaviors are heavily influenced by the need for social rationale. The institutionalization process occurs through the collective cultural and social acceptance of practices, leading to legitimacy (Washington & Patterson, 2011).

Organizational legitimacy is defined as the level of cultural support for an organization's practices. Institutional theory considers culturally defined legitimate processes and practices as determinants of organizational structure, management, and evaluation. In challenging and highly constraining environments, organizations may conform to pre-existing culturally derived institutional norms to attain legitimacy. Factors such as uncertainty, lack of reputation, and prestige drive organizations to identify with culturally or traditionally appropriate behaviors rather than seeking distinctiveness and differentiation (Phelps, Dickson, & Marketing, 2009). According to institutional theorists, an organization's status affects its alignment with institutional practices. Phillips and Zuckerman (2001) found that organizations adapting their behavior to be isomorphic are typically more organized. Low-status organizations, aware of their position, may be less concerned about the effects of their business environment but are still subject to change.

While early studies on institutional theory focused on maintaining institutional isomorphism (Beckert, 2010; Currie, 2012; Seyfried, Ansmann, & Pohlenz, 2019), recent theorists have analyzed changing institutional processes (Washington & Patterson, 2011).

Hysing and Olsson (2017) identified three elements impacting institutions: (i) the emergence of institutions over time, requiring consideration of their history, (ii) the control of behavior through adherence to values and rules, and (iii) the role of individuals in determining changes. The characteristics of an environment determine the impact of institutional theory on organizations within it. The business environment sets boundaries for acceptable behavior, which varies between different environments. Studies have focused on understanding the extent of isomorphic institutional pressure a particular environmental setting exerts and its impact on organizations. Researchers have examined institutional theory across various systems, such as the educational system (Jan, Lu, & Chou, 2012), political science (Peters, 2019), and governance (Luna-Reyes & Gil-Garcia, 2011). This study aims to extend existing research on institutional theory to project management.

It is concluded from the above discussion related to underpinning theories that Resource-Based Theory (RBT) posits that an organization's competitive advantage stems from its unique resources and capabilities. In the context of Total Quality Management (TQM) in the construction industry, RBT highlights how firms leverage specialized skills, technologies, and processes to achieve superior quality and efficiency. Institutional Theory explores how external pressures like regulatory requirements, industry norms, and societal expectations influence organizational practices. For TQM in construction, this theory helps understand how adherence to quality standards and certifications is driven by institutional pressures and expectations. Contingency Theory suggests that the effectiveness of management practices, such as TQM, depends on the alignment between organizational strategies and environmental conditions. In construction, this theory indicates that TQM practices need to be tailored to fit specific project types, organizational structures, and market conditions. Agency Theory deals with the relationship between principals (owners) and agents (managers), focusing on how to align interests and reduce conflicts. In the construction industry, applying TQM can address agency issues by ensuring that quality standards are met and reducing discrepancies between management and stakeholders' expectations.

Together, these theories provide a comprehensive framework for understanding how TQM can be effectively implemented in the construction industry by considering internal resources, external pressures, contextual fit, and stakeholder alignment.

2.5. Hypothesis Development

2.5.1 Total Quality Management (TQM) Factors and Firm Performance

Project performance has emerged as a key issue in project management, with practitioners and academics studying how various aspects affect project success. Researchers have explored modeling from other fields of management, such as Total Quality Management (TQM), to improve project outcomes. Tatikonda and Rosenthal (2000) demonstrated that the final success of a project involves several degrees of flexibility and formality. According to the PMI (2004), cost, schedule, and performance are the primary aspects for measuring project management performance. Effective project execution is evaluated by monitoring these aspects to ensure that projects are completed within budget, on schedule, and meet their objectives. Meredith and Mantel (2003) identified continuous improvement implementation and monitoring as major challenges in developing project performance management.

In the context of Oman, where the construction sector is vital to economic growth and development, implementing TQM can address challenges such as ensuring quality in the face of rapid development, managing costs effectively, and meeting stringent regulatory requirements. By integrating TQM principles, construction projects in Oman can achieve higher efficiency, better quality, and increased satisfaction for all stakeholders involved (Al-Khalaf, & Al-Saleh, 2023; Al-Mamary, & Al-Aamri, 2022).

An analysis of TQM practices and project management dominance has shown positive and significant factors that enhance TQM project performance (Jung et al., 2009; Mir and Pinnington, 2014). In today's market, customers are increasingly focused on product and service quality, prompting organizations to adopt quality improvement strategies. Substantial investments are made to enhance quality through TQM initiatives, which have been linked to improved business performance (Ramlawati & Kusuma, 2018). TQM focuses on customer satisfaction, improved communications, and employee participation (Pambreni et al., 2019). However, studies have shown contradictory results regarding the relationship between TQM and performance (Bouranta et al., 2017; Pambreni et al., 2019; Shafiq, Lasrado & Hafeez, 2019). Additionally, the social and economic conditions of a country can affect TQM practices, making them country-specific and not always applicable elsewhere

(Kull & Wacker, 2010).

The emergence of TQM has been a significant development in management practices, providing a competitive edge and improving performance and competitiveness, especially in the construction sector. Professional literature and practice widely recognize the importance of quality. Numerous studies have defined TQM applications and their contributions to operational performance (Flynn et al., 1995; Black and Porter, 1996; Choi and Eboch, 1998; Samson and Terziovski, 1999; Sun, 2000). The MBNQA framework, introduced in 1995, identifies seven fundamental themes: leadership, customer focus, information and analysis, strategy and planning, process management, staff management, and business performance. These themes can be categorized into four aspects: leadership, relationships with employees, customers and suppliers, and product and process management (Jung and Wang, 2006).

Performance measurement is crucial for efficient management, as noted by Deming, who emphasized that improvement is impossible without measurement. Identifying the level of TQM implementation and its impact on industrial performance is essential for building organizational performance (Gadenne and Sharma, 2002). Many studies have empirically verified the positive impact of TQM on quality, operational and financial performance, and employee and customer satisfaction (Yang, 2006; Fuentes et al., 2006).

Studies show that TQM positively impacts organizational performance, enhancing customer satisfaction, employee relations, operational procedures, and financial results (Kumar et al., 2009). Performance measurement is a key factor in adapting TQM, with companies like Xerox, Northern Telecom, Texas Instruments, and Avco Financial Services demonstrating significant improvements through TQM implementation. Properly implemented TQM plans lead to better customer understanding, satisfaction, improved interconnections, problem-solving, and fewer errors (Huarng and Chen, 2002; Brah and Tee, 2002). Quality experts like Deming, Juran, Feigenbaum, Crosby, and Ishikawa have significantly influenced QMS systems, advocating that better quality leads to increased productivity and competitiveness (Kruger, 2001). Empirical evidence shows that effective.

Quality Control Jobs enhance productivity and organizational performance (Powell, 1995; Easton and Jarresll, 1998; Das et al., 2000; Kaynak, 2003; Yeung et al., 2005; Santos-Vijande, Alvarez-González, 2009; Talib et al., 2020). Japanese manufacturers have

significantly contributed to organizational performance in the USA and China, supporting earlier literature linking TQM practices to organizational achievement (Miyagawa and Yoshida, 2010). However, Phan et al. (2019) found that highly competitive performance requires exploring quality management practices in leadership, process management, and information sharing. TQM contributes to competitive advantages and overall organizational performance (Brah, Tee, & Madhu Rao, 2002). Studies have shown that TQM improves internal and external performance, with employee satisfaction and a favorable working environment being crucial for competitiveness and business performance (Iqbal & Asrar-ul-Haq, 2018). TQM positively impacts financial performance, reduces production costs, and enhances customer satisfaction (Gharakhani et al., 2013; Lakhal et al., 2006). However, further exploration of TQM performance relationships in different countries is suggested (Sila & Ebrahimpour, 2005).

Empirical research supports the TQM performance relationship in various countries. For example, TQM practices in China and the US have been linked to organizational performance (Miyagawa & Yoshida, 2010), and similar findings have been observed in Chinese SMEs (Ahmad et al., 2015). However, the relationship between TQM and performance can vary across industries and regions. For instance, Douglas and Judge Jr (2001) found a positive correlation between TQM and financial performance in US hospitals, while TQM practices in Australian manufacturing companies improved product quality innovation (Prajogo & Sohal, 2003b). Despite these findings, some studies, like Corredor & Goñi (2011), found no substantial link between TQM and performance in the health industry in Italy.

This section provides empirical results from previous studies on TQM's performance relationship in manufacturing and service organizations. The studies offer a wide range of models and empirical evidence, with mixed results primarily in developed and Asian countries. Therefore, examining TQM-project performance in Oman is essential for understanding its impact on building project performance.

2.5.2. Literature Review Matrix for the Study

Table 2.2: Literature Review Matrix for the variables

Author-Year	Title	Variables	Methodology	Results
(Jimoh, Oyewobi, Isa, & Waziri, 2019)	"Total quality management practices and organizational performance: the mediating roles of strategies for continuous improvement"	TQM practices, organizational performance, strategies for continuous improvement	Quantitative with PLS SEM	TQM practices are related positively towards continuous improvement and organizational performance.
(Phan, Nguyen, Nguyen, & Matsui, 2019)	"Effect of total quality management practices and JIT production practices on flexibility performance: Empirical evidence from international manufacturing plants"	TQM practices, just in time, flexibility performance	Regression and correlation analysis	TQM practices significantly impact flexibility performance. Relationship between just in time production practices and performance is stronger with higher TQM implementation.
(Lu, Cai, Wei, Song, & Wu, 2019)	"Quality management practices and inter-organizational project performance: Moderating effect of governance mechanisms"	Quality management practices, inter organizational project performance, governance as moderator	Structural equation modelling	Governance magnifies positive effect of quality management practices on project performance
(Shieh & Wu, 2002)	"The relationship between total quality management and project performance in building planning phase: an empirical study of real estate industries in Taiwan"	TQM, project performance,	Empirical regression analysis	Leadership ability and management of supplier have positive influence on project performance.

Table 2.2 Continued

Author-Year	Title	Variables	Methodology	Results
(Bryde & Robinson, 2007)	"The relationship between total quality management and the focus of project management practices"	TQM, customer focus, project performance	Exploratory study	TQM and customer-based project performance are highly correlated
(Yong, 2018)	"The Influence of Total Quality Management on Project Performance: The Case of Construction Organizations in Malaysia"	TQM practices, project performance	Multiple regression analysis using SPSS	Operation focus and workforce focus were perceived as dominant TQM practices in quality performance
(Abazid, TRNC, & Gökçekuş, 2019)	"Application of total quality management in Saudi Arabia construction project"	TQM practices, construction project performance	Exploratory analysis using SPSS	There is the weak implementation of the concepts of Total Quality Management in delivering construction projects.
(Kuo & Kuo, 2010)	"The effect of corporate culture and total quality management on construction project performance in Taiwan"	TQM, corporate culture and project performance	Structural equation modeling	Both corporate culture and TQM positively influence project performance directly.
(Sadikoglu & Zehir, 2010)	"Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms"	TQM, firm performance	Structural equation modeling	TQM practices are significantly and positively correlated with all performance measures

Table 2.2 Continued

Author-Year	Title	Variables	Methodology	Results
(Pambreni et al., 2019)	"The influence of total quality management toward organization performance"	TQM, Organizational Performance	Regression analysis using SPSS	customer focus, continuous improvement, strategically based, and total employee involvement have a positive and significant effects on organization performance
Eniola, Olorunleke, Akintimehin, Ojeka, and Oyetunji (2019a)	"The impact of organizational culture on total quality management in SMEs in Nigeria"	Organizational culture, TQM, organizational performance	PLS-SEM	TQM may improve the OC dependent on the CVF in an organization, thus, improving SMEs performance.
(Buentello et al., 2008)	"Exploring the casual relationships between organizational citizenship behavior, total quality management & performance"	TQM, OCB, Performance	Exploratory factor analysis	causal relationship exists between the TQM and performance constructs
(Firmansyah et al., 2014)	"The effect of organizational citizenship behavior (OCB), total quality management (TQM), Technology Leadership and Service Quality on the performance of private universities in Surabaya"	OCB, TQM, Leadership technology, service quality, performance	PLS-SEM	Organizational Citizenship Behaviour (OCB) had significant effect on Total Quality Management and performance.

Table 2.2 Continued

Author-Year	Title	Variables	Methodology	Results
(Jung & Hong, 2008)	"Organizational citizenship behaviour (OCB), TQM and performance at the maquiladora"	OCB, TQM and Performance	Structural Equation Modelling	The organizational culture, represented by OCB, significantly impacts how TQM is managed and implemented. Furthermore, the results point out "soft TQM elements" have more significant impact than "hard TQM elements" towards firm's performance
(Mehrabi, Abtahi, & Dehbalaee, 2013)	"The Investigation of relationship between the organizational citizenship behavior (OCB), TQM practice and organizational performance"	OCB, TQM Practices, organizational Performance	Exploratory analysis	OCB on TQM positive influence performance.
(Baird et al., 2011)	"The relationships between organizational culture, total quality management practices and operational performance"	Organizational culture, TQM and operational performance	Structural Equation Modelling	TQM practices is to enhance operational performance
(Ul Musawir, Serra, Zwikael, & Ali, 2017)	"Project governance, benefit management, and project success: Towards a framework for supporting organizational strategy implementation"	Project quality, Project governance, project performance	Structural Equation Modelling	effective project governance improves project success both directly and through an enhanced benefit management process

Table 2.2 Continued

Author-Year	Title	Variables	Methodology	Results
(Sirisomboonsuk et al., 2018)	"Relationships between project governance and information technology governance and their impact on project performance"	Project governance, information technology governance, project performance, quality	Regression analysis	IT Governance and project governance have positive impact on project performance.
(Haq, Liang, Gu, Du, & Zhao, 2018)	"Project governance, project performance, and the mediating role of project quality and project management risk: an agency theory perspective"	Project governance, project performance, project quality, project management risk	Structural Equation Modelling	project governance has a significant positive influence on project performance directly and through mediation, whereas the moderation is insignificant
(Haq, Gu, Liang, & Abdullah, 2019)	"Project governance mechanisms and the performance of software development projects: Moderating role of requirements risk"	Project governance, project performance, requirement risks, project quality	Structural Equation Modelling	contractual and relational governances significantly influence project performance and are useful in reducing opportunism

Manufacturing companies were the first to adopt the concept of Total Quality Management (TQM), and a substantial amount of literature has been published on its implementation worldwide. Various TQM factors have been shown to influence firm performance, business performance, quality performance, and customer satisfaction (Ebrahimi & Sadeghi, 2013). Studies in manufacturing industries (Adem & Virdi, 2020; Arumugam, Ooi, & Fong, 2008a; Sahoo & Yadav, 2020) and service industries (Bouranta, 2020; Ooi, Lin, Tan, & Chong, 2011; Talib & Rahman, 2020) indicate that TQM plays a crucial role in project environments. However, Jong et al. (2019b) noted a lack of studies on TQM's impact on project performance, especially in GCC countries, and indicated that limited research has been conducted on ongoing construction projects.

Quality gurus such as Crosby (1979), Shewhart and Deming (1986), and Juran (1986) have argued for the universal acceptance of TQM, yet emphasized the need to verify its applicability under different environmental circumstances (Mardani & Kazemilari, 2012). Even the critical elements or factors constituting TQM are not universally agreed upon. Statistical evidence from numerous studies confirms TQM as a critical factor for organizational performance. Crosby (1979) defined TQM as the value and degree of excellence, while Shewhart, Deming (1986), and Feigenbaum (1991) highlighted its importance in meeting customer expectations for products and services. Kenneth (2012) stressed that top management must commit to providing quality-related training to lower-level employees to address quality concerns and enhance customer satisfaction and firm performance (Manhas, Gupta, & Gupta, 2015).

The findings from Bouranta, Psomas, and Pantouvakis (2017) indicated that TQM successfully meets customer requirements by promoting continuous improvement and fostering a culture of quality within organizations. Improvement through TQM also reduces waste and rework costs, thereby enhancing overall work efficiency. All the quality gurus discussed—Crosby, Shewhart, Deming, and Juran—have significantly contributed to quality improvement, productivity, and competitive advantage. Low-quality products result in high costs and a weak competitive position. Deming (1986) provided 14 key TQM factors that summarized its relationship to competitive advantage. To this day, Deming's model is appreciated by research scholars for its profound knowledge system (Kudtarkar, 2014),

which includes the appreciation of a system, knowledge about variation, the theory of knowledge, and psychology. It is said that only top management can fully understand the complex operations and structures of organizations.

Juran (1986) focused on the managerial aspects of quality control as an integral section of management. He demonstrated a quality commitment strategy for continuous managerial improvement and established quality councils to address various management quality-related issues. TQM helps organizations meet customer requirements, continuously improve products or services, and reduce costs by minimizing waste and rework. TQM also emphasizes employee involvement and competitive benchmarking, led by teamwork and team-based problem-solving skills (Shan, Ahmad, & Nor, 2016a). TQM is considered a strategic element designed to focus on overall organizational processes and activities with the goal of satisfying stakeholders (Talha, 2004).

Recently, TQM has been a key focus for management in addressing global uncertainty and competitiveness (Anil & Satish, 2016; Sweis, Suleiman, AlSayyed, & Suifan, 2020). Companies adopt TQM for various reasons, including being customer-conscious regarding product quality and customer service, rapid technology transfer, industrial revolution, technology deployment, and achieving a global reputation. Although literature highlights the importance of TQM, its implementation results and impact on organizational performance have been mixed. Empirical studies (Hafeez, Basheer, Rafique, & Siddiqui, 2018; Narula et al., 2018; Shan, Ahmad, & Nor, 2016b) have shown a positive influence of TQM on business performance in developing countries.

However, Prajogo and Sohal (2003a) found that for TQM to be a successful strategy, it needs to focus on innovation. Previous studies have researched TQM in different contexts (Saraph, Benson, & Schroeder, 1989; Sila & Ebrahimpour, 2002). However, the role of TQM in today's competitive and uncertain environment is still not fully understood. TQM, an integral part of quality evolution led by quality scholars like Crosby (1979), Deming and Edwards (1982), and Juran (1986), has evolved through various perspectives, including quality award models and empirical research in both developed and developing countries (Aryanny, 2020; Franz, 2018; Neyestani & Juanzon, 2016; Reinaldo, Neto, Caiado, & Quelhas, 2020).

TQM impacts financial performance (Gharakhani, Rahmati, Farrokhi, & Farahmandian, 2013). Studies by Lakhal, Pasin, and Limam (2006) and Panuwatwanich and Nguyen (2017) highlighted TQM's role in minimizing costs, upgrading staff performance, enhancing organizational performance, and increasing customer satisfaction. Pambreni, Khatibi, Azam, and Tham (2019) supported the empirical TQM-performance relationship, confirming a positive association between them. Furthermore, Antunes, Quirós, and Justino (2017) identified TQM factors like top management commitment, supplier relationships, and employee involvement as highly associated with performance. Rahman and Bullock (2005) showed that soft TQM elements (employee empowerment, training, and team spirit) significantly relate to performance, emphasizing their importance in organizational success.

Many studies have shown that TQM factors significantly influence the operational and financial performance of firms and projects. The first TQM factor, Customer Focus (CF), was shown to be an essential structure for improving corporate performance (Arumugam et al., 2008). Some researchers (Ferdousi et al., 2018b; Sriyakul et al., 2019) confirmed the importance of a good relationship between a company and its suppliers to enhance performance. Another TQM factor, Project Strategy (PS), was confirmed as crucial for business performance by other scientists (Agus & Selvaraj, 2020; Yaseen, Sweis, Abdallah, Obeidat, & Sweis, 2018). The continuous improvement (CI) strategy, a third TQM factor, was also confirmed as important for service industry performance (Haque, Sarwar, Azam, & Yasmin, 2014).

After reviewing previous studies on the importance of TQM, it is clear that TQM is a vital approach for organizations to improve competitiveness and continuously enhance product and service quality (Goetsch & Davis, 2016). Goetsch and Davis (2016) identified 11 key Total Quality Management (TQM) elements essential for organizational performance, including Top Management Commitment (TMC) and Employee Involvement. This research, focusing on project performance, emphasizes top management commitment, customer focus, total employee involvement, continuous improvement, and project strategy as the major TQM factors contributing to the success of construction projects. Based on the existing literature, these five elements are deemed critical for project performance, as they are consistently highlighted in numerous previous studies as the most effective ways to enhance

TQM practices.

Table.2.3 Previous studies on TQM factors

Author-Year	Customer focus	Continuous improvement	Top management Commitment	Project strategy	Employee involvement
(Yas, Alsaud, Almaghrabi, Almaghrabi, & Othman, 2021)	✓				✓
(Amin et al., 2017)	✓		✓		
(Agus & Selvaraj, 2020)	✓		✓		
(Singh, Kumar, & Singh, 2018)	✓	✓	✓		
(Yusr et al., 2017)	✓	✓	✓		
(Ibrahim & Daniel, 2019)	✓				✓
(Puthanveettil, Vijayan, Raj, & Sajan, 2020)	✓	✓	✓		✓
(Mangla, Raut, Narwane, & Zhang, 2020)		✓			✓

2.5.2.1. Customer Focus

In business, the customer is a crucial resource for value creation, driving business growth and necessitating organizations to adapt to changing customer needs. A customer-focused strategy enhances profits and performance, as stated by Barkham and Mellor-Clark (2013), who emphasized the importance of sales turnover as a measure of business growth. Customer satisfaction should be a priority, not just an objective, in today's competitive environment. According to Cai (2009), organizations need to be customer-oriented when implementing customer relationship practices, meeting and exceeding current and future customer expectations. Goetsch and Davis (2016) identified customer focus as a key driver for improving customer satisfaction, supported by Alzoubi and Ahmed (2019), who noted that fulfilling customer needs is essential for competitive advantage. Service quality is also critical for organizational survival and measuring customer satisfaction (Pambreni et al., 2019). Service quality and customer focus, as TQM elements, significantly impact financial performance (Abusa & Gibson, 2013b). Based on the discussed literature, the following hypothesis is formulated for this research:

H1: *There is a positive impact of customer focus on construction project performance in Oman*

2.5.2.2. Continuous Improvement

Within the competitive business environment, product development and quality service delivery have been key focuses for organizations. Firms emphasize continuous improvement of products and services as an ongoing goal, maintaining service quality as a primary objective (Goetsch & Davis, 2016). Amin et al. (2017) highlighted that organizational systems and processes can be enhanced through continuous improvement in both manufacturing and service firms. Additionally, Maletic and Maletic (2012) found that continuous improvement positively contributes to the performance of maintenance departments. Bessant, Caffyn, and Gallagher (2001) noted that continuous improvement should be a daily routine for enhancing quality and organizational performance.

Cleland (2007) observed that project leaders, who thoroughly understand their projects and dynamics, are crucial for successful implementation. Effective control over employee functions, including coordination, production, and component distribution, is essential for

project success. Dragnić (2014) stated that both internal and external factors determine business project performance. Internal factors include size, capital, years of business experience, and project implementation skills, while external factors encompass sales tax rates, research, credit market, government regulations, and economic conditions.

Ramasamy, Ong, and Yeung (2005) revealed that firm owners aim to maximize profits, with private companies often achieving higher profits compared to government-owned companies. They empirically found that firm size and ownership are significant determinants of financial performance, challenging the conventional economic theory that emphasizes financial leverage as a primary contributor to higher returns. The study suggested that organizational inefficiencies and production costs beyond the optimal level hinder profitability. Additionally, higher levels of bureaucracy can impact business growth and continuous improvement.

Innovation is a crucial tool for governments to enhance the quality of life and influence business practices globally. Innovation drives new thinking at various levels and creates innovative organizations capable of managing new technological projects. Effective leadership is essential for realizing new business opportunities through innovation. Based on the findings of past studies, the following research hypothesis is developed regarding the relationship between continuous improvement and project performance:

H2: *There is a positive impact of continuous improvement on construction project performance in Oman.*

2.5.2.3. Top Management Commitment

Top management commitment (TMC) is a crucial element of TQM that empowers employees and enhances their job satisfaction. According to Sila (2007), TMC is part of institutional and contingency theory, involving organizational size and operational scope in quality and customer satisfaction. Previous studies (Ahire & O'Shaughnessy, 1998; Dubey et al., 2018; Mustafa & Bon, 2012; Soltani, 2005) have identified TMC as an institutional factor driving competitive advantage. Organizations are significantly impacted both before and after adopting TQM due to institutional pressures. Institutional theory posits that organizations strive to improve efficiency driven by increased competition and top

management commitment. Leadership style and competency are crucial for project success, with project performance determined by the project leader's performance. Therefore, managers play a vital role as human resources for organizational success.

TMC combines the beliefs and participation of top management to shape the organization. Strategic implementation research suggests that top management significantly influences market and employee orientation. TMC is also essential for managing customer relationships and fostering long-term supplier relationships. Thus, it is crucial for top management to support strategic orientation campaigns within the organization. They must ensure that management functions with appropriate resources and back up operations and service activities to achieve full efficiency (Luo, Gunasekaran, Dubey, Childe, & Papadopoulos, 2017). Dubey et al. (2018) argued that top management's cognitive base reflects the organization's choices, with TQM diffusion driven by top management's actions and positive beliefs in organizational performance.

TQM is heavily influenced by TMC, particularly during the stages of acceptance, routinization, and assimilation (Hazen, Boone, Ezell, & Jones-Farmer, 2014). Once TQM is accepted as a guiding philosophy, the implementation process begins. Although some studies (Abusa & Gibson, 2013a) have shown contradictory influences of TMC on organizational performance, TMC positively impacts financial performance. Current research suggests that top management has significant potential and confidence in evaluating organizational capacity and actions (Gunasekaran et al., 2017).

Mavi and Standing (2018) found that project managers' skills are critical for project success in the manufacturing sector. Maqbool, Sudong, Manzoor, and Rashid (2017) confirmed that workforce management and managerial skills are crucial for project performance, adding that governmental support, family support, and contributions from friends also enhance firm performance. Duchesneau and Gartner (1990) noted that a project manager's experience, interpersonal knowledge, access to capital, and capacity to work hard drive organizational success. The experience and knowledge of the local market are also important for corporate success (Hussain & Windsperger, 2010). Based on the reviewed literature, the following hypothesis is developed regarding the relationship between top management commitment and project performance:

H3: *There is a positive impact of top management commitment on construction project performance in Oman.*

2.5.2.4. Project Strategy

Project strategy refers to the strategic plan executed for quality improvement and gaining competitive advantage in the market environment (Goetsch & Davis, 2016). Effective implementation of TQM driven by a robust project strategy can achieve high quality. A project encompasses overall organizational key elements like company vision, mission, goals, and objectives, which must be conducted from a broad perspective. It is the responsibility of top management to strategize the project team to achieve these organizational key elements (Evans, 2017). Strategic indicators such as leadership, resources, and involvement are key elements of project strategy that need to be employed during project execution. Project strategy must be integrated with the environment and resource capabilities to survive in a dynamic and competitive market (Pambreni et al., 2019).

Additionally, Gunasekaran and Kobu (2007) found that strategies, design, application, logistics, and involved parties contribute to performance. They also noted that project lead time impacts performance. Similarly, ElZomor, Burke, Parrish, and Gibson Jr (2018) concluded that key managerial project decisions should be integrated into project design from planning to execution. Cooper (2019) also highlighted that key strategies and business approaches contribute to project success. Construction project success can be measured by customer adoption of delivered projects. Improved organizational performance and decision-making lead to project success and stakeholder satisfaction. They found that traditional measures like project time and budget do not solely determine performance, supporting Tukel and Rom (2001), who claimed that project performance extends beyond customer satisfaction and stakeholder performance to future firm performance.

Different projects have different learning curves, and successful implementation depends on the project manager's ability. Parantainen and Merilainen (2007) suggested common indicators for providing appropriate services to customers, helping identify project phases and achieve success. They listed milestones as follows:

Processes and procedures used by service providers that worked effectively in the past.

- Services have identifiable names and shapes, with simple services having associated costs.
- Stable content allows for solidifying prices.
- Services should emerge alongside productization within the organization.
- Services must be focused both internally and externally in a phased manner.

However, Jugdev and Müller (2005) argued that project success is influenced by the project context and the consensus among project participants. Based on the reviewed literature, the following hypothesis is developed regarding the relationship between project strategy and project performance:

H4: *There is a positive impact of project strategy on construction project performance in Oman.*

2.5.2.5. Employee Involvement

Employee involvement is at the heart of TQM, referring to the process of addressing organizational problems to make effective decisions related to employee empowerment and motivation (Thamizhmanii & Hasan, 2010). Involvement in work projects is a strategic approach for employees to learn new skills and technologies. Sofijanova and Zabijakin-Chatleska (2013) found that organizational performance is enhanced when employees are effectively utilized as a resource and involved in job execution. Similarly, Raza, Ashi, Agusta, Jalal, and Hasan (2016) investigated the role of employee empowerment in TQM practices in Saudi Arabian firms and found that employees are empowered when managers or supervisors provide them with the authority and responsibility to make decisions.

TQM principles and practices can be summarized into three core elements: customer focus, continuous improvement, and total involvement (Aamer, Al-Awlaqi, & Alkibsi, 2017; Polat, Damci, & Tatar, 2011). TQM focuses on studying organizational changes driven by changes in company strategy and environment. Employee empowerment has no strict boundaries or limitations, but employees must be aware of the organization's goals, objectives, vision, and mission. When employees work as a team on a project, they should be able to address issues and carry out tasks democratically. Based on this, the following

hypothesis is developed regarding the relationship between employee involvement and project performance:

H5: *There is a positive impact of employee involvement on construction project performance in Oman.*

2.5.3. Institutional Factors

According to institutional theory, the institutional environment influences a firm's environmental, economic, and social performance. This theory's framework considers how an organization's processes and attitudes are directed by beliefs, norms, rules, and values (Latif, Mahmood, Tze San, Mohd Said, & Bakhsh, 2020). Although neo-institutional concepts are well-established in the literature, they have faced criticisms that are often overlooked. Suddaby (2014) argued that these concepts fail to address how firms interpret certain aspects of their institutional or organizational environment, leading to a loss of internal consistency. This theory also neglects the processes and individuals related to change, resulting in a poor understanding of the factors contributing to dynamism (Lawrence, Suddaby, & Leca, 2011). Studies using the neo-institutional approach typically focus on short timeframes, reducing the causal connections to a series of relatively measurable and discrete variables (Suddaby & Greenwood, 2005).

Therefore, quantitative methods are primarily adopted to focus on rather than analyze the importance of change in the measurement of organizational forms and structures. Kostova, Roth, and Dacin (2008) focused on the adoption of neo-institutional theory in multinational companies, arguing that their intra-organization fields are regarded by their subsidiaries as institutional environments and that institutional pressures may be ignored when making strategic organizational practice decisions (Vaara & Whittington, 2012).

Despite these controversies, neo-institutional theory has been widely accepted in the literature (Alvesson & Spicer, 2019; Gürtürk & Hahn, 2016; Suddaby, Seidl, & Lê, 2013). This study aims to extend and apply neo-institutional theory to explain the similarities in assurance demand across organizations resulting from isomorphic forces. In practice, it is necessary to acknowledge and accept a certain level of homogeneity among organizations, as the interdisciplinary approach enables legal, cultural, political, and socioeconomic

arguments to be considered. This research adopts the neo-institutional approach, suggesting that isomorphic similarities and institutional policies play a crucial role in the long-term development of firms. These similarities and policies arise from coercive and normative factors. The instrumental role of both normative and coercive factors cannot be ignored in studying project and organizational performance, as these institutional factors have been tested by numerous researchers in their studies, as shown in Table 2.4 below.

Table 2.4 Previous studies on institutional factors

Author-Year	Coercive Pressure	Mimetic Pressure	Normative Pressure
(Sukoco, Supriharyanti, Susanto, Nasution, & Daryanto, 2021)	✓		
(Chen, Yi, Zhang, & Li, 2018)	✓		✓
(Chen, Zhong, & Xue, 2021)	✓	✓	✓
(Martínez-Ferrero & García-Sánchez, 2017)	✓	✓	✓
(Latif et al., 2020)	✓	✓	✓
(Depoers & Jérôme, 2019)	✓	✓	✓
(Somjai & Jermsittiparsert, 2019)	✓		
(Villena & Dhanorkar, 2020)	✓	✓	

2.5.3.1. Coercive Pressure

Coercive isomorphism, as described by DiMaggio and Powell (1983), results from the formal and informal pressures that organizations face from other organizations they depend on, such as the legal regulatory system in which they operate. Othman, Darus, and Arshad (2011) well-defined coercive isomorphism as the outcomes of the casual "rules of the game." Coercive pressures obvious through the interplay of power and politics in civilization, with actors like the state demanding complete compliance and threatening formal and unceremonious permissions. The concept of coercive isomorphism suggests that companies within an industry exhibit similarity due to certain legal or regulatory pressures (Väyrynen, Lanamäki, & Lindman, 2018).

Neo-institutional theory extends this notion, providing a robust framework for describing organizational isomorphism by incorporating previously ignored elements such as cultural values. This theory defines organizational legitimacy as "the extent to which an organization has cultural support," aiding in better supporting and recognizing its institutional partners (Christensen, Lægreid, & Rykkja, 2016; Jiang, Wang, Zhou, & Zhang, 2020). Organizational legitimacy can be gained through three institutional pressures: normative (e.g., morality), mimetic (e.g., generally accepted behavior in similar industries), and coercive (e.g., laws) (Kolk & Perego, 2010). Most organizations adopt assurance processes based on a neo-institutional approach to ensure social legitimacy and address external and internal pressures.

Coercive isomorphism results from institutionalized pressures experienced by organizations from those they depend on. These pressures often manifest when stronger organizations persuade weaker ones to conform to their requirements to gain legitimacy and benefit (Edwards et al., 2009). Oliver (1991) refers to coercive pressure as the incorporation of institutional standards, demands, and values. Organizations that comply with these regulations can benefit from enhanced resources, legitimacy, and accreditation. In institutional environment, Coercive pressure is bulbous where definite standards and rules are formulated and implemented by governments, credential societies and professional bodies for firms to follow to obtain benefits. Sometimes, coercive pressures arise from government directives that organizations must comply with. However, these pressures can also come from other authorized entities imposing sanctions on non-compliant organizations (Washington & Patterson, 2011).

Several studies on coercive isomorphism have highlighted the legal environment's relevance in auditing and disclosing information (Cuadrado-Ballesteros, Rodríguez-Ariza, & García-Sánchez, 2015; Francis, Khurana, Martin, & Pereira, 2011; Martínez-Ferrero & García-Sánchez, 2017). In the field of assurance research, the strength or weakness of the legal system can significantly influence the demand for sustainability assurance at the institutional level. Although this topic has been sparsely covered in the literature, Perego (2009) and Boiral and Gendron (2011) defended the notion that a country's legal environment determines the level of coercive isomorphism, noting differences in sustainability assurance

between countries.

Coercive pressures result from power relations manifesting in various forms (direct or indirect, formal or informal) and from different entities. Non-profit organizations are particularly susceptible to coercive pressures due to their high dependence on stakeholders for resources compared to other organizational structures (Edwards et al., 2009). Non-profit organizations often rely on government support, operating in politically controlled environments and conforming to coercive pressures from sponsors (government agencies) and other stakeholders to survive (DiMaggio & Powell, 1983). Johnston (2013) argued that compliance with coercive pressures can be seen as a "self-serving benefit" for any organization. Based on the discussed literature, the following hypothesis is formulated regarding the relationship between customer focus and project performance:

H15: *There is a positive impact of coercive pressure on construction project performance in Oman.*

2.5.3.2. Normative Pressure

DiMaggio and Powell (1983) identified normative pressure as another form of pressure that causes isomorphism. Normative pressures arise from professionalism in certain organizational fields, which can be explained by members of particular profession jointly in a suitable way of expected actions by the peers of their community. Such point of view is totally grounded on the truth that cultural norms and behaviors are rules which guide to the members of society of the particular profession. Normative pressures stem from actions considered the proper way of doing things and are often related to professional values. Normative isomorphism recognizes the influence of professional standards or networks on change, leading people in a given profession to portray similar characteristics to appear legitimate (Kezar & Bernstein-Sierra, 2019).

Normative pressure is transmitted similarly to how educational institutions impact students through formal education and individual interactions with professional networks. People in a given profession learn appropriate standards of behavior by participating in workshops, seminars, and training courses (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Both sources of regulatory pressure help professional managers and their employees develop organizational standards. Within sociology theory, research into

professional groups as social networks is vast. This is a compelling setting for analysis since professionals typically work autonomously and are not prone to coercive pressure (Prell, 2012). However, theorists argue that professional networks serve as a way of filtering information within a professional community.

DiMaggio and Powell (1983) extended this theory by adding that professional networks not only filter information but also disseminate institutional behaviors and norms among professional body members. Professional communities work together to establish rules and cognitive frameworks that shape organizational routines (Spillane, Parise, & Sherer, 2011). In uncertain or ambiguous situations, individuals are more likely to consult their professional network and form closer relationships to gain insights on addressing their current situation. These arguments imply that even though professionals in a given organization may portray individual characteristics, they tend to act like their counterparts within their professional network.

Normative pressure can significantly affect an organization's operations. The experiences and credentials of individuals in an institution may or may not influence the organization's perception of legitimacy, and they may also affect the organization's conformity to these pressures (Slack & Hinings, 1994). For example, an accounting firm with unqualified accountants may not be seen as legitimate despite the staff's experience in other fields or organizations (Haynes, 2013). Conformity to normative pressures can lead to changes in an organizational structure to align with expected institutional outcomes. While there may be differences in personality traits among professionals across organizations, they often behave similarly to their counterparts in other professions (DiMaggio & Powell, 1983), creating a pool of similar professionals in different organizations within the same field. These professionals can transfer norms and problem-solving capabilities from one organization to another (Galaskiewicz & Wasserman, 1989).

This norm and knowledge transfer can address variations in tradition and control, bringing organizations closer to becoming isomorphic with their counterparts in the same field. Swift and Hwang (2013) stated that professional experience is transferable through the movement of experienced individuals from one organization to another. Normative pressures may also arise when organizations draw from common resource pools, such as graduates, consultants,

and conferences (Washington & Patterson, 2011). Jennings and Lodge (2011) observed that normative mechanisms facilitate the sharing of common norms and practices among sports professionals through major sporting events. However, theorists argue that relying on similar professional resource pools and exchanging similar professionals among organizations pose risks. One danger is the possibility of recycling similar professionals, preventing organizations from hiring outside the resource pool, which can hinder organizational development (Phelps, 2009). Based on the discussed literature, the following hypothesis is formulated regarding the relationship between customer focus and project performance:

H17: *There is a positive impact of customer focus on construction project performance in Oman.*

2.5.4. Organizational Citizenship Behavior (OCB) As Mediator

Organizational Citizenship Behavior (OCB) refers to the behavior of an individual towards their job or organization, which directly or indirectly interacts with the reward system and promotes organizational efficiency and effectiveness. According to Organ (2006), OCB improves organizational productivity, operational efficiency, and financial and organizational stability. The concept of OCB originated from Barnard's (1968) study on cooperative systems, where he examined employee behavior and cooperation towards the organization and allocated tasks. Barnard suggested that belief and a positive attitude towards the job and organization are key elements for future business growth. Employees need motivation through monetary rewards and should be involved in key decision-making processes.

TQM requires high levels of employee involvement and commitment to quality processes. OCB includes behaviors such as helping colleagues, going beyond formal job requirements, and contributing to a positive work environment. These behaviors enhance overall team cohesion and collaboration, which are critical for the successful implementation of TQM practices. Employees who exhibit high levels of OCB are more likely to engage actively with TQM initiatives, leading to improved implementation and effectiveness of quality practices, which in turn positively impacts construction project performance (Khan & Alam, 2022).

OCB behaviors such as helping and supporting colleagues contribute to better communication and information sharing. Effective communication is crucial for TQM, which relies on clear and continuous feedback to drive quality improvements. Employees who exhibit OCB are more likely to proactively identify and address issues before they escalate. This proactive behavior supports the TQM approach of continuous improvement and early problem detection, leading to better project outcomes (Singh, & Kaur, 2023). OCB fosters a positive and supportive work culture, which is essential for the successful adoption of TQM practices. A supportive environment encourages employees to embrace quality initiatives and work towards common goals. High levels of OCB are associated with increased employee morale and job satisfaction, which can enhance commitment to TQM practices and improve project performance (Javed, & Shahbaz, 2023).

Past studies provided a comprehensive view of how OCB mediates the relationship between TQM and firm performance, highlighting the importance of employee behavior in enhancing the effectiveness of quality management practices and improving overall organizational outcomes (Mohan & Bhasin, 2021; Ahmad & Zafar, 2022; Ali & Hassan, 2023; Choi & Lee, 2021; Jabbar, & Noor, 2022). Therefore, none of the past study explored this relationship in the context of Oman's construction industry which is novelty for this study to be conducted in Oman.

OCB is crucial because it affects organizational performance and helps achieve objectives. It is considered an important element for improving organizational efficiency (Organ, Podsakoff, & MacKenzie, 2005). Prior studies, such as Cohen, Ben-Tura, and Vashdi (2012), found that OCB leads to employee achievement and influences role performance in both small and large groups (Olajide, 2020). Cohen and Abedallah (2015) confirmed the relationship between OCB and performance, with emotional intelligence as a mediator. OCB supports organizational effectiveness, as confirmed by Kataria, Garg, and Rastogi (2012).

H22: *There is a positive impact of Organizational Citizenship Behavior on construction project performance in Oman.*

Theoretically, TQM and OCB are interconnected, as the implementation of TQM is influenced by OCB. Many previous studies have shown that TQM factors improve organizational performance mediated by OCB (Carlos, Mendes, & Lourenco, 2014). Similarly, Narimani, Tabaeian, Khanjani, and Soltani (2014) confirmed the positive actions and behaviors of employees as aligned with TQM principles. Numerous studies have demonstrated that TQM elements enhance organizational performance, leading to high profits and customer satisfaction. For example, both soft and hard TQM improve organizational effectiveness and employee behavior (Rahman & Bullock, 2005). TQM enhances employees' working abilities and positive attitudes. Firmansyah, Christiananta, and Ellitan (2014) empirically investigated the influence of TQM factors on OCB and performance, confirming that OCB employees outperform their peers. Both OCB and TQM affect organizations, with a strong relationship indicating that TQM influences OCB (Buentello, Jung, & Sun, 2008).

OCB involves behaviors that benefit the organization, such as voluntary work, cooperation with colleagues, and the exchange of ideas. It encourages cooperation among organization members, promoting efficiency (Kim, 2006). Research has found a strong correlation between OCB and indicators of employee efficiency and organizational success (Bachrach, Powell, Bendoly, & Richey, 2006; Ehtiyar, Aktas Alan, & Oemueris, 2010). The focus on OCB's importance in organizations has increased significantly. Since 2000, research on OCB has grown by more than 50% in the management field (Podsakoff, Whiting, Podsakoff, & Blume, 2009). OCB has been used to investigate its influence on various organizational aspects, such as business performance, financial performance, and contextual performance.

However, there is still a lack of agreement among researchers on the multidimensional constructs linked to OCB. This research includes five dimensions of OCB: altruism, civic virtue, conscientiousness, courtesy, and sportsmanship (Chan & Kuok, 2020; Knez, Hjärpe, & Bryngelsson, 2019). These dimensions are crucial for project-related role behavior. Altruism involves helping colleagues with work-related problems without personal interest (Schwartz, Meisenhelder, Ma, & Reed, 2003). Helping overloaded colleagues, absent coworkers, or new employees exemplifies altruism (Smith, Organ, & Near, 1983). Altruism

fosters team interdependence and considers the welfare and rights of employees (Guinot, Chiva, & Mallén, 2015).

Courtesy refers to behaviors that prevent project-related conflicts by providing timely and reliable project information (Glomb, Bhave, Miner, & Wall, 2011). Courtesy reduces work frustration, improves politeness and respect, and enhances teamwork and organizational harmony (Fox, 2012). Sportsmanship denotes the willingness of employees to be part of the project team and tolerate organizational circumstances without complaints (Shanker, 2018). It involves maintaining job integrity and positive attitudes, even in challenging situations (Schwartz, 1992).

Conscientiousness involves performing tasks beyond required time limits, managing time effectively, maintaining work area cleanliness, and showing punctuality (Roberts, Lejuez, Krueger, Richards, & Hill, 2014). Conscientious employees are self-controlled, hardworking, responsible, and adhere to rules (Roberts, Jackson, Fayard, Edmonds, & Meints, 2009). Civic Virtue is an antecedent of OCB that contributes to organizational functionality (Klotz, Bolino, Song, & Stornelli, 2018). It involves employees' commitment to the organization's well-being and good image, motivating coworkers through intrinsic motivation (Grant & Mayer, 2009).

OCB is influenced by various factors, such as customer focus, top management commitment, continuous improvement, project strategy, and employee involvement (Hermawan, Thamrin, & Susilo, 2020; Meynhardt, Brieger, & Hermann, 2020; Alshaabani, Naz, Magda, & Rudnák, 2021). Therefore, based on the above literature, the following hypotheses are developed related to the mediating role of OCB between TQM factors and institutional factors:

H6: *There is a positive impact of customer focus on Organizational Citizenship Behavior.*

H7: *There is a positive impact of continuous improvement on Organizational Citizenship Behavior.*

H8: *There is a positive impact of top management commitment on Organizational Citizenship Behavior.*

H9: *There is a positive impact of project strategy on Organizational Citizenship Behavior.*

H10: *There is a positive impact of employee involvement on Organizational Citizenship Behavior.*

H11: *Organizational Citizenship Behavior positively mediates the relationship between customer focus and construction project performance in Oman.*

H12: *Organizational Citizenship Behavior positively mediates the relationship between customer focus and construction project performance in Oman.*

H13: *Organizational Citizenship Behavior positively mediates the relationship between top management commitment and construction project performance in Oman.*

H14: *Organizational Citizenship Behavior positively mediates the relationship between project strategy and construction project performance in Oman.*

H15: *Organizational Citizenship Behavior positively mediates the relationship between employee involvement and construction project performance in Oman.*

H18: *Normative pressure positively influences Organizational Citizenship Behavior.*

H19: *Coercive pressure positively influences Organizational Citizenship Behavior.*

H20: *Organizational Citizenship Behavior positively mediates the relationship between normative pressure and construction project performance in Oman.*

H21: *Organizational Citizenship Behavior positively mediates the relationship between coercive pressure and construction project performance in Oman*.

2.5.5. Project Governance (PG) as Moderator

The success of a project is one of the most important aspects of project management, though the meaning of "success" varies significantly across different firms (Joslin & Müller, 2015). Overall accomplishment of project is considered the project performance, which is measured by meeting all criteria of performance, which exhibits the success of the project (Curlee, 2008). In addition, project management methods (PMMs) differ from business to business based on the appropriateness and completeness of the projects. Few project management methods are not related to particular kinds of projects (Wells, 2013). Harrington, Voehl, Zlotin, and Zusman (2012) suggested not following PMMs blindly.

In this study, project performance is defined first and then its relationship with project governance is discussed. Corporate management encompasses all the work that an organization does, governing the traditional lines of the organization (Joslin & Müller, 2016). Corporate governance is a subset of project success and project governance. Governance is influenced indirectly by the governed supervisor and directly by subtle factors in the organization and society within which it operates. Governance interacts with laws and contexts but does not influence group or team members' activities directly. Different definitions of management vary in scope and focus, such as social governance, public administration, corporate governance, project leadership, and project administration. Governance is defined as "The use of institutions, authority structures, and cooperation in allocating resources, coordinating, or controlling activity in society or the economy" (Pinto, 2014).

In projects, governance is conducted at various levels, such as project groups, programs, or portfolios, focusing on collective management as project management (Müller & Lecoeuvre, 2014). This differs from the governance of individual projects, as defined by Pinto (2014). In the corporate governance framework, project management combined with project governance coexists, covering portfolio, program, and project administration. Project governance literature addresses several contexts, such as risk allocation (Abednego & Ogunlana, 2006), development and delivery analysis frameworks for major capital projects (Miller & Hobbs, 2005), NASA-specific project frameworks, project process governance mechanisms, and other aspects related to project management (Bekker, 2015). This document does not cover the direct impact of governance on PMM projects or the nature of the PMM project's relationship to achievement.

The literature provides insight into the impact of project management on the nature of PMM's relationship to project success. Corporate governance exists from the point of creation and is regarded as a context factor. Project management has influenced perceptions of project management because it provides the structure for project implementation, reporting, and establishment (Derakhshan, Turner & Mancini, 2019). The decision to select, apply, and develop PMM is likely influenced by project management. One hypothesis of this document is that project management affects the relationship between Project

Management Maturity (PMM) and project success is pivotal. Therefore, project management was selected to moderate the variable factor in the research model. A framework is essential for categorizing the management approach within each organization to comprehend how project governance impacts the relationship between PMM and project success.

Governance models are developed using either a top-down or bottom-up approach from various perspectives (Klakegg, 2009). Top-down approaches focus on shareholder outcomes, whereas bottom-up approaches emphasize process control and can be viewed as an extension of PMM (Müller, 2017). This study necessitates a governance model that integrates both shareholder and stakeholder perspectives, alongside a behavioral perspective distinguishing between adhering to processes and achieving objectives. Such a model is crucial as it aligns project outlooks towards achieving successful outcomes influenced by shareholders and stakeholders, thereby enhancing PMM.

Models of governance that address issues such as ethics, corporate citizenship, roles, and responsibilities (Dinsmore & Rocha, 2012) were excluded, as this study focuses on shareholder and performance aspects. The most important model is Müller's governance model (2009), which uses legitimacy to emphasize conformity in transaction cost economics, agency theory, and institutional theory. Müller's management model uses categories known as governance paradigms, where a project-governing organization fits into one of the four paradigms. It covers corporate governance (shareholder orientation) and corporate control (behavior versus outcome control). The corporate governance dimension builds on Hernández-Madrigal, Blanco-Dopico, and Aibar-Guzmán's (2012) claim that governance direction is based on a continuum from shareholder to stakeholder. The second dimension of "control" involves the control of the project and its manager by the governing institution. The difference is between corporate control focusing on achieving goals (outcome control) and employee behavior (following a process such as PMM). Project governance has been used as a moderator between TQM practices and project performance (Lu et al., 2019; Joslin & Müller, 2015; Alalyani & Lee, 2024).

Therefore, this research used project governance (PG) as a moderator between TQM factors and construction project performance due to PG's instrumental role observed in past studies. Project governance has shown a quasi-moderating effect between TQM and project

performance (Joslin & Müller, 2015). Lu et al. (2019) found that project governance moderates the relationship between quality management practices and organizations' projects. Based on the above literature, this research formulated the following hypotheses to check the moderating role of project governance between TQM factors and construction projects' performance:

H23: *There is a positive moderating effect of project governance between customer focus and construction project performance in Oman.*

H24: *There is a positive moderating effect of project governance between continuous improvement and construction project performance in Oman.*

H25: *There is a positive moderating effect of project governance between top management commitment and construction project performance in Oman.*

H26: *There is a positive moderating effect of project governance between project strategy and construction project performance in Oman.*

H27: *There is a positive moderating effect of project governance between employee involvement and construction project performance in Oman.*

H28: *There is a positive impact of project governance on construction project performance in Oman.*

2.6. Theoretical Framework

The theoretical framework is a structure that introduces and describes the relationship between the independent and dependent variables in this study. By constructing a theoretical framework, it helps in providing the researcher with a better understanding and more knowledge about the key concepts, theories, and ideas between the independent and dependent variables. The independent variables in this study are total quality management (TQM) and institutional factors (normative pressure and coercive pressure), whereas the dependent variable is construction project performance. Additionally, the mediating variable is organizational citizenship behavior (OCB) and the moderating variable is project governance. All the variables in this research framework are confirmed after a thorough review of the literature, as incorporated in the literature review matrix (Table 2.4). The

theoretical research framework exhibits how construction projects' performance (dependent variable) is influenced by total quality management (TQM) factors (independent variables), institutional factors with organizational citizenship behavior (OCB) as the mediator and project governance as the moderator.

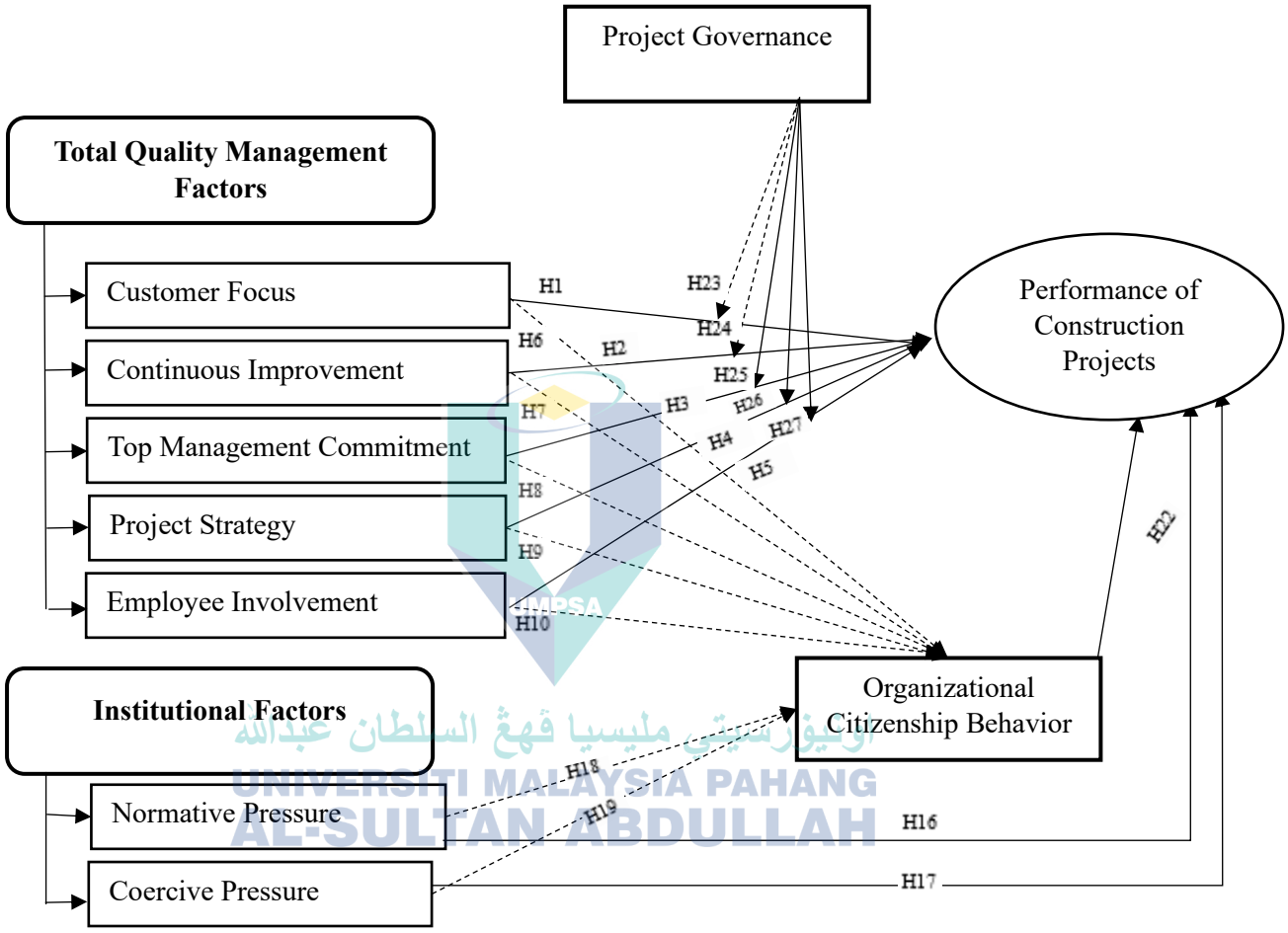


Figure 2.5: Theoretical Research Framework

2.7. Chapter Summary

In Chapter 2, the researcher meticulously examines the independent variables (TQM) alongside the mediating variable (comprising altruism, courtesy, sportsmanship, conscientiousness, and civic virtue), with a keen focus on their interplay within ongoing construction projects. Drawing insights from a comprehensive array of scholarly journals, books, web resources, and articles, the researcher delves into the nuanced relationships among these variables. Additionally, the chapter elucidates the pivotal role of OCB as a mediator and project governance as a moderator, further enriching the discourse on their impact on project performance.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

This chapter primarily focuses on the design and methodology of this study, covering aspects such as research design, approach, population, sampling, data collection techniques, instrument development, data analysis, and the validity and reliability of instruments and data. Section 3.1 introduces chapter 3 following by Section 3.2 explained different research philosophies then followed by section 3.3 discussed the research philosophy and its various types. Section 3.4 outlined the research design, followed by the research approach in Section 3.5. Section 3.6 detailed the population and sampling techniques utilized for data collection. Section 3.7 provided insights into the data collection methods, while Section 3.8 explored different data analysis techniques used for hypothesis testing and confirmation. Section 3.9 addressed ethical considerations, and the chapter 3 concluded with a summary in Section 3.10.

Research is defined as a problem-solving study that adopts a systematic and organized approach. Leedy and Ormrod (2005) describe research as a means to enhance understanding of phenomena through a specific methodological process that includes data collection, analysis, interpretation, and extraction of meaning. Liu, Meng, and Fellows (2015) further delineate research methodology as 'the principles and procedures for the logical thinking process employed in a study.

3.2. Research Philosophy

Philosophy is often described as a love for knowledge, a notion that originates from the Greeks (Osborne, 1992). Elder and Paul (2020) emphasized that philosophy involves questioning, interpreting questions, testing ideas through robust arguments, and exploring how concepts function. It also provides a structured framework for thinking, which aids in expanding intellectual domains and enhancing the alignment between our beliefs and actions. In research, this philosophical foundation is crucial for clarifying concepts, identifying appropriate designs, and recognizing the value of various methodologies. There are three key factors critical to understanding the philosophy of research. This research will

explore various philosophical approaches within the construction industry and subsequently affirm the chosen research philosophy. However, the two main philosophical stances in social research—and by extension, most construction management research—are ontological and epistemological considerations (Bryman, 2008), which will be discussed in more detail subsequently.

Ontology concerns itself with the nature and attributes of reality. Researchers in this field often use direct quotations and narrate experiences in the words of respondents, aiming to highlight divergent perspectives and experiences. Grbich (2007) suggested that ontology is intrinsically linked to our understanding of the nature of reality. Bryman (2008) identified two prevalent ontological positions: objectivism and constructivism. Objectivism posits that social phenomena and their meanings exist independently of social actors. Conversely, constructivism views the meanings of social phenomena as being continuously constructed by social actors.

Similarly, Fitzgerald and Howcroft (1998) described two ontological perspectives: realism and relativism. The realistic approach perceives the external world as made up of solid, tangible structures that exist independently of one's awareness of them. This view is pragmatic, focusing on tangible realities rather than abstract ideals. On the other hand, the relativistic perspective sees reality as shaped by socially transmitted norms and varies with language and cultural differences. From this viewpoint, concepts such as right and wrong, good and evil, or truth and falsehood are seen as subjective and can differ based on the situation.

3.2.1. Epistemological Consideration

It is crucial for researchers to carefully select their epistemological tradition, as this choice influences the design and analytical processes of their research (Grbich, 2007). Epistemological considerations primarily address the legitimacy and scope of knowledge within a discipline, focusing on how knowledge is acquired and validated. This domain concerns itself with the methodologies through which knowledge is obtained. Fumerton (2009) suggests that, in making an epistemic commitment, scholars ought to engage deeply with participants and immerse themselves in the field. Such engagement is essential to fully understand and articulate the complexities encountered by participants.

3.2.2. Constructivism and Interpretivism

According to Creswell, Hanson, Clark Plano, and Morales (2007), the constructionist position is closely associated with interpretivism. This perspective suggests that meanings are formed through interactions with others throughout an individual's life. Constructivism and interpretivism challenge the notion of objective knowledge by asserting that knowledge is constructed through interactions between researchers and participants, standing in contrast to objectivism and positivism. Fellows and Liu (2008) argue that reality is constructed and shaped by observations and perceptions, enabling the identification of truth and reality from a collective perspective. Constructivism and interpretivism propose the existence of multiple realities, evolving over time as a result of a group's collective mentality (Guba & Lincoln, 1994). Creswell et al. (2007) highlight that individuals seek to understand their circumstances to develop subjective interpretations that give rise to specific meanings or concepts.

- Research focuses on the interpretation of people and their experiences in targeted situations, in order to know how these situations affect the understanding they have built;
- Researchers build and impose understandings through interpretation, which is limited by the context derived from their experiences in these situations;

The researcher's constructed visions and recreating views by interacting with others, which are of interest - subjectivities and intersubjectivities are dependent. Significantly, these positions are more likely to feature in qualitative studies (Duffy, Fernandez, & Sène-Harper, 2021; Parsons, 2010; Schwandt, 1994).

3.2.3. Positivism and Post Positivism

Positivism asserts that the external social world and its properties should be understood not through subjective means such as feeling, reflection, or intuition, but through objective methods (Laudan, 1996). This perspective rests on two foundational assumptions: first, an ontological assumption that reality is external and objective; second, an epistemological assumption that knowledge is valid only if it pertains to external realities. Bell, Brayman and Harley (2018) describe positivism as an epistemological stance that endorses the application

of the methodological principles of natural sciences to the study of social realities. However, it is important to note that while the core principle remains consistent, the specifics of positivism can vary among different authors. They mentioned five key concepts of positivism.

Only phenomena and consequently sensory knowledge can truly be justified (the principle of phenomenalism). The aim of theory is to produce hypotheses which can be tested and which allow the assessment of legal explanations (the principle of deductivism). Knowledge is reached through the collection of facts on which the laws are based (the principle of inductivism). Science shall be carried out (and presumably can be) in a way free of value (that is, objective). The scientific statements and the normative statements have a clear distinction between the beliefs that the former are the true field of scientific research. The first is the last principle, because it is not possible to confirm the truth or otherwise of normative statements by the senses. Positivism emphasizes the role of research in collecting empirically verifiable data that can be used to formulate broad hypotheses. These hypotheses are then rigorously tested to develop laws or theories. Positivists typically employ statistical analysis and large sample sizes to derive these laws or theories. This approach is intended to enhance the validity and generalizability of the findings (Hair et al., 2014).

Table.3.1: Difference between positivist and interpretivist philosophy

Positivist	Interpretivist
There is a fundamental belief that the world exists independently of the observer, who is considered external, and that science operates free from subjective values.	A foundational belief holds that the world is socially constructed and subjective. In this view, science is influenced by human perspectives, and the observer is inherently involved in what is being observed.
Research should prioritize factual investigation, seeking causality and fundamental laws. Researchers should aim to simplify phenomena into basic elements, formulate hypotheses, and rigorously test them through empirical	Researchers focusing on meanings should strive to understand the dynamics of a situation, closely observing and analyzing to develop ideas through inductive reasoning.

Table 3.1 Continued

Positivist	Interpretivist
The preferred method in positivism is to operationalize concepts and measure them using large samples for statistical analysis.	The preferred method in interpretivism philosophy involves using multiple methods to explore various phenomena. This approach typically utilizes small samples, allowing for detailed investigation over time to uncover nuanced insights.

Source: Easterby-Smith et al (2012)

The modified approach of modern science is post-positivism. The reason for post-positivism research is that critique of positivism is accepted without losing certain of its key elements. The positivist approach has been significantly influenced by seminal works such as those by Kuhn (1970) and Allmendinger (2002), which have reshaped the interpretation of scientific methodology in global research. Kuhn's historical analysis of the nature of scientific progress has fundamentally altered many scientists' views on how science evolves. Additionally, Popper's concept of falsification has had a considerable impact, particularly as a crucial mechanism in challenging the principles of verification and positivism during the latter part of the 20th century. Post positivism is frequently related to quantitative approaches according to (Green, Creswell, Shope, & Clark, 2007). Researchers make claims of knowledge based on:

1. determinism or thinking about cause and effect;
2. reductions: by limiting and concentrating upon select interconnecting variables
3. detailed observation and measuring of variables; and
4. The testing of theories that are continually refined.

3.2.4. Realism

Easterby-Smith, Thorpe, and Jackson (2012) define realism as an ontological position that perceives no fundamental differences between the assessment of the physical and social

worlds. Bell, Bryman, and Harley (2018) noted that realism shares two main features with positivism: the belief that the methodologies of the natural sciences are applicable to social sciences for data collection and explanation; and the recognition that scientists must focus on an external reality, independent of our descriptions of it. Realism thus occupies a middle ground between the extremes of positivism and interpretivism (see Figure 3.1). Realists agree that there exists a reality external to human cognition, which influences societal conditions and individual behaviors through substantial social forces, often unbeknownst to those affected (Korsgaard, 2003; Saunders, Gale, & Sherry, 2015).

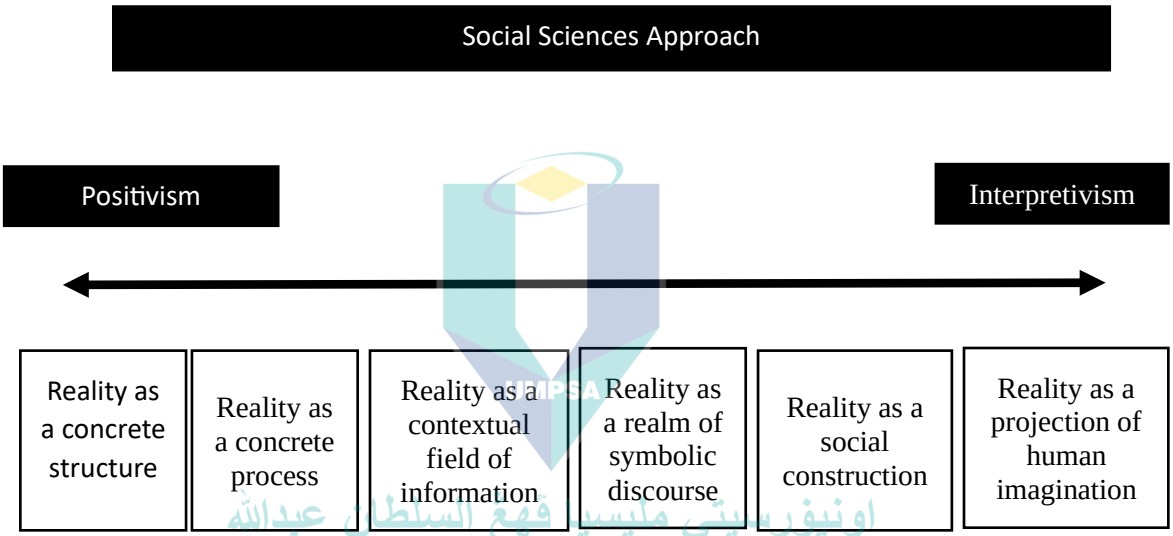


Figure 3.1 Continuum on objective and subjective approach

Source: Morgan and Smircich (1980)

Furthermore, critical realism, an extension within the realism school of thought, posits that our understanding of reality is layered. Developed first by Easton (2010), critical realism argues that hree levels of reality exist: the most superficial being individual experiences, which may not accurately reflect reality; the second level comprises events that are interpreted through personal experiences; and the deepest level includes mechanisms that cause events, which, although they are not directly observable, can be inferred logically. Bhaskar (1998) emphasizes that understanding—and thus the potential to change—the social world hinges on recognizing the underlying structures that generate observable events and phenomena. It is crucial to acknowledge that adherence to the tenets of any specific philosophical school is not absolute; researchers may align differently with various aspects

of these schools. Easterby-Smith et al. (2012) illustrate that these research philosophies evolve over time, displaying varying degrees of alignment with specific features. Figure 3.1 illustrates this continuum, showing the range of philosophical commitments.

3.3. Research Design

Research design refers to the "strategy used to integrate different research components in order to achieve the research objectives" (Sileyew, 2019). This study utilized a descriptive research design aimed at collecting quantifiable information for statistical analysis. According to Bengtsson (2016), the role of a research design is to strategically plan, structure, and execute a study to ensure the validity of its findings and smooth operation of the research process. Research methodologies typically fall into two categories: quantitative and qualitative. This study utilizes a quantitative method, which aims to quantify attitudes, behaviors, opinions, or other defined variables, generating results from a larger sample population. Quantitative data consist of measurements that can be counted, measured, ranked, or have numerical properties.

According to Hair et al. (2014), quantitative data are direct numerical representations that can be statistically analyzed. This type of data provides objectivity in hypothesis testing by applying statistical criteria for data measurement. The hypotheses in this study will be validated through a survey, which is considered the most effective method for collecting and describing data from a population too large to observe directly (Koppius, Speelman, Stulp, Verhoef, & van Heck, 2005). For this research, ongoing construction projects in Oman were selected to assess project performance. These projects were chosen as the criterion for data collection, aligning with the controlled quantitative research study. The research design is diagrammatically represented in Figure 3.2.

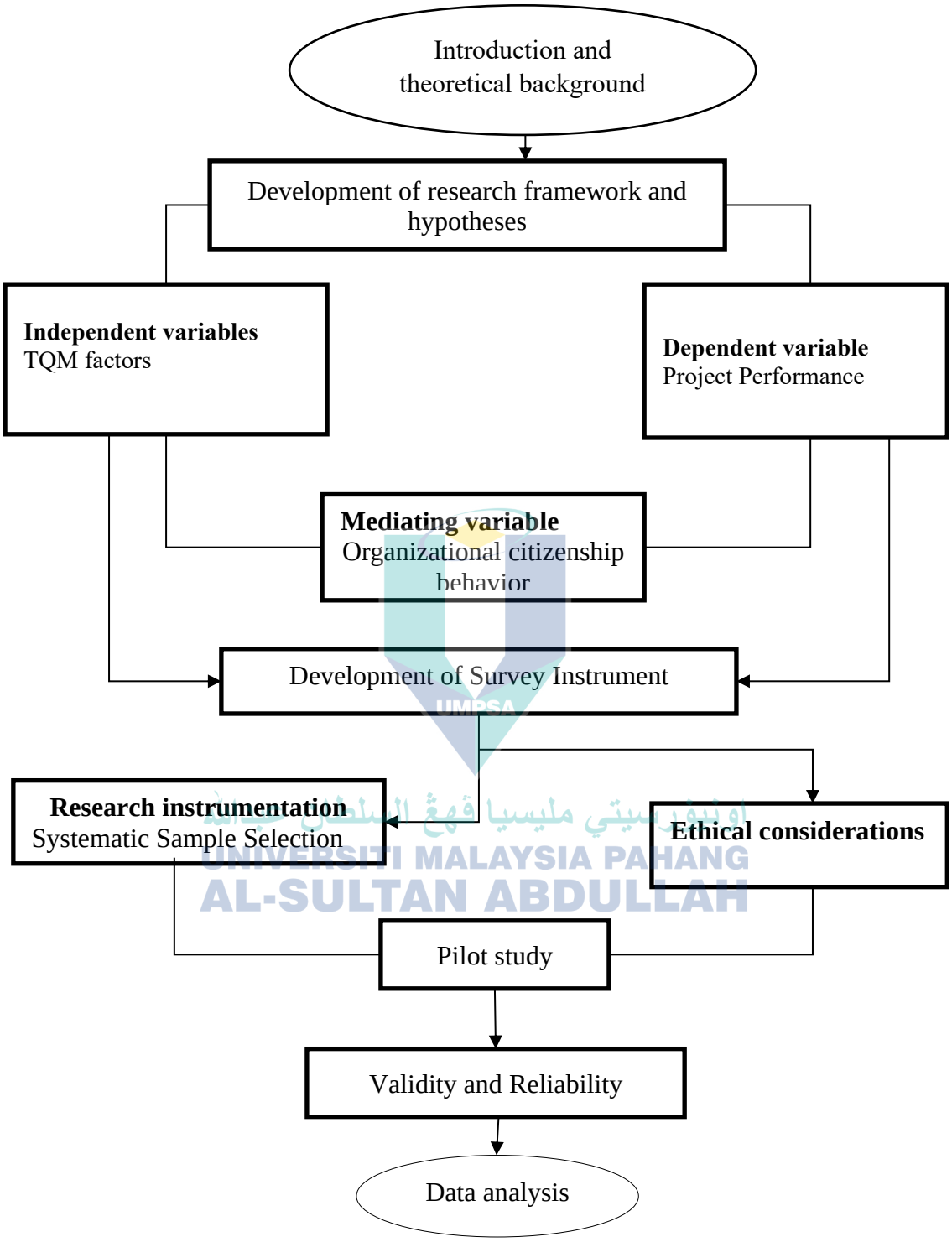


Figure 3.2 Research Design

The type of study in this research is quantitative research design. Quantitative research design targets specific audiences by determining the proportion of the audience exhibiting certain behaviors, behavioral intentions, attitudes, and knowledge related to health concerns, and whether specific determinants predict behaviors at a statistically significant level (Leavy, 2022). This method is particularly apt for examining various relationships within construction project management. Specifically, it explores the relationship between total quality management and construction project performance, the impact of organizational citizenship behavior on project performance, and the interaction between total quality management and organizational citizenship behavior. Additionally, this study evaluates the role of organizational citizenship behavior as a mediating variable. In this research, the quantitative method is selected as the primary data collection approach to investigate the relationships among these variables, supported by the use of a mediating variable. The study is designed as a correlational research project, where the researcher aims to identify and analyze the correlations among the variables.

3.4. Research Approach

There are several types of research approaches, namely deductive, inductive, and abductive. The inductive approach is particularly distinct in that it involves developing theories based on observations of specific instances. Researchers using this method start with specific observations and measures, move through patterns and regularities, and ultimately formulate broader generalizations and theories. This approach typically begins with collecting context-specific data, from which conclusions are generalized to a broader context, often leading to the development of new theories or frameworks. This type of approach is also known as bottom-up approach as shown in Figure 3.3:

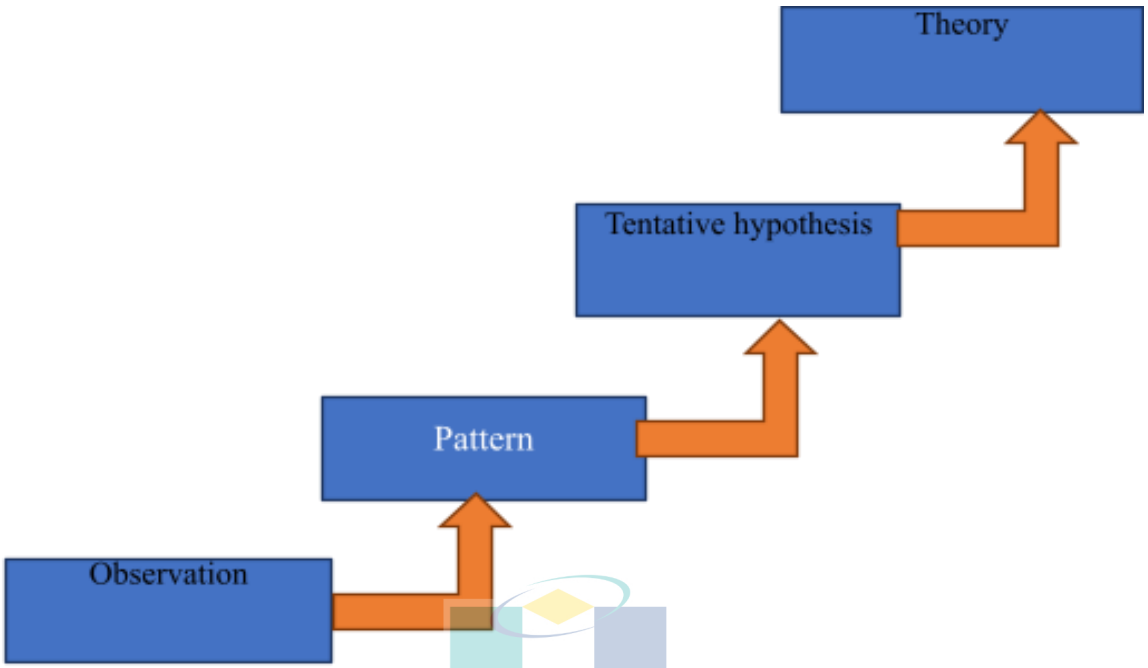


Figure 3.3 Inductive bottom-up research approach

Source: Yin (2018)

The deductive approach is driven from the theory and confirms it through testing hypothesis (Saunders et al. 2016). Therefore, considering the existing theory in the initial stage of research and moving towards the general to specific is often terms as top-down approach, as shown in Figure 3.4 (Yin, 2018).

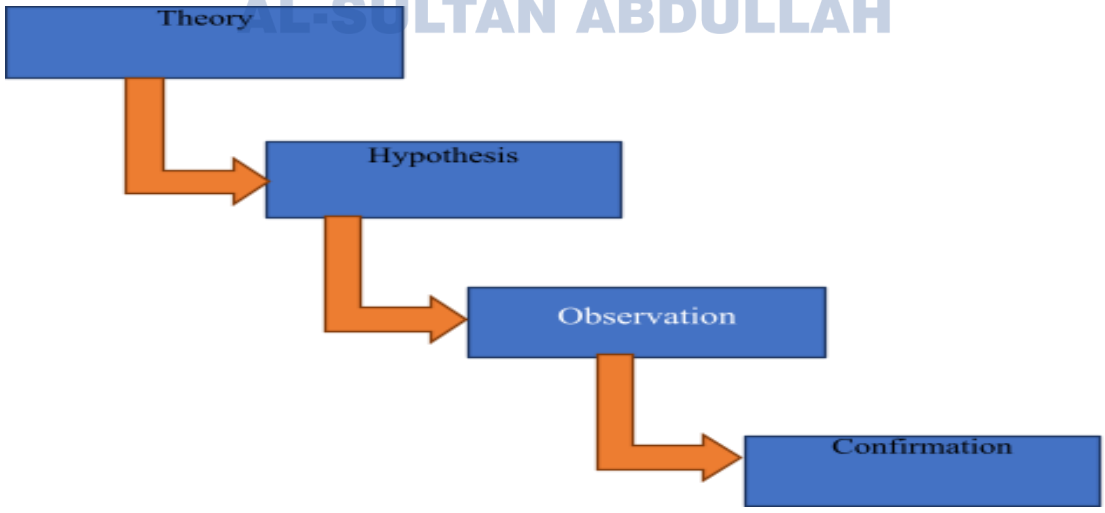


Figure 3.4 Deductive top-down approach

Source: Yin (2018)

This research utilized a deductive, top-down approach. Initially, a conceptual framework was developed based on a literature review to identify key factors that influence the performance of ongoing construction projects in Oman. This framework included an exploration of Total Quality Management (TQM), institutional factors, Organizational Citizenship Behavior (OCB), and Project Governance and their impact on project performance. The study aims to empirically confirm the hypotheses derived from this framework. The present study adopted a deductive quantitative research approach to address the research questions and validate the hypotheses. The use of a survey questionnaire facilitates the collection of numerical data, which is convenient for analysis and measurement using figures, tables, graphs, and charts. Furthermore, the data obtained through the questionnaire can be quantitatively analyzed using statistical scales, allowing for precise and structured interpretation of the results.

Figure 3.5 A Three-variable System

To achieve the objectives of this research, the adopted approach follows a three-variable structure as illustrated in Figure 3.5, which includes independent, mediating, and dependent variables. This structure is particularly effective for exploring the relationships among variables, as suggested by MacKinnon and Fairchild (2009). This approach is appropriate for the current study as it systematically identifies and analyzes the interactions between these variables to understand their impact on the performance of construction projects in Oman.

3.5. Population and Sampling

The focus of this study is on corporate performance within selected ongoing construction projects in Oman. A population in research terms refers to a complete set of entities sharing common characteristics. The total population of this research are 338 construction projects which are underway and these firms are unit of analysis of this research study. This population data is extracted from omanprojects.com, 19 different sectors with ongoing construction projects have been identified for inclusion in this study, and these are listed as new tenders. Detailed information about the companies involved is provided in

APPENDIX A.

Saunders and Bezzina (2015) categorize sampling techniques into two main groups: probability and non-probability sampling. Probability sampling is appropriate when the members of the population are known and can be listed, making it possible to give each member a chance of being selected. This method is favored when the goal is to enhance the generalizability of the findings. On the other hand, non-probability sampling is employed when the members of the population are not clearly identifiable. Sekaran and Bougie (2003) note that probability sampling is often chosen for its potential to accurately represent a larger population, which is critical for the broader applicability of the research findings.

For the purposes of this research, sampling is strategically conducted based on the selection of an appropriate sample at a specific time. The sample size is determined using the G power analysis and the Krejcie and Morgan (1970) table, which is a widely recognized method for estimating sample sizes in research. This technique ensures that the sample chosen is representative and adequate for the study's analytical needs.

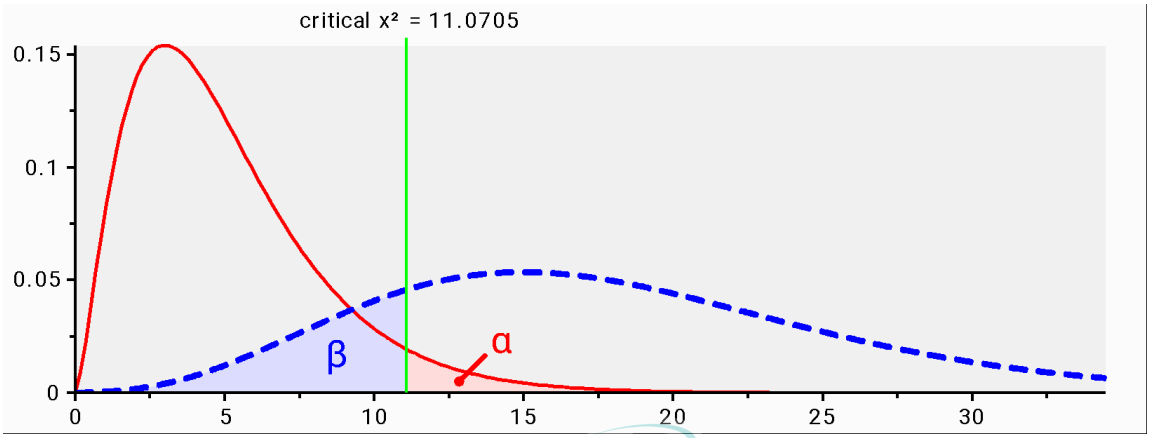
Table 3.2 Sample Size Determination

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	10000 0	384

"Note that 'N' is the study population size while 'S' is the sample size". The formula is

simply expressed:

$$S = X^2 NP (1- P) \div d^2 (N -1) + X^2 P (1 - P) \quad 0.1$$



where: "S = the required sample size, X^2 is the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841), N is the population size, P is the population proportion (assumed to be .50 since this would provide the maximum sample size), d is the degree of accuracy expressed as a proportion (0.05)."

Input:	Effect size f²(V)	=	0.3
	α err prob	=	0.05
	Power (1-β err prob)	=	0.80
	Number of groups	=	6
	Number of predictors	=	4
	Response variables	=	2
Output:	Non-centrality parameter λ	=	12.87
	Critical F	=	1.9576063
	Numerator df	=	8.0000000
	Denominator df	=	482

Total sample size = 143

Actual power = 0.8015

Pillai V = 0.1176471

Cohen (1992) recommends considering statistical power and effect sizes when determining sample size. In this context, G*Power Version 3.1.9.2, a tool for individual power analysis, suggests a total sample size of 143 for a t-test, using parameters such as a two-tailed test, a medium effect size of 0.5, an α error probability of 0.05, and a power of 0.80. This size is deemed sufficient for applying Covariance-Based Structural Equation Modeling (CB-SEM).

According to the Krejcie and Morgan (1970) table, the minimum sample size for a population of 338 construction projects is approximately 180. This research, however, has chosen a sample size of 216, which is twenty percent above the minimum to accommodate potential issues such as incomplete or erroneous responses. This ensures that the sample size of 216 project managers from construction projects in Oman meets the criteria for a robust statistical analysis. The rationale for a larger sample size is supported by Hair, Black, Babin, Anderson, and Tatham (2014), who note that complex models require larger samples to account for the potential of missing data and to enhance the reliability of the findings.

The study utilized systematic probability sampling, a method where sample members are selected from a larger population based on a random starting point and a fixed, periodic interval. This facilitate the collection of data through either an email survey or Google Forms, providing a structured approach to reaching participants. Additionally, the use of Structural Equation Modeling (SEM) in this study, as noted by Kline (2015), requires a larger sample size to ensure the accuracy and validity of the model. This approach aligns with the guidelines from Creswell and Poth (2016), who assert that a larger sample size increases the likelihood that the sample will accurately reflect the population. This strategic decision to distribute 216 questionnaires among project managers is aimed at gathering sufficient data to support effective generalizations and insights into the research topic.

3.6. Questionnaire Development

In this research, key indicators of Total Quality Management (TQM) and project performance were identified through an extensive review of the literature. A questionnaire was developed based on prior studies, aimed at analyzing the roles of TQM, Organizational Citizenship Behavior (OCB), and project governance in influencing project performance as provided in table 2.2 chapter 2. The key variables included in the study are TQM, which encompasses five dimensions: continuous quality improvement, top management commitment, customer focus, project strategy, and employee involvement; and OCB, which includes four key dimensions: sportsmanship, altruism, courtesy, and conscientiousness. Additionally, project governance was utilized as a moderator to assess the impact of TQM on project performance in ongoing construction projects.

The questionnaire was structured into four sections covering various aspects: demographic information of respondents, TQM factors, OCB factors, and project governance and performance. Initially, respondents provided personal and project-related survey included several sections to gather information comprehensively. The first section captured demographic data such as age, gender, qualifications, organizational employment size, sector, and years of experience in project management. The second section assessed respondents' agreement or disagreement with statements related to Total Quality Management (TQM) factors. Following this, the third section measured perceptions of Organizational Citizenship Behavior (OCB) using a five-point Likert scale. The fourth section explored perceptions of project governance using a scale ranging from 'completely inaccurate' to 'completely accurate'. Lastly, the fifth section evaluated project performance using a Likert scale ranging from 'strongly disagree' to 'strongly agree'.

This survey was specifically designed for ongoing construction projects in Oman, targeting key project participants such as project managers, consultants, and contractors. This targeted approach ensures that the data collected is relevant and significant to the study’s objectives.

Table 3.3 The Summary of Questionnaire Development

Constructs	Definitions	References	Number of items	Likert Scale
Continuous quality improvement	"Commitment to quality through benchmarking"	(Androwis et al., 2018)	7	1=Strongly disagree 5=strongly agree
Top management commitment	"Satisfying customers with total quality"	(Androwis et al., 2018)	6	1=Strongly disagree 5=strongly agree
Customer focus	"Putting customer's requirement first"	(Androwis et al., 2018)	5	1=Strongly disagree 5=strongly agree
Project strategy	"Achieving strategic position in competitive environment"	(Anantatmula, 2015)	5	1=Strongly disagree 5=strongly agree
Employee involvement	"Participation of employees to fulfill its mission"	(Androwis et al., 2018)		1=Strongly disagree 5=strongly agree
Coercive Pressure	"Meet legislated standards"	(Dubey et al., 2017)	4	1=Strongly disagree 5=strongly agree
Normative Pressure	"Encouraging employees to become environmentally responsible"	(Dubey et al., 2017)	3	1=Strongly disagree 5=strongly agree
Project governance	"Problem solving and information sharing"	(Müller & Martinsuo, 2015)	10	1=Completely Inaccurate 5=Completely Accurate
Project performance	"Objective of the project"	(Jong et al., 2019a)	4	

The Survey questions for TQM factors were adopted from (Androwis et al., 2018) and (Anantatmula, 2015); institutional factors were adopted from whereas for OCB factors, the questions were adopted from (Walz & Niehoff, 1996). Project governance was having ten indicators adopted from (Müller & Martinsuo, 2015) and project performance from (Jong et al., 2019a).

3.7. Data Collection

To fulfil the aims and objectives of the research, data collection is very important by elucidating the validity and reliability of the information from the participants and address the research questions (Fellows, Liu, & Storey, 2009; Kivunja & Kuyini, 2017). There are several types of data that are used by the researchers. It is as listed below.

a) Primary Data

Primary data is data collected by first-hand information such as questionnaire, interview, surveys, and focus group.

b) Secondary Data

Secondary data is collected through other party such as journals, newspaper or government archives.

In this study, primary data was collected through survey questionnaire and brought together for empirical analysis. The questionnaire was distributed to the project managers of the ongoing construction projects in Oman. The questionnaires was distributed to the companies through email to the selected employees based on the information stored in the company database. In the email, a link to the electronic version of the questionnaire was provided with the suggestion of a reward by the company for participation in the survey. The electronic version of the questionnaire was created using Google Forms in the English language.

3.8. Data Analysis

This study utilized the Statistical Package for the Social Sciences (SPSS) version 25.0 and the Structural Equation Modeling (SEM) technique via Smart-PLS version 4.0 for data analysis. Zikmund et al. (2014) describe SPSS as a widely used data analysis tool among researchers. Hair et al. (2014) outlined the application of SPSS in two main phases: the first stage involves data screening, coding, detecting outliers, and assessing normality; the second phase involves testing the structural model for hypotheses. In addition, the analysis of demographic variables.

In the second stage of analysis, Confirmatory Factor Analysis (CFA) was conducted using Smart-PLS version 4.0 to evaluate the validity and reliability of the model. Previous research has consistently demonstrated that Structural Equation Modeling (SEM) is reliable and valid for social science studies, as it effectively examines the dimensionality, reliability, and validity of each construct. Both Hair et al. (2014) and Kline (2015) have highlighted SEM's capability to comprehensively test model fit and estimate individual parameters accurately. Additionally, Byrne (2013) underscores SEM's effectiveness in testing hypothesized relationships between factors by allowing for simultaneous investigation of all hypothesized relationships, including interactions among multiple dependent variables. This refined explanation clarifies the two-phase approach to data analysis using SPSS and SEM, and underscores the advantages of SEM for comprehensive relationship testing in social sciences.

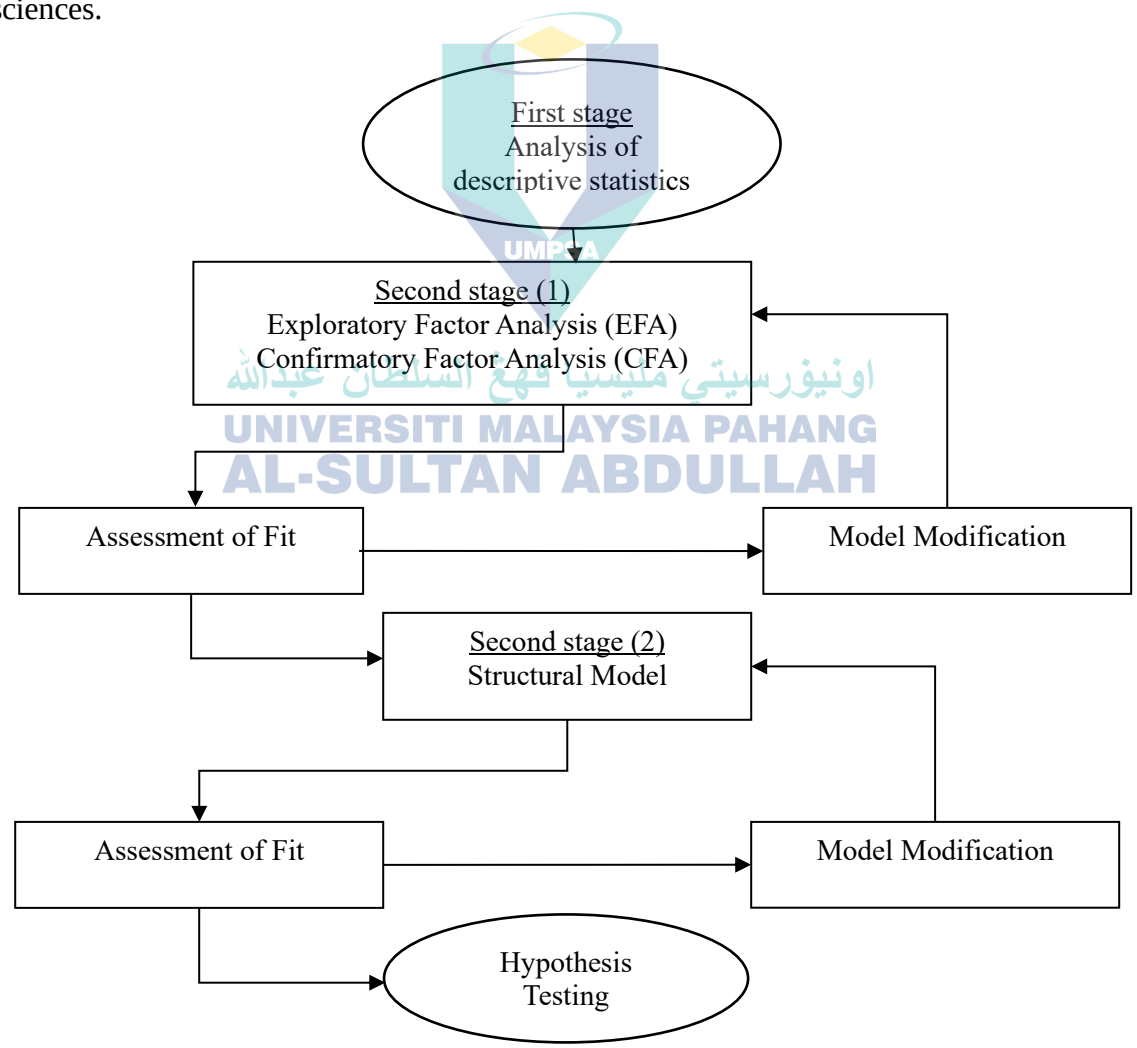


Figure 3.6 Data Analysis Process

As depicted in Figure 3.6, the primary focus of the data analysis is the testing of hypotheses and their assessment. Kline (2015) emphasizes the importance of foundational concepts, stating, "The value of the data analysis depends on the quality of the concept, i.e., hypotheses on which the analysis is based." Kline also notes the importance of model fit assessment at various stages, which helps ensure the consistency of the measurement framework with the specified effects.

The subsequent section will address the screening of data. Data screening is essential for identifying extreme correlations among variables, which, as noted by scholars such as Fornell & Larcker (1981) and Green (2016), can lead to empirical under-identification. This process ensures that the integrity of the data analysis is maintained, enabling more accurate and reliable testing of hypotheses.

3.8.1. Partial Least Square (PLS)

The author utilized Partial Least Square (PLS) analysis for the data collected, particularly using SmartPLS software. PLS is highly recommended for its effectiveness and suitability in theoretical and exploratory studies, especially when the model includes formative constructs (Gefen et al., 2000; Petter et al., 2007). One common issue in data analysis is multicollinearity, where predictor variables are correlated among themselves. This correlation can cause instability in the Ordinary Least Squares (OLS) regression coefficients, varying significantly based on the sample and the selection of variables included in the model. PLS is particularly valuable in addressing multicollinearity, providing robustness when there are numerous predictor variables.

PLS regression aims to predict the dependent variable Y from the independent variables X and to elucidate their common structural relationship. It involves extracting factors (latent vectors) that maximize the covariance between X and Y, using both the predictor matrix X and the response matrix Y. Typically, the number of extracted factors is fewer than the number of predictor variables Xs. The primary focus of PLS is on prediction, rather than explicating the relationships between variables.

The primary objective of Partial Least Squares (PLS) is to maximize the variance explained in dependent (endogenous) variables by their related independent (exogenous)

variables through statistical means. Structural Equation Modeling (SEM) is ideal for analyzing primary quantitative data from questionnaires because it provides a sophisticated method to explore complex relationships among variables. SEM allows researchers to test and refine theoretical models by examining both direct and indirect pathways between observed variables and underlying latent constructs. This technique integrates aspects of factor analysis and regression, enabling a detailed investigation of how variables interact. By accounting for measurement errors and handling multiple dependent variables, SEM offers a thorough and accurate representation of the data, leading to more reliable insights into the constructs being studied, therefore this research used SEM as it has the same features which are necessary to apply SEM. In the initial stage of PLS-based Structural Equation Modeling (SEM), emphasis is placed on verifying the psychometric integrity of the measurement model. This ensures its efficacy in predicting relationships among variables. Known as the outer model phase, this stage evaluates the factor structure of unobservable latent variables against their observable indicators to assess uni-dimensionality. Within the PLS framework, construct validity is assessed through both convergent and discriminant validity measures.

Furthermore, PLS procedures utilize weighted average scores to estimate case values that capture maximum variance in the independent variables. Conceptually, these weights can be compared to regression coefficients in the context of regressing first-order factors on higher-order factors, as discussed by Doll et al. (2004).

3.8.2. SEM Expectations

Structural Equation Modeling (SEM) ensures data normality and adequacy of sample size, crucial for stable estimates of covariance and correlations, especially in smaller samples as highlighted by Tabachnick & Fidell (2013) and Hair et al. (2014), who recommend a minimum of 100 samples for effective SEM application. However, Boomsma & Hoogland (2001) suggest at least 200 samples. In this study, following Krejcie & Morgan (1970), a sample size over 200 is deemed sufficient. SEM, as a sophisticated multivariate technique, facilitates path-analytic modeling with latent variables, blending psychometric and econometric traditions to robustly test relationships between inferred unobserved and observed measurements. Confirmatory Factor Analysis (CFA) within SEM evaluates indicators, distinguishing between reflective and formative constructs, essential for ensuring

model parsimony. The Partial Least Squares (PLS) approach was selected for its flexibility under various conditions, supporting small sample sizes and non-normal data distribution, aligning with prediction-oriented research objectives. This method also aids in clarifying constructs' directions and validating the study's items, significantly enhancing the research framework.

3.8.3. Estimation of Maximum Likelihood

Maximum Likelihood (ML) estimation aims to maximize the likelihood that the observed data are drawn from a population that fits the specified model accurately. One of the significant advantages of ML is its status as a full-information method, enabling it to calculate all parameters of a model simultaneously. The fit function of ML, which it seeks to minimize, measures the discrepancy in covariance between the observed data and the population data. In statistical software, the Structural Equation Modeling (SEM) function utilizes ML estimation based on the model specification provided. ML remains a traditional and widely-used method for estimating structural equation models due to its robustness and flexibility. This study focuses on estimating the structural relationships of a path model within a small sample and across multiple variables groups. The analytical process for this study involved several key steps: 1) simplification of the initial theoretical model to enhance its applicability; 2) estimation of the revised model for multiple sub-groups within the data to address potential variability; and 3) comprehensive evaluation of the final model for both the overall group and each subgroup using various alternative estimation procedures. This structured approach ensures thorough analysis and validation of the model across different contexts and group dynamics.

3.8.4. Goodness-of-Fitness Assessment

Goodness-of-fit indices were produced in this study to determine the fit of the model. Table 3.4. provides the details of this assessment.

Table 3.4: Summary of Goodness-of-fit Indices

Goodness-of-fit indices	Acceptable value	Comments
Absolute fit indices:	$p < 0.05$ (Hancock & Mueller, 2013; Kline, 2015)	
Chi-square	(Kline 2015)	"An exact fit of the model is indicated when the p-value associated with the fit measures is non-significant, suggesting that the model adequately represents the data. This measure is particularly sensitive to large sample sizes, where statistical significance indicates that the model fits well with the observed data".
Goodness-of-Fit (GFI)	GFI ≥ 0.90 (J. F. Hair, Gabriel, & Patel, 2014)	"A value close to 0 indicates a poor fit, whereas a value close to 1 indicates a perfect fit. The Goodness-of-Fit Index (GFI) quantifies the amount of covariance between the latent variables in the model. It serves as a measure of how well the proposed model fits the observed data, with higher values indicating better model fit".
Root mean square error of approximation (RMSEA)	RMSEA ≤ 0.08 (Kline 2015)	"It seems there might be a misunderstanding in the statement you provided. Typically, in the context of statistical significance and p-values: A p-value less than 0.05 is generally considered statistically significant, indicating a good fit. Values between 0.05 and 0.08 may still be considered statistically significant in some contexts, suggesting an adequate fit. A p-value up to 0.10 might be considered marginally significant or borderline, indicating an acceptable fit but potentially on the lower end. These p-value thresholds are often used in hypothesis testing to determine the significance of findings. However, it's important to note that the interpretation of p-values can vary depending on the specific statistical test and the field of study".

Table 3.4 Continued

Goodness-of-fit indices	Acceptable value	Comments
Incremental fit indices: Comparative fit index (CFI)	CFI ≥ 0.90 (Kline 2015)	Compares the hypothesised model against a null model.
Parsimonious fit indices: Normed chi-square ($\chi 2/df$)	$1.0 \leq \chi 2/df \leq 5.0$ (Cunningham 2008)	Lower limit is 1.0, upper limit is 3.0 or as high as 5.0.

The model is considered as fit if any one of the criteria from the goodness-of-fit indices is achieved (Hair, Ringle, & Sarstedt, 2013). However, for parsimonious indices, there is only one criterion of normed chi-square ($\chi 2/df$). Therefore, it is very crucial for this index to be significant (Cunningham, 2008).

3.9. Ethical Consideration

Consent for conducting this study will be sought from the companies involved to ensure that there are no conflicts of interest and to mitigate any risks associated with conducting the survey. Each respondent will be required to complete a research participant consent form before accessing the survey instrument. It is imperative that the researcher pays close attention to ethical considerations, maintaining objectivity, integrity, intellectual property rights, and confidentiality throughout the research process. Ensuring that the research is conducted credibly and yields valid results is essential (Mertens & Ginsberg, 2009). For this study, approval was also obtained from relevant authorities in Oman for the selection of companies from which the research participants were chosen. This step further underscores the commitment to ethical research practices and adherence to regulatory standards.

3.10. Chapter Summary

This chapter has outlined and discussed the research design, which adopts a quantitative approach utilizing a structured questionnaire. It detailed the use of systematic random sampling, aiming for a sample size of 216 respondents. This target number was established based on general guidelines and G power analysis. The chapter further elaborated

on the population, sample size, and survey procedures, including the rationale behind the minimum sample size requirements and the organization of the collected data. The design of the questionnaire, including the measurement of variables and scaling techniques, was also thoroughly examined. Additionally, this chapter addressed the management of validity issues through pre-tests and a pilot study. The discussions culminated with an examination and justification for using Structural Equation Modeling (SEM), wrapping up the chapter. The subsequent chapter will present the quantitative results that are expected to support the confirmation of the hypotheses.

CHAPTER 4

RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents the results of an empirical analysis that synthesizes the data to explore the relationships hypothesized in Chapter 3. The structure of this chapter is organized as follows: initially, an overview of the methodologies used to analyze the research hypotheses is provided. This is followed by the presentation of the analysis results pertaining to the propositions associated with the dependent and independent variables. The constructs were clearly defined, and appropriate measures were either developed or adapted from existing instruments. Subsequently, a suitable method for data analysis was selected. According to Renkyl (1997), educational researchers often encounter situations characterized by abundant data but a relative lack of theoretical grounding. The Partial Least Squares (PLS) approach to Structural Equation Modeling (SEM) serves as a versatile and effective tool for statistical model building. The flexibility and breadth of PLS are particularly advantageous for analyzing and investigating large and complex path models in a predominantly deductive manner, as demonstrated in this research (Christmas, 2005).

4.2. Data Analysis

In the data analysis process, several tools were utilized: SPSS 21.0, Excel 2007, and Smart-PLS version 4.0. Excel 2007 played a pivotal role in organizing the online data for processing in SPSS 26.0 and preparing the dataset for SEM analysis in Smart-PLS. Within these programs, procedures for detecting missing data and outliers, as well as conducting reliability and normality tests, were implemented. Smart-PLS was chosen due to its reputation as the most advanced and popular estimation tool for analyzing primary data with small sample sizes (Ali et al., 2018). Additionally, it facilitated the evaluation of the measurement model via confirmatory factor analysis and the structural model through SEM.

4.2.1. Preliminary Analysis

The descriptive statistics of the sample were initially examined using the dataset. Subsequently, the data was prepared for Structural Equation Modeling (SEM) by adhering to specific requirements. This preparation involved exploring the dataset for missing values and outliers, and examining the distribution shape of the data. Confirmatory factor analysis was also conducted to assess the validity of the constructs. Detailed results from each of these stages are presented in the subsequent subsections.

4.2.2. Response Bias Test

This research developed domains based on the literature review to encapsulate the key aspects of the research questions and to structure these questions systematically. According to Leedy and Ormrod (2005), a questionnaire should be concise, constructed in clear and unambiguous language, and free from unwarranted assumptions by the researcher. Accordingly, this study crafted questions aimed at eliciting responses specifically relevant to the research problems, while carefully avoiding leading questions to minimize response bias. Following the methodologies of Hair et al. (1998) and Kline (2015), this study also examined the normal distribution of the variables and assessed for response bias. Additionally, missing data was analyzed to identify any patterns; as Tabachnick and Fidell (2001) suggest, non-random distributions of missing data could indicate a potential bias in the estimated results.

4.2.3. Missing Data

It was not feasible to obtain a dataset completely free from missing values. As noted by Coakes and Steed (2009) and Hair et al. (1998), missing values typically occur when respondents fail to answer or are confused by the questions asked. Additionally, Tabachnick and Fidell (2001) suggest evaluating the extent of missing data by identifying both the quantity and the specific data that are missing. They further argued that the pattern of missing data could be more significant than the quantity of missing data. Therefore, it is essential to ascertain whether the missing data occurs randomly or is specific to certain items. Table 4.1 illustrates the response rate for the data collection.

Table.4.1 Response rate for collecting data

Description	Number and percentage
Sample Size	216
Questionnaires Returned	169
Raw Response Rate	78.24%
Completed questionnaires	162
Number of unusable questionnaires	7
Adjusted response rate	75%

The sample was selected from the population using a convenience sampling method, a type of non-probability sampling framework. To achieve an adequate response rate, 216 questionnaires were distributed among employees involved in ongoing construction projects in Oman. Of these, 169 questionnaires were successfully collected, representing a response rate of 78.24%. However, 7 of these were deemed unusable due to either complete non-response or uniform responses to all questions. Therefore, 75% of the total questionnaires distributed were usable, resulting in an effective sample size of 162.

The high response rate of 78% can largely be attributed to the small population of ongoing construction projects, a list of which is included in the appendix. The limited number of firms within the construction sector, combined with a small workforce, made it feasible to follow up effectively on the distributed questionnaires. Additionally, the researcher's connection to a university administration played a crucial role; many project heads are alumni of the university, which facilitated quicker and more comprehensive responses to the distributed questionnaires, thereby ensuring a higher response rate.

4.3. Demographic Profile

This section presents an analysis of the demographic characteristics of the respondents, supported by comparative tables and figures that detail their profiles. A total of 162 usable questionnaires were collected from employees of manufacturing firms in Oman that are currently engaged in construction projects. As indicated in Table 4.2, the majority of the respondents were male, constituting 114 (70.4%), while the remaining 48 (29.6%) were

females. The age distribution shows that most respondents were within the 40 to 49 years age range. Regarding educational qualifications, 81 respondents held bachelor's degrees, 37 had master's degrees, and 22 possessed professional degrees. In terms of work experience, 87 respondents had more than 10 years of experience, 49 had between 5 to 10 years, 24 had between 1 to 5 years, and 2 respondents had less than 1 year of experience. Project-wise, 141 projects employed fewer than 50 people, 17 projects had between 51 to 100 employees, and 4 projects had between 101 to 250 employees.

Sector-wise distribution of the projects included 28 in oil and gas, 27 in information technology, 23 in engineering and seaports, and 19 in power and energy, among others. This demographic breakdown provides a comprehensive view of the workforce involved in Oman's ongoing construction projects.

Table 4.2. Respondents' Profile

Variables	Category	Frequency	Percent
Age	20-29	7	4.3
	30-39	35	21.6
	40-49	74	45.7
	50 or above	46	28.4
Gender	Male	114	70.4
	Female	48	29.6
Qualification	Diploma	17	10.5
	Bachelor	81	50.0
	Masters	37	22.8
	PhD	5	3.1
	Professional	22	13.6
Number of Employees	Less than 50	141	87.0
	51 to 100	17	10.5
	101 to 250	4	2.5
Sector	Agriculture	20	12.3
	Telecommunication	9	5.6
	Food and Beverage	10	6.2

Table 4.2 Continued

Variables	Category	Frequency	Percent
	Oil and Gas	28	17.3
	Information Technology	27	16.7
	Engineering works and Seaports	23	14.2
	Municipal services	13	8.0
	Power and Energy	19	11.7
	Building and Constructions	13	8.0
Experience	Less than 1 year	2	1.2
	1 to 5 years	24	14.8
	5 to 10 years	49	30.2
	Above 10 years	87	53.7
Job Role	Project Manager	80	49.4
	Project Consultant	11	6.8
	Project contractor	66	40.7
	Others	5	3.1
Project Amount (OMR)	Less than 100,000	54	33.3
	100,001 to 250,000	46	28.4
	250,001 to 500,000	32	19.8
	500,001 to 1 mil	18	11.1
	Above 1 Mil	12	7.4
Project Location	Muscat	35	21.6
	Dhofar	30	18.5
	Musandam	12	7.4
	Buraimi	16	9.9
	Dakhiliyah	14	8.6
	North Batinah	14	8.6
	South Batinah	18	11.1
	South Sharqiyah	10	6.2
	North Sharqiyah	5	3.1
	Dhahirah	3	1.9

Table 4.2 Continued

Variables	Category	Frequency	Percent
	Wusta	5	3.1
Project year	2020	71	43.8
	2021	55	34.0
	2022	36	22.2
Decision making Authority in the project is high	Disagree	4	2.5
	Neutral	46	28.4
	Agree	99	61.1
	Strongly Agree	13	8.0

4.4. Measurement Model Assessment

The factors were named according to the literature after interpreting the pattern matrix. The reliability of each factor was then evaluated using Cronbach's alpha, a measure of internal consistency. As shown in Table 4.3, the Cronbach's alpha values for the constructs exceeded the minimum threshold of 0.70, confirming the reliability of the data and justifying its subsequent use in the analysis. The reliability analysis serves to determine whether the factors are consistently interpreted by respondents, despite the potential for some survey participants to misinterpret the questions. The findings indicate that all the constructs maintain a Cronbach's alpha above the threshold value of 0.70, demonstrating their reliability.

It is important to note that assessing the reliability of formative constructs using PLS (Partial Least Squares) can be challenging. Therefore, the reliability of the scale was measured for reflective constructs only. The Cronbach's alpha values for these reflective constructs, as detailed in Table 4.3, are all above the 0.7 threshold, confirming their adequacy for further analysis. The composite reliability and variance extracted for each latent construct were independently calculated for each multi-item construct in the model, alongside an examination of the loadings for each indicator on a relevant factor. Confirmatory Factor Analysis (CFA) with associated components was then employed to assess the measures' convergent and discriminant validity. This research utilized SmartPLS SEM (Reinartz, Haenlein, & Henseler,

2009) to evaluate the measurement model.

The reliability of individual items was measured by analyzing the outer loading of each item of the construct, as recommended by Hair and Lukas (2014). Both the composite reliability coefficients and Cronbach's alpha were used to measure the internal consistency reliability of the scale employed in this study (Peterson & Kim, 2013). Furthermore, the measurement model included checks for factor loading, average variance extracted (AVE), composite reliability, and discriminant validity. The results of these evaluations are depicted in Figure 4.1 below, which illustrates the measurement model used in this research.

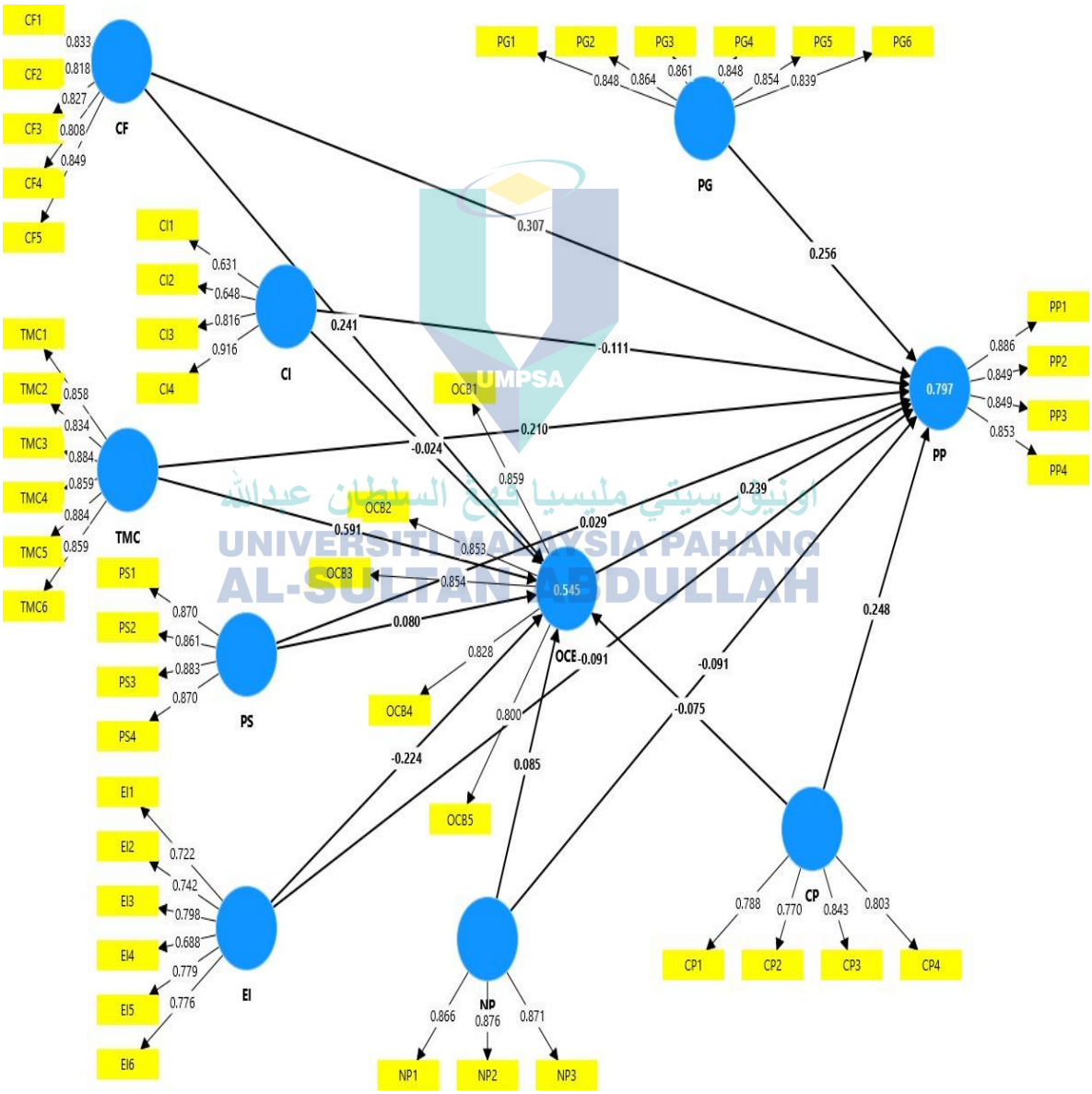


Figure 4.1. Measurement Model Assessment

4.4.1. Reliability and Validity Analysis

Table 4.3. Convergent Validity and Reliability

Constructs	Loadings	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
CF1	0.833	0.885	0.915	0.684
CF2	0.818			
CF3	0.827			
CF4	0.808			
CF5	0.849			
CI1	0.631	0.799	0.844	0.580
CI2	0.648			
CI3	0.816			
CI4	0.916			
CP1	0.788	0.816	0.878	0.642
CP2	0.770			
CP3	0.843			
CP4	0.803			
EI1	0.722	0.849	0.886	0.565
EI2	0.742			
EI3	0.798			
EI4	0.688			
EI5	0.779			
EI6	0.776			
NP1	0.866	0.841	0.904	0.758

Table 4.3 Continued

Constructs	Loadings	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
NP2	0.876			
NP3	0.871			
OCB1	0.859	0.895	0.922	0.704
OCB2	0.853			
OCB3	0.854			
OCB4	0.828			
OCB5	0.800			
PG1	0.848	0.925	0.941	0.727
PG2	0.864			
PG3	0.861			
PG4	0.848			
PG5	0.854			
PG6	0.839			
PP1	0.886	0.882	0.919	0.738
PP2	0.849			
PP3	0.849			
PP4	0.853			
PS1	0.870	0.894	0.926	0.759
PS2	0.861			
PS3	0.883			
PS4	0.870			
TMC1	0.858	0.931	0.946	0.745

Table 4.3 Continued

Constructs	Loadings	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
TMC2	0.834			
TMC3	0.884			
TMC4	0.859			
TMC5	0.884			
TMC6	0.859			

Figure 4.1 illustrates the measurement model used in this research. In Table 4.3, the factor loadings for all items of the constructs exceeded the recommended threshold of 0.6, as suggested by Hair et al. (2016). Additionally, the values of Composite Reliability (CR) for all constructs surpassed the minimum threshold value of 0.70, in line with the recommendations of Hair et al. (2016). Furthermore, the Average Variance Extracted (AVE) values for each construct were also above the recommended threshold of 0.5, confirming adequate convergent validity. The reliability of the instrument was assessed using Cronbach's Alpha (α), where values above 0.80 are considered good, values above 0.60 are acceptable, and values below 0.60 are deemed weak (Hair et al., 2010). The Cronbach's Alpha values for all ten variables in this study exceeded 0.70, which is considered acceptable.

Based on these findings, it was concluded that both reliability and convergent validity of the measurement model were satisfactorily established. This ensures the robustness of the constructs used in the analysis and supports the validity of the conclusions drawn from the research data.

4.4.2. Discriminant Validity

The procedure used in related studies (e.g., Alkhaldi & Abdallah, 2022; Yazdani, 2022) was employed to evaluate the validity of the data. Validity refers to the extent to which the data accurately reflect the topic being examined. It is used to assess the actual meanings of survey responses. According to Sekaran (2003), various types of validity tests, including construct validity, content validity, and criterion-related validity, are used to evaluate the

usefulness of measures.

In this study, construct validity was employed to determine how well the outcomes from the measures fit the theories upon which the tests were developed. Construct validity was established through factor analysis and correlation analysis. Correlation analysis, in particular, was used to confirm construct validity. This method suggests that the items serving as indicators of a particular concept should converge or share a significant portion of their variation. In other words, it evaluates the degree of correlation between two measures of the same concept, with high correlation indicating that the scale is measuring the intended concept.

To assess discriminant validity, Fornell and Larcker (1981) suggested that the average variance extracted (AVE) for each construct should be greater than the squares of the correlations between the construct and all other constructs. Additionally, the correlations between constructs should be smaller than the square root of the average extracted variance. This ensures that the constructs are distinct from one another and measure different concepts.

Table 4.4 Heterotrait-monotrait ratio (HTMT) - Matrix

CF	**CF**	**CI**	**CP**	**EI**	**NP**	**OCB**	**PG**	**PP**	**PS**	**TMC**
CI	0.353									
CP	0.413	0.498								
EI	0.514	0.501	0.607							
NP	0.495	0.575	0.583	0.464						
OCB	0.607	0.157	0.272	0.130	0.390					
PG	0.633	0.230	0.278	0.189	0.476	0.820				
PP	0.789	0.190	0.532	0.277	0.425	0.840	0.831			
PS	0.353	0.253	0.591	0.281	0.374	0.355	0.406	0.488		
TMC	0.712	0.327	0.535	0.420	0.508	0.748	0.763	0.848	0.443	

Table 4.5. Fornell-Larcker criterion

	CF	CI	CP	EI	NP	OCB	PG	PP	PS	TMC
CF	0.827									
CI	0.340	0.762								
CP	0.355	0.391	0.801							
EI	0.462	0.410	0.515	0.752						
NP	0.432	0.472	0.486	0.392	0.871					
OCB	0.548	0.190	0.247	0.119	0.345	0.839				
PG	0.578	0.262	0.254	0.174	0.422	0.750	0.853			
PP	0.700	0.199	0.461	0.259	0.369	0.752	0.752	0.859		
PS	0.314	0.196	0.510	0.250	0.326	0.326	0.375	0.438	0.871	
TMC	0.647	0.334	0.471	0.384	0.448	0.689	0.709	0.772	0.409	0.863

Discriminant validity is used to determine the extent to which a construct is distinct from other constructs (Hair et al., 2010). In this research, two common methods were employed to assess discriminant validity: the Heterotrait-Monotrait Ratio (HTMT) (Henseler et al., 2015) and the Fornell and Larcker Criterion (FLC) (Fornell and Larcker, 1981). The HTMT ratio is considered the most advanced and robust criterion compared to the Fornell and Larcker Criterion. Table 4.4 provides the HTMT ratio outcome values, with the recommended range for construct values being below 0.90, as suggested by Gold et al. (2001). All the construct values in the HTMT ratio were less than 0.90, indicating that discriminant validity was achieved for all constructs.

Additionally, the Fornell and Larcker Criterion was also examined. This method involves using the square root of each construct's AVE and comparing it to the correlation values of all other constructs (Fornell and Larcker, 1981). The square root coefficients of AVE are displayed in the correlation matrix along the diagonal. To establish discriminant validity, the AVE square root values should be greater than the squared correlation outcomes (Hair et al., 2006). In this research, the square root values of AVE exceeded the correlation estimates for all variables. As shown in Table 4.5, all diagonal elements were greater than the off-diagonal items in their respective columns and rows, confirming sufficient discriminant

validity for all variables.

Table 4.6. R-Square

Constructs	R-square	Percentage
OCB	0.545	52.5%
PP	0.797	78.5%

The R-square value measures the proportion of variance in the dependent variable that is explained by the combined effect of the independent variables. As shown in Table 4.6, the R-square value of this research model is 52.5%, indicating that the independent variables collectively explain 78.5% of the variance in the dependent variable, which is construction project performance.

The threshold values for R-square are 0.19, 0.33, and 0.60, which are considered weak, moderate, and substantial, respectively. Therefore, the R-square value of 52.5% in this study is classified as moderate. This indicates a reasonable level of explanatory power for the independent variables in predicting the dependent variable.

4.5. Structural Equation Modelling (SEM)

Structural Equation Modeling (SEM) is referred to as a second-generation multivariate technique since it allows researchers to perform path-analytic modeling with latent variables (Fornell & Larcker, 1987). This approach combines a psychometric focus on conceptualizing models with latent (unobserved) variables inferred from multiple observable measurements and an econometric perspective aimed at prediction. These observable measurements are also known as indicators or manifest variables. SEM provides researchers with greater flexibility for integrating theory and data (Chin, 1998).

Confirmatory factor analysis (CFA) is a technique within SEM used to empirically evaluate the indicator specification in the model (Hair, Hollingsworth, Randolph, & Chong, 2017). This method helps clarify whether constructs are reflective or formative, which is crucial for determining the appropriate model type for achieving model parsimony (Garson, 2016; Gudergan, Ringle, Wende, & Will, 2008; Hair et al., 2017; Hair, Sarstedt, Ringle, & Gudergan, 2017; Rodrigues, Menezes, & Ferreira, 2018). Running CFA using PLS (Partial

Least Squares) helps determine whether the measures are reflective or formative (Gudergan et al., 2008).

The PLS approach was chosen by the researcher due to its advantages over the covariance technique. These advantages include theoretical conditions, measurement conditions, distributional considerations, and practical considerations (Falk & Miller, 1992). PLS is information-dependent and supports small sample sizes, does not require normal data distribution, and aligns with a prediction-oriented research purpose (Chin & Newsted, 1999).

For formative constructs, statistics such as reliability and AVE (Average Variance Extracted) are not appropriate for validation (Chin, 1998; Xie et al., 2007). Instead, the validity of formative items should be assessed by examining significant path weights that each item contributes to the construct. The coefficients presented in the study demonstrate the validity of each item used as a variable, allowing for further investigation.

Regression analysis is one of the most popular and adaptable dependent techniques, applicable across various types of research. It is used to address research problems by linking components (or sets of factors) to specific outcomes. The researcher must ensure that the adjusted coefficient of determination (adjusted R2) is sufficiently high when performing regression analysis. The adjusted R2 takes into account the sample size and the number of independent variables included in the regression equation. Although adding independent variables will always increase the coefficient of determination, the adjusted R2 may decrease if the additional variables have weak explanatory power or if the degrees of freedom are too small. This statistic is helpful for comparing equations with different numbers of independent variables, sample sizes, or both.

The coefficient of determination (R2) measures the amount of variance in the dependent variable explained by the independent or predictor variables. The R2 value ranges from 0 to 1. When the regression model is implemented and estimated correctly, an increase in R2 indicates higher explanatory power of the regression equation, thereby enhancing the accuracy of the dependent variable's prediction. The underlying assumptions of multiple regression analysis apply to both the overall connection and each individual variable (dependent and independent variables).

4.5.1. Structural Model Assessment

In this chapter, the data analysis procedures are discussed first, followed by the results of statistical tests related to the hypotheses. The chapter concludes with the presentation of the hypothesis tests. The research hypotheses were tested using Structural Equation Modeling (SEM). The structural component is the second part of SEM. It is used to evaluate and examine the proposed connections between latent variables (constructs). Unlike normal regression models, which only permit the explicit modeling of direct effects, SEM allows for the explicit modeling of direct, indirect, and correlated effects. This capability enables the analyst to make significant claims about the associations between latent variables and the underlying processes of a phenomenon. SEM's structural component is akin to a set of concurrent regression models.

Both the measurement model and the structural model should be evaluated sequentially, as suggested by Anderson and Gerbing (1988) and Mohamed (2002). This two-stage methodology reduces the possibility of interpretational confounds by establishing construct validity before investigating the proposed relationships. Understanding the impact of exogenous variables on endogenous variables requires connecting the variables and understanding their interrelationships. This overview of the analysis links the hypothesized models. The researcher's task is to understand how the variables interact and to identify the observed variables that are more significant in terms of endogenous and exogenous variables.

After using the measurement model, the structural equation model was utilized. The process began with analyzing the direct relationships of all constructs, including moderators and mediators, which is referred to as the direct effect. At the second level, the mediating role of Organizational Citizenship Behavior (OCB) was examined, known as the indirect effect. At the third level, the moderating effect of Project Governance (PG) was analyzed between Total Quality Management (TQM) factors and construction project performance. Additionally, the effect size (f^2) was examined. The Structural Model Assessment is shown in Figure 4.2.

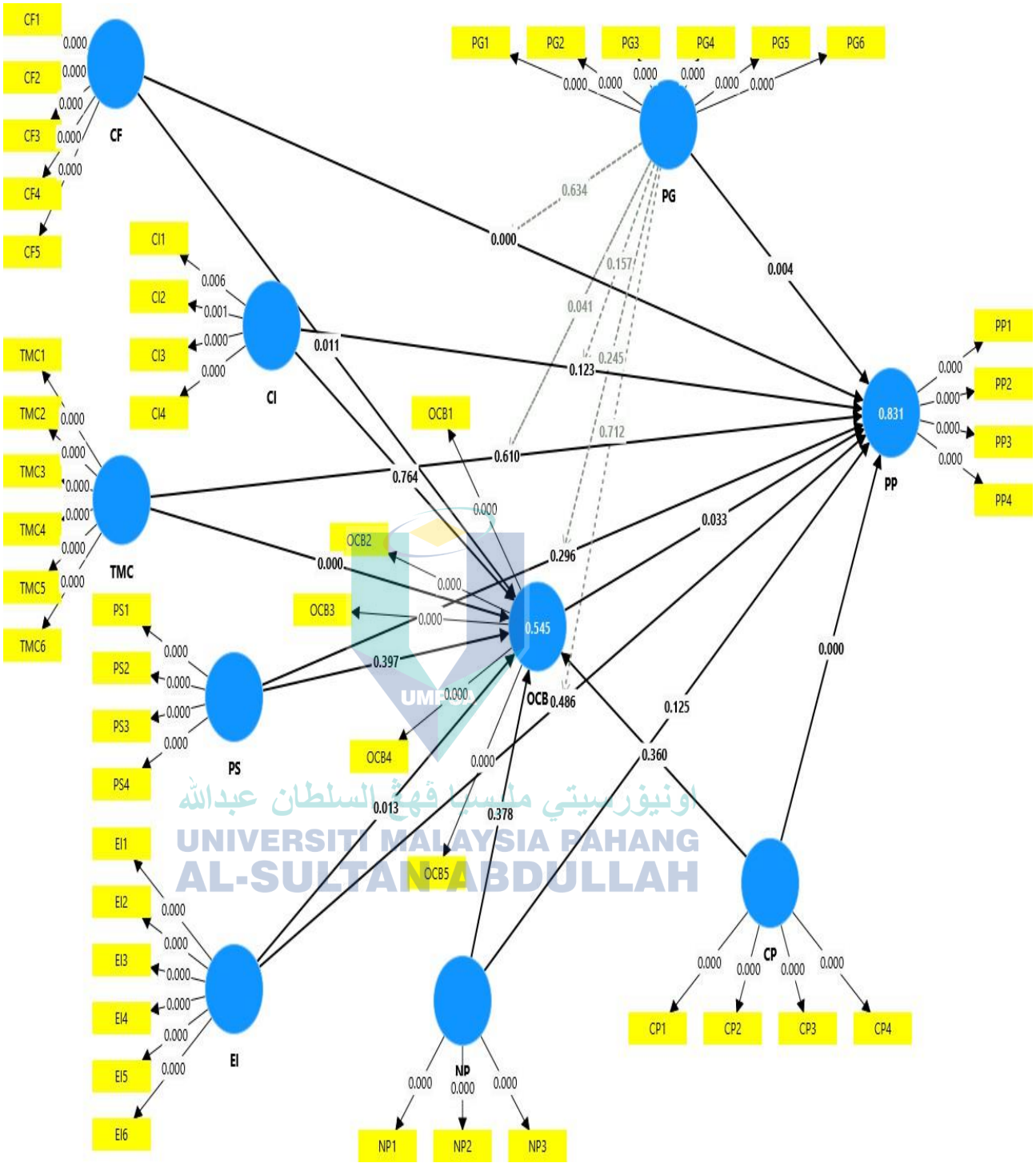


Figure 4.2. Structural Model Assessment

Table 4.7. Path Co-Efficient -Direct Effect

Hypothesis	Constructs	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H6	CF -> OCB	0.241	0.236	0.095	2.550	0.011	Supported
H1	CF -> PP	0.253	0.227	0.073	3.491	0.000	Supported
H7	CI -> OCB	-0.024	-0.020	0.081	0.301	0.764	Not-Supported
H2	CI -> PP	-0.077	-0.066	0.050	1.544	0.123	Not-Supported
H19	CP -> OCB	-0.075	-0.069	0.082	0.916	0.360	Not-Supported
H17	CP -> PP	0.341	0.346	0.078	4.355	0.000	Supported
H10	EI -> OCB	-0.224	-0.204	0.090	2.482	0.013	Supported
H5	EI -> PP	-0.044	-0.032	0.064	0.696	0.486	Not-Supported
H18	NP -> OCB	0.085	0.081	0.097	0.882	0.378	Not-Supported
H16	NP -> PP	-0.083	-0.073	0.054	1.534	0.125	Not-Supported
H22	OCB -> PP	0.174	0.170	0.081	2.138	0.033	Supported
H28	PG -> PP	0.232	0.212	0.082	2.844	0.004	Supported
H9	PS -> OCB	0.080	0.096	0.094	0.847	0.397	Not-Supported
H4	PS -> PP	0.049	0.054	0.047	1.046	0.296	Not-Supported
H8	TMC -> OCB	0.591	0.570	0.101	5.869	0.000	Supported
H3	TMC -> PP	0.043	0.054	0.085	0.510	0.610	Not-Supported

Table.4.7 shows the structural model results of TQM and institutional factors with project governance, organizational citizenship behavior and project performance. It is found from the table that Customer focus (CF) (p = .000, t = 3.491) a factor of TQM, Coercive Pressure (CP) (p = .000, t = 4.355), an institutional factor, Organizational Citizenship Behavior (OCB) (p = .033, t = 2.138) and Project Governance (PG), (p = .004, t = 2.844) have significant positive influence on Project Performance (PP). Therefore, the hypothesis of this research such as H1, H17, H22 and H28 were accepted. On the other hand, the constructs such as Continuous Improvement (CI) (p = .123, t = 1.54), Normative Pressure (NP) (p = .125, t = 1.534), Project Strategy (PS) (p = .296, t = 1.046) and Top Management Commitment (TMC) (p = .610, t = .510), have insignificant impact on Project Performance (PP). Hence the hypothesis including H2, H16, H4 and H3 of this research were rejected.

Moreover, direct relationship of TQM and Institutional factors with Organizational Citizenship Behavior (mediator) was examined. It was found from the table that Customer focus (CF) (p = .011, t = 2.550), Employment Involvement (EI) (p = .013, t = 2.482) and Top Management Commitment (TMC) (p = .000, t = 5.869), the factors of TQM have significant influence on Organizational Citizenship Behavior (OCB). Therefore, the hypothesis such as H6, H10 and H8 were accepted. On the contrary, the constructs such as Coercive Pressure (CP) (p = .360, t = .916), Continuous Improvement (CI) (p = .764, t = .301), Normative Pressure (NP) (p = .378, t = .882), and Project Strategy (PS) (p = .397, t = .847) have insignificant impact on Organizational Citizenship Behavior (OCB). Therefore, the hypothesis including H7, H19, H18 and H9 of this research were rejected.

Table 4.8. Path Coefficients: Indirect Effect

Hypothesis	Constructs	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P-values	Decision
H11	CF -> OCB -> PP	0.042	0.041	0.027	1.542	0.123	Not-Supported
H12	CI -> OCB -> PP	-0.004	-0.002	0.015	0.284	0.777	Not-Supported
H21	CP -> OCB -> PP	-0.013	-0.013	0.018	0.734	0.463	Not-Supported
H15	EI -> OCB -> PP	-0.039	-0.035	0.024	1.643	0.100	Not-Supported
H20	NP -> OCB -> PP	0.015	0.014	0.019	0.776	0.438	Not-Supported
H14	PS -> OCB -> PP	0.014	0.016	0.020	0.706	0.480	Not-Supported
H13	TMC -> OCB -> PP	0.103	0.097	0.051	2.023	0.043	Supported

The step-by-step processes and standard directions were followed to examine the mediation effect of OCB between TQM factors and Institutional factors. In addition, by ensuing the instruction of Hair Jr and Lukas (2014), during testing the mediation role, the process suggested by Preachers and Hayes (2004; 2008) was followed. This process was examined using bootstrapping which is a nonparametric re-sampling process and it is considered the most appropriate technique for mediation. The results of mediating role of

organizational citizenship behavior (OCB) between TQM factors and Institutional factors and project performance are shown in table 4.8. organizational citizenship behavior (OCB) significantly played the mediating role between the Top Management Commitment (TMC) and Project Performance (t = 2.023, p = .043), resultantly, H13 was accepted and supported. On the contrary, organizational citizenship behavior (OCB) played insignificant role among Customer focus (CF) (t = 1.542, p = .123),, Coercive Pressure (CP) (t = .734, p = .463),, Continuous Improvement (CI) (t = .284, p = .777),, Normative Pressure (NP) (t = .776, p = .438),, Project Strategy (PS) (t = .706, p = .480) and Employment Involvement (EI) (t = 1.643, p = .100) and project performance and did not mediate, thereby, H11, H12, H21, H15, H20 and H14 were rejected and were not supported.

Table 4.9. Moderation Effect of Project Governance

Hypothesis	Constructs	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H23	PG x CF -> PP	0.031	0.025	-0.006	-0.097	0.176	Not-Supported
H24	PG x CI -> PP	0.082	0.087	0.005	-0.008	0.222	Not- Supported
H25	PG x TMC -> PP	-0.158	-0.161	-0.003	-2.98	0.015	Supported
H26	PG x PS -> PP	0.047	0.049	0.001	-0.044	0.126	Not- Supported
H27	PG x EI -> PP	0.027	0.020	-0.007	-0.125	0.163	Not- Supported

The moderating role of Project Governance (PG) between all factors of Total Quality Management (TQM)—Customer Focus (CF), Continuous Improvement (CI), Top Management Commitment (TMC), Project Strategy (PS), and Employee Involvement (EI)—was examined. The outcomes of this moderation analysis are presented in Table 4.9.

The results indicate that the relationship between Top Management Commitment (TMC) and project performance was significantly moderated by PG (t = 2.98, p = .015), with a p-value less than .05 and a t-value greater than 1.96. Consequently, the hypothesis H25 was accepted, supporting the moderation effect of PG on the relationship between TMC and project performance. However, the relationships between the other TQM factors—Customer Focus (CF), Continuous Improvement (CI), Project Strategy (PS), and Employee Involvement

(EI)—and project performance appeared insignificant, with p-values greater than .05 and t-values less than 1.96. Therefore, the hypotheses H23, H24, H26, and H27 were rejected, indicating that PG did not significantly moderate these relationships.

In the results report, Smart-PLS provided simple slope charts to illustrate these relationships. The simple slope analysis graphically represents the relationship between TQM and project performance, moderated by PG. In this example, the central line in the simple slope plot shows the relationship for an average level of the moderator variable, project governance. The second and third lines demonstrate how PG moderates the link between TQM elements and project performance.

The analysis revealed that out of the five TQM factors, project governance significantly moderated the relationship between Top Management Commitment (TMC) and project performance. This finding suggests that TMC plays a crucial role in enhancing project performance, highlighting the importance of management commitment in improving project outcomes.

Table 4.10. Model Fit Criteria

Model Fit Criteria	Saturated model	Estimated model
SRMR	0.059	0.063
d_ULS	3.886	4.445
d_G	2.336	2.386
Chi-square	1872.229	1892.688
NFI	0.708	0.704
BIC (Bayesian information criterion)		
OCB		-88.003
PP		-208.827

In order to extract the availability of additional information beyond the specified, Henseler et al. (2016) developed an indicator to evaluate the overall fit of a model in PLS-SEM. Model fit was evaluated in the study using SRMR, d ULS, d G1, and d G2 (Benitez et al., 2020). The predicted model fit is measured by the SRMR. The standardised residual matrix ratio (SRMR) is a measure of the average of the residuals between the hypothesized and observed covariance matrices (Chen et al., 2010). According to Henseler et al. (2014), the study model fits the data well when the SRMR is less than 0.08; a lower SRMR indicates a

better fit. The study's SRMR values are displayed in Table 4.10. The study model's SRMR is 0.06, as shown in Table 4.10, indicating that it had a satisfactory match. The total model fit is expressed by the d ULS and d G values since the model is based on statistical inference rather than heuristic principles (Benitez et al., 2020). The study's d ULS and d G values are lower than the 95% confidence interval's upper bound, demonstrating overall model fit (Benitez et al., 2020).

Table 4.11 Effect Size (f-square)

R-squared	f-square	Effect Size
CF -> OCB	0.065	Small
CF -> PP	0.217	Moderate
CI -> OCB	0.001	Weak
CI -> PP	0.042	Small
CP -> OCB	0.006	Weak
CP -> PP	0.149	Moderate
EI -> OCB	0.068	Small
EI -> PP	0.023	Small
NP -> OCB	0.010	Weak
NP -> PP	0.024	Small
OCB -> PP	0.103	Small
PG -> PP	0.107	Small
PS -> OCB	0.010	Weak
PS -> PP	0.003	Weak
TMC -> OCB	0.379	Strong
TMC -> PP	0.070	Small

After evaluating the values of R2, the modifications in R2 could further estimated using effect size (f2), which is an evaluation criterion and it was first introduced by Cohen (1998). This technique or criteria evaluates the individual independent variable's substantive effect on the dependent variable so that structural model could be assessed appropriately. In addition, a particular variable is removed from the framework to check the effect of omitted or removed variable on dependent variable through (f2). Standard values as recommended by Cohen (1998) for evaluating (f2) are 0.3. 0.15, 0.02, which represent moderate, small and weak effects of independent variables respectively, if the effect size value is below 0.02. Following the benchmark, table 4.11 presented the (f2) values, the TMC on PP has strong effect which f2 value was greater than .35. furthermore, the variables CF on PP and CP on PP has moderate effect having the f2 values greater than .15 and less than .35, whereas, the variables CF on OCB, CI on PP, EI on OCB, EI on PP, NP on PP, OCB on PP, PG on PP and TMC on PP

have small effect having the f2 values less than .15 and greater than .02. Lastly, the variable CI on OCB, CP on OCB, NP on OCB, PS on OCB and PS on PP have weak effect as their f2 values were less than .02. Therefore, it is concluded that there was no exogenous variable that do not have effect on their respective dependent variable irrespective of the effect size.

4.6. Discussion of the Findings

The construction project is fragmented, complex, nonlinear, and dynamic. This sector's key trait is causality. The economic and social development of developing nations are considerably aided by construction projects. Achieving strategic competitiveness, employee empowerment, employee involvement, customer repetition, decreasing rework, continuous improvement, increasing productivity, improved budget performance, and comparative more desirable schedule performance all depend on maintaining quality in the projects. For the management of construction project quality, a variety of quality management strategies have been used, including total quality management (TQM), six sigma, top-down and bottom-up approaches, adoption of the international standard organization codes (ISO), Kaizen, cost of quality etc. By putting the TQM principles into effect in the industrial ongoing projects, this model offers the quality assurance that consumers will receive what they anticipate as well as a method for handling dissatisfied customers and also minimizes waste and time. This study is of a novel character, and the approach it uses enables continuous organizational improvement. It will provide a deeper comprehension of methods for TQM and problems noted by the organizational framework. The industrial sector of Oman will benefit from the adoption of TQM techniques by making it easier to set goals for improving the quality performance of construction projects.

Customer satisfaction is the major factor that is only possible to fulfil by quality management technique of TQM practices. The lack of top management commitment is the significant barrier in developing countries to implement TQM practices. This lack TMC includes number of factors such as non-expertise, concentrated on low bed projects, the undervaluation of training and education and training, low level of employees' involvement and worker empowerment, a rigid attitude and behavior on the part of executives, and a rigid approach to quality management system (QMS) implementation. Organizations should work on increasing customer quality together with focus on coercive pressure, both of which are

crucial for obtaining high project performance. As a result, management must allocate funds to support an innovative quality improvement. According to the findings, management that is focused on quality improvement will confront aspects of technical advancement in addition to the actual nature of doing things correctly. The findings also failed to identify any significant relationship between OCB and project performance. Despite the fact that TQM techniques have a considerable impact on project performance, it has not yet been proven empirically that OCB has a mediating effect. Three of the five proposed hypotheses were supported by the current study's findings. The following are the discussions of the study's findings, which are arranged in accordance with the study's objectives:

4.6.1. The relationship between TQM Factors, Institutional Factors and project performance.

The first objective of the study was to validate the relationship between TQM factors and construction projects' performance in Oman. From this objective, five hypotheses were formulated (H1 to H5). The first hypothesis (H1) was outlined between customer focus and project performance. This research found significant positive impact of customer focus on construction project performance which means that as construction companies are concerned with the customers' requirements of their projects such projects' performance is increased. The findings of this hypothesis is supported by many past literature, Mehra and Ranganathan (2008) mentioned that customer focus is one of the fundamental tenets of total quality management (TQM), and as a result, client expectations must be met consistently and correctly. Furthermore, Sahney (2016) stated that an organization's ability to comprehend and address the requirements of its consumers determines how successful it will be. According to Kotler et al. (2006), Dimitriades (2006) and Gberevbie and Isiavwe-Ogbari (2007), inadequate human resource development and management are just a few of the challenges facing total quality management.

The findings of studies by Anderson et al. (1995) and Forza and Filippini (1998), which indicated that complete quality management results in customer satisfaction, confirm the conclusion. Customers' satisfaction is strongly impacted by overall quality management, according to Rungtusanatham (1998) and Choi and Eboch (1998). It is impossible to have a sustainable competitive advantage in business, regardless of the best guarantee that

organization is referring to for both survival and profit maximization, and this is especially true in private higher education institutions where it is a requirement. Ou et al. (2010) claimed that determining customer needs is the first step in setting quality objectives for enterprises.

Additionally, quality planning and execution start with a focus on customer demands and finish when those needs are met. TQM organizes future actions, manages everyday activities, and uses planning to accomplish the company's long-term objectives. It does this by combining customer knowledge with other information. Furthermore, the study linked to Das et al. (2000) found a favorable correlation between total quality management methods and customer satisfaction. However, Sousa (2003) suggested that customer focus are contingent on organization's strategies. This result determines that the projects are more focused on quality then focusing on the customer requirement. This is due to strict policy from the Oman government on the quality projects and its executions.

Second hypothesis (H2) was outlined between continuous quality improvement and project performance. The current study used the conceptualization of customer quality improvement proposed by Adam et al., (1997) who mentioned that customers demand quality for an additional benefit of cost reduction and eliminate waste. The performance of organizations is strongly correlated with continuous improvement. An insignificant impact of continuous quality improvement on construction project performance is found. This finding is not in line with earlier study (Bullock & Rahman, 2005; Fuentes et al., 2006), which found that ongoing improvement in quality standards had a favorable impact on various types of performance. The lack of finding consistent similar results could have different reasons among studies. In few studies the TQM is taken as a single variable due to which the relationship of continuous improvement found significant with firm performance (Douglas & Judge, 2001).

Moreover, few studies (Samson & Terziovski, 1999) might be used its relationship with multidimensional variable due to which their findings could be different. Furthermore, our findings are not aligned with the past studies for instance few studies have operationalized construction project performance at different levels; few studies operationalized at operating level while other operationalized at using only financial performance (Das et al., 2000). Furthermore, the investigative model to check the relationship between studies could be different among the studies which differentiated current study' findings with other studies.

Moreover, the findings could be different due to the level of knowledge and information of the respondents of the current study with the other studies.

In addition, the reason is that Quality management is more applicable for manufacturing companies when TQM is implemented while keeping in mind the value of continuous improvement. Quality work with improvement techniques is most critical for reducing discrepancies between quality management practices but which particular techniques of continuous improvement could increase the performance it all depends on the nature and type of technique because sometimes all the techniques of continuous improvement are unable to enhance performance of projects (Cui and Wu, 2016).

Lastly, the few studies mentioned the performance of firms instead of project performance of construction projects which is another justification of non-alignment of findings with other studies (Sluti, 1992). Another study Sluti (1992) by empirically investigated impact of quality improvement in manufacturing companies in New Zealand and posed positive link with business performance but the relationship was insignificant. Cui and Wu (2016) using primary data from various industries, examines the causes and effects of three different forms of customer involvement. It discovered that the impact of customer involvement on product performance is dependent on the firm's technological capacity and that the contingent effect varies between the various forms of customer involvement. However, according to several research, an organization can gain a lot of advantages from a good TQM implementation. Meeting the quality requirements of TQM implementation in the construction industry can lead to higher customer satisfaction, better product quality, and a larger market share (Polat et al., 2011; Yong, 2018). Although the bulk of the publications cited the advantages of implementing the TQM management philosophy in different kinds of businesses, others (Budayan & Okudan, 2022).

The body of research supports the idea that strict TQM organization is necessary for success throughout the project's life cycle (Eniola et al., 2019). Employees in any organization must understand that they are working toward a common goal and must contribute to successfully implementing TQM (Acıkara et al., 2017). To become a leader in the construction industry, a business must adopt TQM and undergo a paradigm shift in its quality culture. According to earlier research, managerial behaviors or human factors are primarily concerned

with achieving organizational and quality management objectives (Neyestani & Juanzon, 2016). Based on the review of the previous studies and this study's finding, customer involvement is an important factor for improving project performance. The fundamental objective of TQM adoption is to achieve sustainable considerable performance improvement and business superiority of organizational performance, which is not in line with the findings of Chin and Pun (2002). Continuous improvement was not likewise regarded by Munizu (2013) as the most insignificant TQM aspect in terms of effecting organizational performance. Expanding on the debate from before, it is evident that continual improvement was viewed as unfavorable and important aspect determining organizational effectiveness in the context of Oman. Therefore, this hypothesis was rejected.

The third hypothesis (H3) was outlined between top management commitment and project performance. The significant impact of TMC is found on project performance in Oman with indirect effect of OCB, which means that partial mediation of OCB can attract bring close the TMC and Construction project Performance in Oman which cannot be ignored. Senior management support for a project must be measured in terms of the requirement to offer resources, which includes delivering people, material, and financial resources. The project is seriously threatened by the unavailability of these resources (Jong et al., 2019). Any organizational goal must have the support of the top management to be realized successfully (Haldorai et al., 2022). In order to improve project performance, the project manager is expected to reinforce shared values among project team members through intrinsic motivation and self-control. It is crucial to understand whether managerial control influences project performance. The effectiveness of a TQM program's implementation is heavily influenced by top management commitment, which is seen as a key driver of TQM (Soltani, 2005). The mission, vision, and goals that support a high-quality culture and develop a set of shared values, leading to high performance, are to be defined by top management (Kanji, 2008).

Therefore, it is essential that top management's full commitment be recognized, disseminated, put into practice, and sustained at all organizational levels. According to (Riaz et al., 2023), low bid subcontracting and top management have an antagonistic relationship. Low bid subcontracting increasingly declines as senior management commitment rises. Low bid subcontracting is a shady method of contract awarding that favors the vendor with the

lowest cost. The project's overall quality could be compromised by this technique. The client/customer's attitude and conduct toward TQM are increased as low bid subcontracting is reduced. Thus, the low organizational quality culture is diminished. The effectiveness of education, training, and quality methods in implementing TQM is enhanced as negative organizational quality trends are decreased. Therefore, managers' dedication to these sustainable practices is key to the development of sustainability, which can result in a competitive advantage. Therefore, this hypothesis was partially supported.

The fourth hypothesis (H4) was outlined between project strategy and project performance. Strong personal values enable a leader to successfully connect with his or her team, promote the strategic vision, and win the support of partners. The direct impact of project strategy is found on construction project performance in Oman. Therefore, exceptional leadership outcomes are driven by the appropriate equilibrium of personal ethics such as trustworthiness, integrity, honesty and benevolence in the behavior of leaders. Shenhar (2004) introduced the framework of leadership related to strategic project that connected the human leadership and business focused operations by outlining five factors such as tools, spirit, processes, strategy and organization. Maltz (2001) proposed viewing project success as a premeditated multidimensional concept. Morris (2009) discussed on the significance of dealing the venture frontend as part of the execution of policy over project management. Artto, Dietrich, and Nurminen (2004) detailed the implementation of strategy by projects. Certain frameworks have been presented by some writers to steer the discipline in the direction of a more strategic approach. The path coefficient for this research confirmed that there is significant influence of project strategy on project performance. Thus, this hypothesis was supported.

The fifth hypothesis (H5) was outlined between employee involvement and construction project performance. The success of continuous improvement is closely tied to employee engagement and dedication (Coyle-Shapiro 2002; Jurburg et al. 2017; Lleo et al. 2017; Costa et al. 2019) but the findings of this research were not aligned with the existing body of knowledge and found that employee involvement has insignificant impact on construction project performance. Multiple evidences were published where employee’s engagement and commitment in programs improvement particularly in operations and

productions are reported and these were included decentralization, of decision-making authority, trainings, performance measurement, non-financial as well as financial rewards, goal setting engagement and empowerment. Global business scenario has changed significantly, which made it necessary to for the firms to gain competitive advantages while improving the product and services quality which is one of the instrumental tactics which organizations generally use. Therefore, it is essential to implement a number of key TQM tenets in order to lead the continuous improvement process. The path coefficient confirmed that there was an insignificant influence of employee involvement on project performance. Thus, this sub hypothesis was not supported.

The hypothesis (H17 and H18) was outlined between one of the institutional factors named as coercive and normative pressure and Construction project performance. Institutional factors coercive pressure significant positive impact has been found on construction projects' performance in Oman while normative pressure has insignificant effects on construction projects' performance in Oman. It means H17 is supported or accepted based on the findings of current study but H18 is rejected or not supported based on the findings of this research. It means coercive pressure has significant role in the project performance success. Therefore, the findings of this research are aligned with the findings of the past literature (Hussain & Gunasekaran, 2002). The institutional dynamics that encourage banks to employ performance metrics use coercive pressures as its most potent influencer (Hussain & Hoque, 2002). Additionally, the central bank's rules and regulations have an impact on bank performance (Oliver, 1997).

According to the literature, professional associations and formal education's normative demands are other significant institutional influences (DiMaggio & Powell, 1991). The path coefficient for coercive pressure and project performance confirmed that there is significant influence of coercive pressure on project performance. Thus, the hypothesis (H17) was supported. On the contrast, the hypothesis (H18) of institutional factor, normative pressure was also investigated having insignificant influence on project performance. The path coefficient for normative pressure confirmed that there was insignificant influence of normative pressure on project performance, thus H18 was rejected based on the findings of this research.

Five hypotheses (H11-H15) were outlined as the mediating effect of OCB between TQM factors and construction project performance and Two hypotheses (H20 and H21) were outlined as the mediating role of OCB between institutional factors and construction project performance. As a result, the OCB construct is included in the current analysis as a mediating influence. The OCB construct has been identified as an interaction variable in a number of research. Jung (2008), for instance, claimed that TQM has a large impact on OCB; yet, because OCB then affects performance, OCB can play a mediating function. Numerous earlier studies have shown how TQM affects OCB (Kiani, 2020). Employees demand top management commitment in their firms in terms of TQM aspects, and they want leaders who show traits like human rights, morality, respect, responsibility, equity, and equality. Employees will feel safe and trust their leaders with these characteristics (Advani, 2015).

From the table 4.8, it was found that the TQM factors (customer focus, TMC and employee involvement) were significant to organizational citizenship behavior and institutional factor (normative pressure and coercive pressure) have insignificant impact on OCB which concluded that (H7, H8 and H10) were supported and on the contrast, the hypotheses of direct relationship with OCB such as (H6, H9, H18 and H19) were rejected based on the findings of this research. In addition, the hypothesis related to OCB and PP found significant which means that OCB affects the construction project performance, therefore, hypothesis (H22) was supported by the findings of this research.

But as for mediation role of OCB between TQM factors and Institutional factors was checked with the construction project performance, the findings of the research confirmed the significant mediating relationship of organizational citizenship behavior between one of the TQM factors (TMC) and construction project performance. On the other hand, findings of this research confirmed the insignificant mediating role of OCB between four of the TQM factors (CF, CI, PS and EI) and institutional factors (CP and NP) and construction projects' performance, hence the hypotheses related to TQM factors (H11, H12, H14, H15) and institutional factors (H20 and H21) were rejected respectively based on the findings of this research.

The five hypotheses (H23, H24, H25, H26, H27) were outlined as the moderating effect of project governance between TQM factors (CF, CI, TMC, PS and EI) and construction

project performance. There is no universal agreement on the components that make up a project governance model despite the fact that project governance has been explored from a wide range of theoretical viewpoints and many frameworks have evolved in the literature (Levie, Burke, & Lannon, 2017; Zwikael & Smyrk, 2015). Additionally, outdated and insufficient conceptualizations of project governance are now in use (Lechler & Cohen, 2009; Zwikael & Smyrk, 2012, 2015), and they frequently confuse management with governance (PMI, 2016; Too & Weaver, 2014).

From the simple slope analysis, only project strategy of TQM was found to be having significant to project governance and project performance hence hypothesis (H26) was supported by the findings of this research and on the contrast, TQM factors hypotheses (H23, H24, H25 and H27) were not supported by the findings of this research and concluded that project governance failed to moderate the relationship between TQM factors of CF, CI, TMC and EI. The hypothsis of project governance and construction project performance (H28) was also formulated to check the relationship between these two variables and outcomes of this study confirmed this relationship significantly that project governance plays instrumental role in increasing the construction project performance. Therefore, the hypothesis H28 was supported by the findings of this research.

4.7. Summary

In this chapter, descriptive statistics for respondents' profiles and variables of interest were reported. The Structural Equation Modeling (SEM) technique was used to test the hypotheses developed in the study and to assess model fitness among the variables. Factor analysis was conducted prior to SEM analysis to ensure the reliability and validity of the measurements, based on cut-off values for factor loadings, Average Variance Extracted (AVE), and Cronbach's alpha.

Following this, the hypothesized model was tested using the SEM procedure. Besides analyzing the hypothesized model, this study also posited four subsidiary hypotheses to support the findings from the main model. The majority of the hypotheses were supported. This chapter provides the results for various analyses conducted to answer the research questions and confirm the hypotheses.

The data analysis was conducted in two phases: Factor Analysis and SEM. In the Factor Analysis phase, Confirmatory Factor Analysis (CFA) was performed to confirm the factor structure of the independent variables. In the SEM phase, the measurement model was first assessed to verify the overall relationships among the independent variables (TQM factors, institutional factors) and the latent variables (organizational citizenship behavior, project governance, and project performance). Subsequently, two series of models were tested to answer the research questions and test the hypotheses accordingly. The research model was investigated for both overall relationships among variables and detailed relationships among variables.

In this chapter, the data analysis procedures and results of the current study were reported. SEM using SmartPLS 4.0 was conducted to test the hypotheses developed in the research model. The results partially supported the hypotheses. A total of twenty-eight (28) different hypotheses were considered. First, the independent variable Customer Focus (CF) from TQM factors had a significant positive relationship with the dependent variable Project Performance (PP). Second, there was a significant positive impact between the independent variable Coercive Pressure (institutional factors) and Project Performance (PP). Third, there was a positive relationship between the independent variable Organizational Citizenship Behavior (OCB) and Project Performance (PP).

From Table 4.7, it was noted that TQM factors such as Continuous Improvement (CI), Top Management Commitment (TMC), Project Strategy (PS), and Employee Involvement (EI) had an insignificant impact on Project Performance (PP). Additionally, the institutional factor Normative Pressure (NP) also had an insignificant impact on Project Performance (PP). However, OCB had a significant positive impact on Project Performance (PP), and Project Governance (PG) also had a significant positive impact on Project Performance (PP).

Moreover, OCB played a mediating role between Top Management Commitment (TMC), a TQM factor, and Project Performance (PP), explaining the influence of TMC on PP. In contrast, OCB did not mediate the relationships between Customer Focus (CF), Continuous Improvement (CI), Project Strategy (PS), Employee Involvement (EI), Coercive Pressure (CP), Normative Pressure (NP), and Project Performance (PP). Thus, OCB remained insignificant in explaining these variables' impact on PP.

Furthermore, Project Governance (PG) played a moderating role between Top Management Commitment (TMC) and Project Performance (PP), significantly strengthening the impact of the exogenous variable on the endogenous variable. Conversely, PG played an insignificant role in moderating the effects of Customer Focus (CF), Continuous Improvement (CI), Project Strategy (PS), and Employee Involvement (EI) on Project Performance (PP). Therefore, it is concluded that a majority of the hypotheses were supported or partially supported, indicating that the research framework proposed in this study was generally confirmed. The implications of these results are discussed in the next chapter.

CHAPTER 5

CONCLUSION

5.1. Introduction

Today, quality management has emerged as one of the key elements influencing organizational performance and growth in international marketplaces. Every division inside the organization must cooperate to accomplish the same goals if it is to succeed in the marketplace. TQM is being utilized as a strategy to stay in business as organizations seek to increase the level of effectiveness across all activities and processes to increase competitiveness. Due to the globalization of world economies, new problems with product quality, business procedures, and customer focus have emerged. These elements are now crucial for organizational survival as well as growth. The degree to which quality management is successfully implemented inside a business determines its success. The research findings that are based on the study questions and objectives are discussed in this chapter. This chapter also discusses the study's implications from a theoretical, practical, and methodological viewpoint. Finally, this chapter discusses its limitations and suggestions for future research.

5.2. Summary of the Study

The alignment between the study's goals and its findings are covered in the following section. The current analysis was carried out to evaluate the performance of ongoing projects in Oman. A total of 162 participants who have been engaged in the ongoing projects responded to the survey questionnaire. There are five objectives of the study presented in chapter 1: (1) The first objective was to examine the impact of total quality management factors on construction project performance in Oman. (2) The second objective was to determine the influence of institutional factors on the construction project performance in Oman. (3) The third objective was to investigate the influence of organizational citizenship behaviour on construction project performance in Oman. (4) the fourth objective was to investigate the mediating role of organizational citizenship behaviour (OCB) between total quality management (TQM) factors and institutional factors and construction project performance in Oman. (5) the fifth objective was to investigate the moderating role of project governance

between TQM factors and construction project performance in Oman.

The research questions that were created from the problem statement in the first chapter were used to define and outline the following objectives. The study looked at the suggested relationships in an effort to improve the efficiency of construction projects. The institutional and contingency theories provide support for the studies' existing research framework. According to the study's findings, organisational citizenship behaviour, institutional variables, and TQM components are all considered intangible resources, and project performance is viewed as having a dynamic capability. Five hypotheses are placed were proposed and statistically tested using the PLS-SEM technique and Smart PLS 4.0 software; of these five, two tested the direct relationships, two the indirect (mediating) relationships, and the last tested the moderating effect of project governance on the relationship between the TQM factors and project performance.

The empirical findings for objective one revealed a positive connection between one of the TQM factors namely customer focus and performance of construction project in Oman, as well as between institutional elements namely coercive pressure and construction projects' performance in Oman. Though, this research did not find any instrumental role of OCB in mediating the link between TQM factors and Oman construction projects' performance. This study exposes a significant relationship between institutional factors and performance of projects in Oman with regard to objective two. Regarding objective three, the research reveals a significant correlation between OCB and the construction projects'' performance. This research found the significant mediating role of OCB in relationship between one of the TQM factors named as TMC and project performance for Objective 4. Project governance is considered instrumental to the realization of projects' advantages and efficacious delivery of projects and it is acknowledged around the globe.

The literature of project governance is still inconsistent in spite of the researchers past efforts on project governance. There are mixed opinions of the researchers regarding the core components of project governance and what the project governance is. Additionally, although project governance runs substantial role in aligning the projects with the objectives and strategies of its parent company, still there is a literature gap with respect to practices for how project governance can help in enforcing the organizational strategies by their projects. The

study did find that project governance partially moderated the relationship between TQM and project performance. In conclusion, out of total twenty hypotheses total 8 hypotheses were supported by the findings of this research. In overall, TQM and Institutional factors were considered significant in enhancing the performance of construction projects in Oman.

5.3. Research Implications

This study further explores the TQM literature and brought some managerial and methodological implications that are discussed as follows:

5.3.1. Theoretical Implications

The main research question for this study is how TQM and institutional factors influences project performance. Considering the notion of total, in the TQM, everyone in the organizations (administrative staffs, project managers, project employees, government agencies and whomsoever involved in the projects). For this purpose, this study focused previous literature on TQM and project performance in order to find how TQM evolved as an emerging factor for performance and what resources and capabilities need to be executed in the organization for overall performance improvement of construction ongoing projects. Based on the review, it was noted that widely component of TQM in the project is the employee involvement and top management commitment. It was also found that TQM not only includes the employees and staffs involved in the projects, but also the administrative staffs and government agencies as part of the project execution.

Resource based theory and Institutional theory has been anchored to develop quality improvement capabilities utilizing internal resources and enhance quality performance. Findings of the study stayed the argument through developed paths depicted in the structural model. TQM is a management concept, so it doesn't make wisdom to study it without taking into account where it came from. This research formulated a theoretical model on two TQM factors and construction projects' performance grounded on resource capabilities. It also took into account the practices of firms utilizing all for its capabilities to create and carry out the strategies of the projects. Furthermore, this research model also interlinked different practices to expand the capacity of the projects and to increase the robustness of the research. The theoretical model filled the gap found in the past literature and given a strong theoretical

ground for the research conducted on cause and effect relationship among TQM factors, institutional factors and construction projects' performance.

The formulation of new variables related to knowledge, innovation, capabilities transfer is also suggested in this research and it is taken as instrumental to enhance the different capabilities so that projects' performance and quality can be enhanced in speedily changing world' business environment. Research has previously been done on dynamic capabilities generally, but not specifically on the dynamic capabilities that enterprises in the construction sector need. The three components of dynamic capabilities—integration, organisational learning, and reconfiguration—are to be discussed in connection to project-oriented organisations in this study, which builds on recent advances in the field of dynamic capabilities research. The study also suggests that building KCT capabilities to incorporate resource management practices in light of quickly changing settings is the key to success in quality management and overall performance.

5.3.2. Practical Implications

TQM is a modern advancement towards organisational success that is being adopted by businesses all over the world. It is widely acknowledged as one of the crucial components for enhancing businesses' success (Ooi et al. 2011). Companies have been implementing TQM's quality-conscious management practices because it is one of the best ways to boost their company's overall competitiveness. Additionally, it has been discovered that TQM practices can be effective tools for enhancing management and performance on its own or as a whole. For practitioners and scholars in the disciplines of quality and project performance, the findings and debates in the preceding sections provided insightful information.

The senior administration or leadership should give the project management departments enough power that will make sure that they can encourage quality in all of their endeavors, which will improve the overall effectiveness of the firm. Additionally, it is highly advised that the top management of the organization permit staff members at all levels to provide them with training and development in order to reach their full potential for achieving organizational goals. Another suggestion is that organizations should concentrate on TQM continuous improvement by inspiring staff to put in extra effort to meet the organization's

goals and objectives. According to the concept, TQM is influenced by how effectively resources are used and by their capabilities, which are in turn anchored in the management of three different types of resources: project resources, staff resources, and strategic resources. These methods of resource management make up a system of intensive resource use from which resource capabilities grow.

Therefore, in accordance with the framework, organisations coordinate their resources to build their capacity for knowledge creation and transfer, to increase the standard of project completion and governance, and to improve overall performance. Employers demonstrate their level of commitment to the environment and good corporate responsibility when they support employees in implementing green policies and achieving green goals. Khan and Qianli (2017) have identified the elements that contribute to competitiveness. Organizational and individual barriers exist for OCB. Personal hurdles to environmental problem-solving include societal norms, individual behavior, a lack of information, awareness, and self-efficacy, whereas organizational barriers include corporate principles, a lack of autonomy, a lack of resources, and supervisor support (Ankaya & Sezen, 2019).

For researchers, project managers, and policy makers in Oman and beyond, this study has significant ramifications. By formulating a means capability-based framework related to TQM practices furthers to the existing body of knowledge and fills the research gap identified by this research. By executing such TQM related research models, firms can employ all facilities and resources to create competences which will make them capable to deliver and perform the desired level of the clients. After utilizing such approach, policy makers can prepare themselves to develop tools for helping the development projects sot that the quality and performance can be enhanced.

With regard to how project performance can be improved through TQM practices, this research has formulated multiple effective techniques for the firms especially for construction companies in Oman. An effective TQM practices related model must be formulated, assessed and researched ina suitable manner to benefit to the construction sector related firms. This study shows that three of the five TQM practices—employee participation, top management commitment, and project strategy—have a favorable effect on project performance in Omani construction organizations. More precisely, the two TQM practices most strongly associated

with project success are workforce focus and operation focus.

A helpful tool for construction management practitioners is provided by this study. The practical contributions of this research include raising the multidimensionality of TQM's awareness among managers at all levels in the construction industry and emphasizing the importance of these five TQM practices to project performance. By fostering an industry-wide culture of successful project performance, this research recognizes the significance of TQM practices. To achieve the greatest outcomes for Oman's construction industry, these organisations should place a strong emphasis on the ongoing adoption, monitoring, and assessment of TQM practices.

5.4. Limitations and Recommendations

The accomplishment of construction sector projects is contingent on quality maintenance, which can be completed by TQM practices or methods. In developing countries, the major factors of TQM application particularly in construction industry, however, have not been studied well. This could be due to cost and time constraints, the findings of the researcher had to solve the inadequacies in data. The initial drawback of the research was that it solely examined construction projects in Oman. It is recommended that research can be enhanced in further developed, developing nations as well as conducting comparative studies. It is encouraged to conduct comparative research between Oman, a developing state, and alternative set of states. Investigating the variations in the connection amid TQM practices and project performance across several countries may be done using this. These investigations are anticipated to significantly advance the field and offer insightful information. Second, because of time constraints, this research used cross sectional design.

A longitudinal study examining the project performance and TQM practices' relationship in the industry based on time arrangement is suggested in the future. Different time period data cane be utilized to check the causality among different constructs for more instrumental and clearer contribution. The continuing project managers, managers, quality managers, and quantity surveyors were the intended audience for the questionnaire. As today's consumers want more and more products with sourcing practices consistent with their values, quality management supply must be leveraged in order to promote sustainability and

transparency. For implementing a no-fear approach to project policy reform and meeting the responsibility necessary for it, TQM's continual improvement focus is a crucial element. The TQM system presents students and teachers with a more engaging challenge to encourage teamwork and cooperation among them. Superior perceptions on the applications of TQM in the firms with a further complete conclusion will emerge from a different perspective that includes the entire workforce. Ordinary employees may have a different viewpoint on the acceptance and use of TQM practices than management, so their viewpoint should also be taken into account. As a result, it is advised to carry out a study that takes into account all labour levels.

The sample size in this study is appropriate, according to a comparison of studies on the construction industry conducted by Mir and Pinnington (2014), Ali and Rahmat (2010) and Din, Abd-Hamid, and Bryde (2011). The study's limitation to ongoing projects in Oman is among its serious faults. The sample size for this study was capped at 162 respondents. This could prompt more research by conducting comparison studies with a bigger sample size to expand the scope of this study's findings. If more people participate in the poll, the industries will benefit from the results more. This finding also paves the way for further investigation. However, it is suggested that the large sample sizes can be used in future research to get better results which represent the community and understand how practices of firms influence the performance of the project. In order to authenticate the outcomes of current research, it will be interesting to make comparison of this research with those studies considering large sample size.

To raise awareness and establish a separate department for quality management experts, sufficient resources should be set aside. To better satisfy customers, senior management and staff should receive monthly or quarterly training. All departments and personnel should be included in the quality management program, according to top management. It is important to conduct both internal and external audits to determine whether TQM is being applied correctly or not. To provide businesses a competitive edge, management staff must be in charge of selecting relevant cost-cutting measures employing TQM practices. More businesses should seek to get ISO-certified so they may adopt TQM in a practical and effective way.

5.5. Conclusion

For the highly esteemed management of the companies, performance is crucial. Different types of performance including business performance, financial performance, inventive performance, quality performance, operational performance and project performance have been employed by researchers. Examining the link between various performance kinds and TQM techniques is still important. The ability of a company to achieve its strategic and financial goals can be used to gauge the project performance. Although TQM has a favorable impact on the project's performance, it does so in a subtle way. Firms make efforts to sustain and survive their high performance resultantly the global economy expand rapidly to excel the growth, performance and effectiveness but this all depends on the quality, economic stability, technical innovation, customer happiness, due to which businesses confront different economic situations around the globe.

The study's conclusions offer observations and insights that will help regulators and policymakers in Oman evaluate and take into account any necessary adjustments and amendments to the country's current laws in order to boost the quality of work in the construction sector. One suggestion is that the present Oman construction industry strategy be updated to include labour emphasis and operation focus, which have instrumental effect on the performance of projects. To enhance project performance and raise the status of the Oman construction industry internationally, the personnel and process attention related actions can be taken into consideration.

Governance addresses projects' right to autonomy in project-based organizations as independent, mutually respected, and controlled entities that reciprocally control one other, for instance through pooling resources (Müller et al., 2016). Here, the idea of sovereignty partly coincides with that of project autonomy (Müller et al., 2017), but its reach is widened by its inclusion of external control and reciprocal recognition. Furthermore, sovereignty is often claimed by the institution in question, whereas autonomy is typically conferred by an institution with higher level power. Sovereignty, which is a more practical measurement than officially authorized autonomy, which may not be followed in project reality, quantifies the amount to which project managers assert power and autonomy among peer projects. The organizations working in Oman know that TQM is difficult because of its techniques used for

continuous improvement in quality. It is the only ISO 9000 for construction industry for its quality certification assurance.

An organization (TOCO) in Oman claimed that ISO 9000 is only demanded for individuals associated with the construction sector particularly in Grade 7. The awareness, understanding and application of TQM is still far behind in many stall construction firms. It is significant to support ongoing efforts of government of Oman to apply TQM principles and to promote TQM especially in construction sector. TQM practice can be advantageous for the building industry, according to the study's conclusions. This study backs up Pheng and Teo's 2004 finding that TQM practices are essential for improving productivity and construction sector’s project performance.

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APPENDICES

Appendix A: List of Ongoing Projects in Oman.

Sr. No.	Country	Date	Project Title Summary
1	Oman	8-Nov-21	Suhar Industrial City - Phase 7.
2	Oman	8-Nov-21	Construct 22 Housing Units At Hai Al Naseem Neighbourhood In Barka.
3	Oman	1-Nov-21	Construct 35 Housing Units For A Number Of Citizens Whose Houses Were Damaged By Cyclone Shaheen In The North Al Batinah Governorate.
4	Oman	1-Nov-21	High-tech Plant At Rusayl Industrial City Muscat.
5	Oman	26-Oct-21	Road Instatement Works And Repair Of Damages Caused By Tropical Cyclone Shaheen At Al Batinah Highway..
6	Oman	25-Oct-21	Install Solar Photovoltaic Systems At Homes.
7	Oman	22-Oct-21	500 Megawatts (mw) Manah 2 Solar Photovoltaic (pv) Independent Power Producer (ipp) Project.
8	Oman	21-Oct-21	Construct Multi Storey Car Parking In Knowledge Oasis Muscat.
9	Oman	19-Oct-21	Nakhl Integrated Housing Development Project.
10	Oman	19-Oct-21	Al Seeb Integrated Housing Development Project.
	Oman	19-Oct-21	Bidbid Integrated Housing Development Project.
	Oman	19-Oct-21	Al Amerat 2 Integrated Housing Development Project.
	Oman	19-Oct-21	Al Amerat 1 Integrated Housing Development Project.
	Oman	14-Oct-21	Salalah2.
	Oman	13-Oct-21	Enhance Sewage And Treated Water Networks In The Wilayat Of Seeb And Airport Heights In Muscat Governorate.
	Oman	12-Oct-21	100mw Solar Pv Farm In Suhar Industrial City.
	Oman	12-Oct-21	Rehabilitate Southern Runway And Air Corridors Of Muscat International Airport (mc15) Project.
	Oman	9-Oct-21	Sadah Wind Power Project In Dhofar Governorate.
	Oman	9-Oct-21	Shaleem Wind Power Project In Dhofar Governorate.
	Oman	9-Oct-21	Al Jazir Wind Power Project In Dhofar Governorate.
	Oman	6-Oct-21	Canned Fish Project In Duqm Sez.
	Oman	6-Oct-21	Establish Duqm-2 Wind Power Project In Al Wusta.
	Oman	6-Oct-21	Establish Duqm-1 Wind Power Project In Al Wusta.
	Oman	6-Oct-21	Jaalan Bani Bu Ali Wind Power Project In North Al Sharqiyah.
	Oman	6-Oct-21	Sur Wind Power Project In North Al Sharqiyah.

	Oman	6-Oct-21	Establish An Industrial Project To Manufacture Plastic And Fiberglass Materials In Khazaen.
	Oman	4-Oct-21	Construct Telecommunication Tower In Al Saada Neighborhood.
	Oman	30-Sep-21	Establish An Electric Games Area In The Wilayat Of Adam.
	Oman	30-Sep-21	Establish An Electric Games Area In Samail Park.
	Oman	30-Sep-21	Develop Park In Misfat Al Abrieen In The Wilayat Of Al Hamra.
	Oman	30-Sep-21	Develop Bidbid Park.
	Oman	29-Sep-21	Develop Popular Heritage Neighbourhood Park In The Wilayat Of Nizwa.
	Oman	29-Sep-21	Develop Al Seha Al Hamr Park In Bidbid.
	Oman	29-Sep-21	Development And Operation Of Tanuf Park In The Wilayat Of Nizwa.
	Oman	29-Sep-21	Establish Number Of Barns For The Sale Of Livestock In The Wilayats Of Nizwa, Izki And Manah.
	Oman	28-Sep-21	Construction And Operation Of An Integrated Recreational Area In Jebel Shams In The Wilayat Of Al Hamra.
	Oman	28-Sep-21	Establish Commercial Complex In Bahla.
	Oman	28-Sep-21	Establish Commercial Complex In Wilayat Of Bidbid.
	Oman	28-Sep-21	Establish Some Commercial And Industrial Complexes In Jebel Akhdar.
	Oman	21-Sep-21	Cement Plant Expansion In Oman.
	Oman	21-Sep-21	Implement An Integrated Irrigation System In Al Saara Falaj And Al Buraimi Falaj In Buraimi Governorate.
	Oman	21-Sep-21	Tilal Al Irfan Urban Development Project In Muscat - First Phase.
	Oman	21-Sep-21	Develop Titanium Dioxide Production Plant In Sohar Free Zone.
	Oman	15-Nov-21	Yiti-yenkit Development Project.
	Oman	20-Sep-21	Develop Eco-tourism Project At Centering Around Khor Taqah Reserve In Dhofar Governorate.
	Oman	20-Sep-21	Develop Eco-tourism Project At Al Jabal Al Ahkdar In Al Dakhiliyah Governorate.
	Oman	20-Sep-21	Develop Eco-tourism Project In The Wilayat Of Al Kamil Al Wafi In South Al Sharqiyah Governorate.

	Oman	20-Sep-21	Smart City Pilot Project In Pdos Ras Al Hamra Residential And Leisure Community.
	Oman	14-Sep-21	Central 48 Rich And Lean Segregation Project.
	Oman	3-Sep-21	Musandam Airport.
	Oman	3-Sep-21	Construct Ring Road At Knowledge Oasis Muscat (kom) And Other Facilities.
	Oman	31-Aug-21	Implement Copper Project In Ghuzayn In Oman.
	Oman	25-Aug-21	Construct Linking Streets In Southern Al Ghubra Area In Bousher.
	Oman	10-Aug-21	Oman Broadband Infrastructure.
	Oman	10-Aug-21	Construct Sewege Treatment Plant At Sur Industrial City In Muscat.
	Oman	5-Aug-21	Establish The First Businessmen Hotel In Khazaen Economic City.
	Oman	5-Aug-21	Smart City Infrastructure In Oman.
	Oman	5-Aug-21	Fish Storage Centre In Sharbathat In The Wilayat Of Shalim And Al Hallaniyat Islands.
	Oman	2-Aug-21	Rehabilitate Arjout-sarfait Road.
	Oman	2-Aug-21	Construct Wadi Afoul Bridge.
	Oman	2-Aug-21	Construct Al Mughsail Bridge On The Raysout-al Mughsail Road In Dhfoar Governorate.
	Oman	2-Aug-21	Reconstruct Viaducts On Wadi Adonab.
	Oman	2-Aug-21	Construct New Plastic Industries Complex In Suhar Industrial City.
	Oman	28-Jul-21	Muscat Metro Network.
	Oman	27-Jul-21	Exploration And Development Of Block 66 In Oman.
	Oman	27-Jul-21	Exploration And Development Of Block 38 In Oman.
	Oman	27-Jul-21	Exploration And Development Of Block 23 In Oman.
	Oman	27-Jul-21	Develop Longest Zipline In Oman.
	Oman	27-Jul-21	Vertical Farming Project In Oman.
	Oman	23-Jul-21	Construct New Container Terminal At Duqm Port.
	Oman	20-Jul-21	Assessing Capacity-building Needs And Country-specific Priorities In Biodiversity (add On).
	Oman	15-Jul-21	Construct 80mw Power Plant In Special Economic Zone At Duqm, Oman.
	Oman	6-Jul-21	Muscat Pavilion Smart Office.
	Oman	5-Jul-21	Develop Greenfield Genoil Upgrading Refinery In

			Port Of Duqm.
	Oman	2-Jul-21	North Oman Solar Ipp.
	Oman	29-Jun-21	Maiden Satellite Project In Oman.
	Oman	28-Jun-21	enabling The Sultanate Of Oman To Prepare Its Second National Communication (snc) And Biennial Update Report (bur) To The Unfccc.
	Oman	21-Jun-21	Rehabilitate And Maintenance Of Road In Al Wadi Al Kabir Area.
	Oman	17-Jul-21	Khasab Industrial City In Musandam Governorate.
	Oman	8-Jun-21	Establish Cloud Computing Centre In The Sultanate.
	Oman	3-Jun-21	Construct Bio Methane Based Power Plant And Solar Pv Plant In Dhofar Governorate, Salalah Wilayat.
	Oman	3-Jun-21	Madayn Vehicle Complex (motcar).
	Oman	2-Jun-21	New Food Industries Centre At Khazaen Economic City.
	Oman	27-May-21	Construct 300 Telecom Towers In Oman.
	Oman	14-Jun-21	New Khazaen Central Vegetables And Fruit Market.
	Oman	19-May-21	Al Batinah Coast Highway First Phase - Completion Of The Road Leading To Asuwaiq Harbour.
	Oman	18-May-21	Construct 25 Gw Wind-solar Complex In The Al Wusta Governorate In Central Oman.
	Oman	12-May-21	Develop Port Shinas.
	Oman	12-May-21	Develop Port Khasab.
	Oman	11-May-21	Al Hafa Waterfront Development.
	Oman	11-May-21	Construct 32 Housing Units For Low-income People In The Wilayat Of Al Amerat, Muscat Governorate.
	Oman	5-May-21	Construct Oman Football Associations (ofa) New Building At Aseeb Sports Stadium.
	Oman	4-May-21	Develop High-quality Infrastructure Network At Khazaen Economic City.
	Oman	26-Apr-21	Install More Than 13000 Smart Led Lights In City Of Muscat.
	Oman	26-Apr-21	Desert Agriculture Project In Oman.
	Oman	17-Apr-21	Smart Electricity Meters Across Oman.
	Oman	12-Oct-21	Green Hydrogen And Green Ammonia Facility In Duqm.
	Oman	25-Mar-	Establish Physiotherapy And Rehabilitation Centre In

		21	Shinas.
	Oman	22-Mar-21	Develop Land And Quay Wall In Eastern Area At Sohar Port.
	Oman	22-Mar-21	Develop Industrial City At Al Rawdah.
	Oman	11-May-21	Airport City Development In Muscat.
	Oman	30-Sep-19	Sewerage Network Project In Sahlanoot Area In Salalah.
	Oman	3-Oct-19	St. Regis Al Mouj Muscat Resort.
	Oman	4-Oct-19	Community Mall In Al Khuwair Area In Bawshar.
	Oman	16-Oct-19	The Myriad, Muscat - Residential And Retail Complex.
	Oman	27-Jul-21	Duqm Dual Carriageway For Nr-32 Phase-1.
	Oman,	31-Oct-19	Oman Australia Cable (oac) Project.
	Oman	25-Nov-19	12 Accommodation Villages Development In Oman.
	Oman	10-Dec-19	Mixed-use Project In Al Mazunah Freezone.
	Oman	8-Mar-21	Construct Mazunah Facility Building.
	Oman	10-Dec-19	Greenfield Calcium Chloride Plant In Suhar.
	Oman	16-Dec-19	Construct Substations And Electricity Supply Between Wilayat Of Sohar And Dhahira Governorate.
	Oman	3-Jan-20	Oman Gate Tourism Project.
	Oman	20-Jan-20	Develop Eco-tourism Inns At Qalhat (sur).
	Oman	20-Jan-20	Develop Eco-tourism Inns At Wadi Tiwi (sur).
	Oman	20-Jan-20	Develop Eco-tourism Inns At Toal (dima Wa Attayeen).
	Oman	21-Jan-20	Develop Eco-tourism Inns At Ras Al Hadd (bahla).
	Oman	21-Jan-20	Develop Eco-tourism Inns At Al Safala (bahla).
	Oman	21-Jan-20	Develop Eco-tourism Inns At Al Mazaara (qurayat).
	Oman	22-Jan-20	Develop Eco-tourism Inns At Wadi Shab (sur).
	Oman	22-Jan-20	Develop Eco-tourism Inns At Wadi Ahan (suhar).
	Oman	3-Dec-20	Develop New Fishery Port At Sez In Duqm.
	Oman	24-Jan-20	Construct An Industrial-scale Dates Processing Complex In Wilayat Of Nizwa - Phase I.
	Oman	27-Jan-20	55km Musandam Road Project.
	Oman	27-Jan-20	Establish Maysan Square Duqm Business Park.
	Oman	28-Jan-20	Develop Eco-tourism Inns At Wadi Jizzi (suhar).
	Oman	28-Jan-20	Develop Eco-tourism Inns At Masah (al Buraimi).

	Oman	29-Jan-20	Develop Eco-tourism Inns At Wadi Hibi (suhar).
	Oman	29-Jan-20	Develop Eco-tourism Inns At Aseelah (jaalan Bani Bu Ali).
	Oman	31-Jan-20	Develop Eco-tourism Inns At Deera (dima Wa Attayeen).
	Oman	31-Jan-20	Develop Eco-tourism Inns At Al Ghabi (bidiya).
	Oman	3-Feb-20	Adam-thamrait Road Dualisation Project.
	Oman	6-Feb-20	Large-scale Water Transportation.
	Oman	7-Feb-20	Large-scale Water Transportation.
	Oman	12-Feb-20	Al Seef Luxury Waterfront Villas.
	Oman	24-Sep-20	Rusayl-Bidbid Road Expansion.
	Oman	26-Feb-20	Construct 400-key Branded 5-star Hotel In Hawana Salalah.
	Oman	27-Feb-20	Al Qurum Park Development Project.
	Oman	30-Sep-21	Hyport Duqm.
	Oman	8-Mar-21	Al Dakhiliyah Water Transmission System, Phase - Ii.
	Oman	6-Mar-20	Develop Tourism Project In Kahf Hayoor Area In Jabal Samhan In Dhofar Governorate.
	Oman	10-Apr-20	Mixed-use Project In Al Athaiba In Muscat Governorate.
	Oman	22-Jul-20	15 Mw Solar Park In Oman.
	Oman	12-Mar-20	Integrated Training Destination In Oman.
	Oman	16-Mar-20	Hospital In Al Mazyouna.
	Oman	17-Mar-20	Construct Cable Car Manufacturing And Assembly Plant In Salalah Free Zone.
	Oman	3-Jul-20	Construct Flood Protection Dam At Wadi Adawnib (a1b) In Wilayat Salalah Dhofar Governorate.
	Oman	3-Jul-20	Construct Flood Protection Dam At Wadi Annar And River Training At Salalah Marine Port- Dhofar Governorate.
	Oman	23-Mar-20	Construct Remaining Work of Mahlah Ghobrat Altam Ismaya Road In Wilayat Damaa And Altaeen-Ash Sharqiyah North.
	Oman	23-Mar-20	Construct New Rustaq 400/132 Kv Grid Station And Associated 400 Kv Overhead Line From Ibri To New Rustaq.
	Oman	23-Mar-20	Construct 400 Kv Over Head Line From New Rustaq Gs To Jefnien Gs.
	Oman	11-Apr-20	Construct 400 Kv Grid Station To Connect Existing Grid In South And North With Petroleum

			Development Oman (pdo) Area.
	Oman	14-Apr-20	Construct Staff Accommodations In Sezad.
	Oman	15-Apr-20	Establish Vehicle Trade Centre At Al Mazunah Free Zone.
	Oman	15-Apr-20	Construct Portable Water Supply Systems For Remote Coastal Areas At Musandam Governorate.
	Oman	21-Apr-20	Provide Telecom Services To 500 Rural Villages In Oman.
	Oman	22-Apr-20	Sohar East Development Project.
	Oman	29-Apr-20	Implement Central Livestock And Slaughterhouse Project In The Wilayat Of Al Suwaiq.
	Oman	7-May-20	Ibri Ii 500mw Solar Pv Independent Power Plant Project.
	Oman	11-May-20	Construct Ibri Science And Innovation Centre Project In The Wilayat Of Ibri.
	Oman	3-Jun-20	Establish An Industrial City Within Industrial And Logistics Complex In Marmul.
	Oman	4-Jun-20	Development Of The Second Part Of Road 32 In The Special Economic Zone Of Duqm.
	Oman	4-Jun-20	Housing Program.
	Oman	8-Jun-20	Establish New Shrimp Production Farm In South Al Sharqiyah Governorate.
	Oman	10-Jun-20	Rayhaan By Rotana At Al Barakah.
	Oman	13-Jun-20	Construct Five New Medicine, Healthcare Product Factories In Oman.
	Oman	15-Jun-20	Develop Daba Fishing Port In Governorate Of Musandam.
	Oman	15-Jun-20	Establish Fish Collection Centre At Hasik Area In Niyabat Of Sadah In Governorate Of Dhofar.
	Oman	27-Apr-21	Establish Fish Collection Centre In Hayatam And Ras Madrakah Areas In The Wilayat Of Duqm In Governorate Of Al Wusta.
	Oman	15-Jun-20	Establish Fish Collection Centre At Khuwaimiya Area In The Wilayat Of Jaalan Bani Bu Ali In Governorate Of South Al Sharqiyah.
	Oman	18-Jun-20	Construct Juman Two Apartments.
	Oman	25-Jun-20	Develop Ocean View Project.
	Oman	26-Aug-21	Construct New Industrial Zone In Northwestern Ibri City Near Border With The Uae.

	Oman	18-Sep-20	Construct Al Seeb Internal Roads Phase 1.
	Oman	8-Jul-20	Establish Technology City In Salalah Free Zone.
	Oman	9-Jul-20	Establish Low Sulphur Fuel Oil (lsfo) Refinery In Oman.
	Oman	14-Jul-20	Install Recreational Rides For Six Public Parks In Sohar.
	Oman	14-Jul-20	Construct New 400kv Manah Grid Station With Associated Overhead Transmission Line.
	Oman	14-Jul-20	Construct New 400kv/132kv Al Jefnen Substation With Associated Overhead Transmission Line.
	Oman	22-Jul-20	Develop Central Market In Salalah.
	Oman	22-Jul-20	Develop Gardens, Parks, Public Squares, And Main Streets In Salalah And Some States.
	Oman	27-Sep-21	Construct Dual Carriageway Road For Nr 32 Phase 2 At Duqm.
	Oman	24-Aug-20	Qarn Alam Congeneration Power Project.
	Oman	29-Aug-20	Set Up F&b Innovation Unit At General Directorate Of Agricultural And Animal Research.
	Oman	29-Aug-20	Construct Bitumen Refinery At Sohar Industrial Port.
	Oman	31-Aug-20	Construct New Resort (pearl Resort) Near Al Ashkara Beach, In Wilayat Of Jalan Bani Bu Ali.
	Oman	17-Aug-21	Construct Second Fishermen Village In Wilayat Of Masairah In Governorate Of South Al Sharqiyah.
	Oman	8-Jun-21	Construct Fishermen Village In Wilayat Of Mahout In Village Of Sirab.
	Oman	9-Sep-20	Yetti Tourism Project At Yetti.
	Oman	9-Sep-20	Develop Bassah Beach In Wilayat Of Khasab.
	Oman	10-Sep-20	Establish Cold Storage Warehouses At Port Of Duqm Area.
	Oman	10-Sep-20	Roll Out Telecom Tower Infrastructure For Mobile Operators Within The Port Concession Land.
	Oman	17-Sep-20	Small Pelagic Fisheries Development And Management Plan In The Sultanate Of Oman.
	Oman	23-Jun-21	Construct New Sultan Qaboos Hospital In Salalah.
	Oman	10-Jun-21	Khasab Convention And Exhibition Centre Establishment.
	Oman	29-Sep-20	Develop And Upgrade Electrical Network Infrastructure In Special Economic Zone At Duqm (sezd).
	Oman	29-Sep-20	Establish Dhamani Electronic Platform In Oman.

	Oman	14-Oct-20	Construct Obstetric And Pediatric Care Hospital In Wilayat Of Suhar.
	Oman	14-Oct-20	Construct Obstetric And Pediatric Hospital In Muscat.
	Oman	20-Oct-20	Refurbish Southern Runaway And Taxiway System At Developmental Of Muscat International Airport.
	Oman	27-Feb-20	Al Qurum Park Development Project.
	Oman	26-Feb-20	Construct 400-key Branded 5-star Hotel In Hawana Salalah.
	Oman	24-Sep-20	Rusayl-Bidbid Road Expansion.
	Oman	12-Feb-20	Al Seef Luxury Waterfront Villas.
	Oman	7-Feb-20	Large-scale Water Transportation.
	Oman	6-Feb-20	Large-scale Water Transportation.
	Oman	3-Feb-20	Adam-thamrait Road Dualisation Project.
	Oman	31-Jan-20	Develop Eco-tourism Inns At Al Ghabi (bidiya).
	Oman	31-Jan-20	Develop Eco-tourism Inns At Deera (dima Wa Attayeen).
	Oman	29-Jan-20	Develop Eco-tourism Inns At Aseelah (jaalan Bani Bu Ali).
	Oman	29-Jan-20	Develop Eco-tourism Inns At Wadi Hibi (suhar).
	Oman	28-Jan-20	Develop Eco-tourism Inns At Masah (al Buraimi).
	Oman	28-Jan-20	Develop Eco-tourism Inns At Wadi Jizzi (suhar).
	Oman	27-Jan-20	Establish Maysan Square Duqm Business Park.
	Oman	27-Jan-20	55km Musandam Road Project.
	Oman	24-Jan-20	Construct An Industrial-scale Dates Processing Complex In Wilayat Of Nizwa - Phase I.
	Oman	3-Dec-20	Develop New Fishery Port At Sez In Duqm.
	Oman	22-Jan-20	Develop Eco-tourism Inns At Wadi Ahan (suhar).
	Oman	22-Jan-20	Develop Eco-tourism Inns At Wadi Shab (sur).
	Oman	21-Jan-20	Develop Eco-tourism Inns At Al Mazaara (qurayat).
	Oman	21-Jan-20	Develop Eco-tourism Inns At Al Safala (bahla).
	Oman	21-Jan-20	Develop Eco-tourism Inns At Ras Al Hadd (bahla).
	Oman	20-Jan-20	Develop Eco-tourism Inns At Toal (dima Wa Attayeen).
	Oman	20-Jan-20	Develop Eco-tourism Inns At Wadi Tiwi (sur).
	Oman	20-Jan-20	Develop Eco-tourism Inns At Qalhat (sur).
	Oman	3-Jan-20	Oman Gate Tourism Project.
	Oman	16-Dec-19	Construct Substations And Electricity Supply Between Wilayat Of Sohar And Dhahira Governorate.
	Oman	10-Dec-	Greenfield Calcium Chloride Plant In Suhar.

		19	
	Oman	8-Mar-21	Construct Mazunah Facility Building.
	Oman	10-Dec-19	Mixed-use Project In Al Mazunah Freezone.
	Oman	25-Nov-19	12 Accommodation Villages Development In Oman.
	Oman,	31-Oct-19	Oman Australia Cable (oac) Project.
	Oman	27-Jul-21	Duqm Dual Carriageway For Nr-32 Phase-1.
	Oman	16-Oct-19	The Myriad, Muscat - Residential And Retail Complex.
	Oman	4-Oct-19	Community Mall In Al Khuwair Area In Bawshar.
	Oman	3-Oct-19	St. Regis Al Mouj Muscat Resort.
	Oman	30-Sep-19	Sewerage Network Project In Sahlanoot Area In Salalah.
	Oman	11-May-21	Airport City Development In Muscat.
	Oman	26-Sep-19	Non-hazardous Waste And Waste Yards Management In Pdos Concession Area.
	Oman	26-Sep-19	Main Oil Line In North Oman Maintenance Work Project.
	Oman	26-Sep-19	Main Oil Line In Central Oman Maintenance Work Project.
	Oman	16-Sep-19	Access Management System For All Current And Future Industrial Cities.
	Oman	19-Aug-19	Mixed-use Development Habitat In Al Khuwair Near Muscat International Airport.
	Oman	30-Jul-19	New 400kv Transmission Line Construction From Izki To Duqm.
	Oman	20-May-21	Mahan Solar Ii Project.
	Oman	20-May-21	Mahan Solar I Project.
	Oman	25-Sep-19	Calorie-free Sugar Factory In Oman.
	Oman	16-Mar-20	Sixth Building (kom 6) Construction In Knowledge Oasis Muscat (kom).
	Oman	23-May-19	An Artificial Reef Project In Liwa.
	Oman	23-May-19	Wadi Dayqah Dam And Reservoir.
	Oman	16-May-19	Dualisation Of Adam-thumrait Road Project.
	Oman	16-May-19	Al Sharqiyah Algae Farm.

	Oman	13-May-19	Addition Of Two Lanes Construction To Dualisation Of Rusail-nizwa Road.
	Oman	21-Oct-21	Road From Duqm Airport To Ras Markaz.
	Oman	8-May-19	Modern Steel Mill In Raysut Industrial City.
	Oman	2-May-19	Bazaar Project In Wilayat Of Suhar.
	Oman	24-Jan-20	25mw Solar Power Plant In Oman.
	Oman	17-Apr-19	Offices And Housing Construction In Samail.
	Oman	17-Apr-19	Offices And Housing Construction In Al Rusayl.
	Oman	17-Apr-19	Offices And Housing Construction In Knowledge Oasis Muscat.
	Oman	20-Feb-21	Mabrouk Gas Field Project [Mabrouk North East Deep Gas Field Development].
	Oman	26-Mar-19	Research Centres In Special Economic Zone In Duqm (sezd).
	Oman	25-Mar-19	Petroleum Coke Calcining Plant In Sohar.
	Oman	18-Mar-19	Dubbed Wind 2023 In Duqm.
	Oman	1-Nov-19	Building That Contains Offices, Hotel, Residntial And Commercial Units At Ghala Heights In Muscat.
	Oman	11-Feb-19	Major Water Transmission Pipeline Project In Al Sharqiyah Governorate.
	Oman	11-Feb-19	Philex Pharmaceuticals Complex In Salalah.
	Oman	2-May-20	Fishery Harbour In Seeb (muscat Governorate).
	Oman	12-Jan-21	Nizwa Industrial City - Phases 3 And 4.
	Oman	2-Jan-19	Rusayl Industrial City.
	Oman	26-Dec-18	Qarn Alam Co-generation Project In Central Oman.
	Oman	1-Apr-19	Calcined Petroleum Coke (cpc) Plant In Sohar Freezone Area.
	Oman	14-Dec-18	Seeb Sewage Treatment Plant (stp) - Phase 2.
	Oman	9-Jul-20	Oil Block 58.
	Oman	25-Oct-18	Barka Marina.
	Oman	16-Oct-18	Oman Nano City Project.
	Oman	8-Oct-18	Solar 2022 Ipp.
	Oman	5-Apr-19	50mw Bio-gas Plant At Barka.
	Oman	8-Sep-18	Duqm Independent Power And Water Plant Project.
	Oman	31-Aug-18	Sultanate First National Hazardous Waste Treatment Facility.

	Oman	30-Aug-18	Movenpick Hotel At Muscat Airport.
	Oman	8-Aug-18	Mammoth New Water Desalination Plant.
	Oman	23-Jul-18	Tourism And Hotel Sites In North Al Batinah.
	Oman	21-Jul-18	4-star Movenpick Hotel Bowsher.
	Oman	24-Jul-19	Masirah Island First Independent Water Project (iwp).
	Oman	5-Jul-18	Madinat Al Irfan Urban Development (phase 1).
	Oman	5-Jul-18	Madinat Al Irfan Project - Second Phase.
	Oman	4-Jul-18	Khazaen Economic City.
	Oman	16-Jan-20	North-south Grid Interconnection Project.
	Oman	12-Jun-18	Tranche 3 Of Lamar Project (funding Programme).
	Oman, Saudi Arabia, United Arab Emirates	4-Aug-21	Etihad Rail - Stage 2.
	Oman	11-Oct-19	Duqm Refinery & Petrochemical Complex - Utilities & Offsites (package 3).
	Oman	4-Jun-21	Duqm Refinery - Phase 2.
	Oman	12-Sep-19	Mandarin Oriental Hotel In Muscat.
	Oman	3-May-18	Cables And Electric Connectors.
	Oman	3-May-18	200 Mw Duqm Wind Ipp.
	Oman	3-May-18	200 Mw Dhofar Wind Ipp.
	Oman	3-May-18	150 Mw Dhofar Ii Wind Ipp.
	Oman	3-May-18	500 Mw Solar Photovoltaic (pv) At Adam.
	Oman	22-Oct-21	Manah 1 solar photovoltaic (PV) independent power producer (IPP) project.
	Oman	28-Sep-21	Establish Commercial Complex In Wilayat Of Bidbid.
	Oman	28-Sep-21	Establish Commercial Complex In Bahla.
	Oman	28-Sep-21	Construction And Operation Of An Integrated Recreational Area In Jebel Shams In The Wilayat Of Al Hamra.
	Oman	29-Sep-21	Establish Number Of Barns For The Sale Of Livestock In The Wilayats Of Nizwa, Izki And Manah.
	Oman	29-Sep-21	Development And Operation Of Tanuf Park In The Wilayat Of Nizwa.
	Oman	29-Sep-21	Develop Al Seha Al Hamr Park In Bidbid.

	Oman	29-Sep-21	Develop Popular Heritage Neighbourhood Park In The Wilayat Of Nizwa.
	Oman	30-Sep-21	Develop Bidbid Park.
	Oman	30-Sep-21	Develop Park In Misfat Al Abrieen In The Wilayat Of Al Hamra.
	Oman	30-Sep-21	Establish An Electric Games Area In Samail Park.
	Oman	30-Sep-21	Establish An Electric Games Area In The Wilayat Of Adam.
	Oman	4-Oct-21	Construct Telecommunication Tower In Al Saada Neighborhood.
	Oman	6-Oct-21	Establish An Industrial Project To Manufacture Plastic And Fiberglass Materials In Khazaen.
	Oman	6-Oct-21	Sur Wind Power Project In North Al Sharqiyah.
	Oman	6-Oct-21	Jaalan Bani Bu Ali Wind Power Project In North Al Sharqiyah.
	Oman	6-Oct-21	Establish Duqm-1 Wind Power Project In Al Wusta.
	Oman	6-Oct-21	Establish Duqm-2 Wind Power Project In Al Wusta.
	Oman	6-Oct-21	Canned Fish Project In Duqm Sez.
	Oman	9-Oct-21	Al Jazir Wind Power Project In Dhofar Governorate.
	Oman	9-Oct-21	Shaleem Wind Power Project In Dhofar Governorate.
	Oman	9-Oct-21	Sadah Wind Power Project In Dhofar Governorate.
	Oman	12-Oct-21	Rehabilitate Southern Runway And Air Corridors Of Muscat International Airport (mc15) Project.
	Oman	12-Oct-21	100mw Solar Pv Farm In Suhar Industrial City.
	Oman	13-Oct-21	Enhance Sewage And Treated Water Networks In The Wilayat Of Seeb And Airport Heights In Muscat Governorate.
	Oman	14-Oct-21	Salalah2.
	Oman	19-Oct-21	Al Amerat 1 Integrated Housing Development Project.
	Oman	19-Oct-21	Al Amerat 2 Integrated Housing Development Project.
	Oman	19-Oct-21	Bidbid Integrated Housing Development Project.
	Oman	19-Oct-21	Al Seeb Integrated Housing Development Project.
	Oman	19-Oct-21	Nakhl Integrated Housing Development Project.
	Oman	21-Oct-21	Construct Multi Storey Car Parking In Knowledge Oasis Muscat.
	Oman	22-Oct-21	500 Megawatts (mw) Manah 2 Solar Photovoltaic (pv) Independent Power Producer (ipp) Project.
	Oman	25-Oct-21	Install Solar Photovoltaic Systems At Homes.

	Oman	26-Oct-21	Road Instatement Works And Repair Of Damages Caused By Tropical Cyclone Shaheen At Al Batinah Highway..
	Oman	1-Nov-21	High-tech Plant At Rusayl Industrial City Muscat.
	Oman	1-Nov-21	Construct 35 Housing Units For A Number Of Citizens Whose Houses Were Damaged By Cyclone Shaheen In The North Al Batinah Governorate.
	Oman	8-Nov-21	Construct 22 Housing Units At Hai Al Naseem Neighbourhood In Barka.
	Oman	8-Nov-21	Suhar Industrial City - Phase 7.

Appendix B Survey Questionnaire

Dear survey participants,

This study is intended to investigate the influence of total quality management, institutional factors, project governance organization citizenship behavior and project governance on performance of ongoing projects in Oman. Currently I am a doctorate student in University Malaysia Pahang and my field of research is on project management.

Your personal view and experience as a project manager towards the importance of total quality management for project performance will provide valuable inputs to this doctoral research.

The study questions are designed to facilitate your response to your perceptions and practices relating to preference, choice and decisions pertaining to the construction projects. All responses will be treated with confidence and be used only for academic purposes.

Should you require further clarification, please do not hesitate to contact the researcher at the address shown below.

Sincerely,

Wafa Rashid Al Alyani
PhD Candidate
Faculty of Industrial Management,
Universiti Malaysia Pahang (UMP)
Email: wafa.r@uob.edu.om

SECTION A(Please select one of the options provided below :)

1) Age

a) Under 20 years old ☐
b) 20 – 29 ☐
c) 30 – 39 ☐
d) 40 – 49 ☐
e) 50 or above ☐

2) Gender

a) Male ☐
b) Female ☐

3) Qualification

a) Diploma ☐
b) Bachelor degree ☐
c) Master degree ☐
d) PhD ☐
e) Professional ☐

4) Number of employees working in your organization?

a) Less than 50 employees ☐
b) 51 to 100 employees ☐
c) 101 to 250 employees ☐
d) 251 to 500 employees ☐
e) Over 500 employees ☐

5) Sector

a) Agriculture ☐
b) Telecommunications ☐
c) Education ☐
d) Food & Beverages ☐
e) Oil & Gas ☐
f) Information Technology ☐
g) Engineering works & Seaports ☐
h) Municipal services ☐
i) Power & Energy ☐
j) Buildings & Constructions ☐

6) Number of experiences as project manager.

a) Less than 1 year ☐
b) 1 to 5 years ☐

c) 5 to 10 years ☐
d) Above 10 years ☐

7) Role in the ongoing project

a) Project manager ☐
b) Project consultant ☐
c) Project contractor ☐
d) Others ☐

SECTION B: Project Details:
Kindly provide the below details for the current ongoing projects:

1) Project Amount _____ (in Omani Rial)

2) Project Location _____

3) Project commences in which year? _____

4) Decision making Authority in the project is high

Strongly Disagree ☐
Disagree ☐
Neutral ☐
Agree ☐
Strongly Agree ☐

SECTION C: Please tick the appropriate box to indicate whether you agree or disagree with the following statements

The score level is described as 7 = strongly agree 6 = slightly agree, 5 = agree, 4 = not decided, 3 = disagree, 2 = slightly disagree and 1 = strongly disagree

Sr. No		Strongly	strongly	Disagree	agree	
Continuous Quality Improvement						
CI1	Competitive bench-marking is made against primary competitors	1	2	3	4	5
CI2	Bench-marking helps in improving system and processes.	1	2	3	4	5
CI3	Problem-solving and continuous improvement processes is based on facts and systematic analysis.	1	2	3	4	5
CI4	Our company has Informal bench-marking and other forms of information acquisition and sharing with organization in different sectors and industries to identify best practices for improvements and opportunities.	1	2	3	4	5
CI5	We have a culture of continuous improvement.	1	2	3	4	5

CI6	Our Company use self-assessment tools and other mechanisms to track and improve performance gaps in the implementation and effectiveness of system, processes and practices	1	2	3	4	5
CI7	Elements of quality management structure are in place to manage the organization's quality journey	1	2	3	4	5
Top Management Commitment						
TM1	Top executives know their responsibility for quality	1	2	3	4	5
TM2	Top management actively develops one integrated quality plan to meet business objectives	1	2	3	4	5
TM3	Acceptance of responsibility for quality by major department heads within the organization	1	2	3	4	5
TM4	Degree of comprehensiveness of the quality plan within the organization.	1	2	3	4	5
TM5	Amount of review of quality issues in organizational top management meetings	1	2	3	4	5
TM6	Extent to which quality goals and policy are understood within the organization	1	2	3	4	5
Customer Focus						
CF1	Comprehensive identification of customers and customers' needs and alignment of processes to satisfy these needs.	1	2	3	4	5
CF2	The use of customer surveys and feedback process, and tracking of other key measures to asses' customer satisfaction.	1	2	3	4	5
CF3	Our customers give us feedback on quality and delivery performance	1	2	3	4	5
CF4	We inform customers' current and future needs and expectations to our employees effectively	1	2	3	4	5
CF5	Customer complaints are used as input to improve our processes	1	2	3	4	5
Project Strategy						
PS1	Project size is the decisive factor in determining the extent of the project management policies and procedures.	1	2	3	4	5
PS2	Priority of the project determines the extent of top management support.	1	2	3	4	5
PS3	Appropriate level of communication plan with respect to project governance must be in place to develop a cohesive project team.	1	2	3	4	5
PS4	Extent of participation in decision making is influenced by changes in project goals, cohesive project teams and project priorities.	1	2	3	4	5
PS5	Collaborative culture helps in developing a clearly defined project mission.	1	2	3	4	5
Employee involvement						
EI1	The entire organization understands that each individual and each process has internal customer and	1	2	3	4	5

	suppliers					
EI2	Employees are held responsible for error-free output to some extent.	1	2	3	4	5
EI3	Employee Surveys and tracking of other key measures are used to assess employee support of, and involvement in the quality initiative	1	2	3	4	5
EI4	Employee suggestions are considered by the management and employees are given a deadline for management response to these suggestions.	1	2	3	4	5
EI5	Employees fully understand the need to change from the existing situation to a Total quality management philosophy.	1	2	3	4	5
EI6	Employees support the organization's quality initiative	1	2	3	4	5
Coercive Pressure						
CP1	Projects that do not meet the legislated standards faces a significant thread for legal prosecution.	1	2	3	4	5
CP2	Projects are aware of the fines and penalties associated with irresponsible behavior.	1	2	3	4	5
CP3	If the project commits an environmental or people related infraction, the consequence would be negative reports.	1	2	3	4	5
CP4	There are negative consequences for projects that fails to comply with the government regulations related to environment or people.	1	2	3	4	5
Normative Pressure						
NP1	Our project has professionals that encourage the organization to become more environmentally responsible	1	2	3	4	5
NP2	Our industry expects all projects to be environmental and socially responsible	1	2	3	4	5
NP3	Being environmentally and socially responsible is a requirement for projects to be part of the industry.	1	2	3	4	5
Sportsmanship						
SP1	I am the classic “squeaky wheel” that always needs greasing (R)	1	2	3	4	5
SP2	I consume a lot of time complaining about trivial matters (R)	1	2	3	4	5
SP3	I tend to make “Mountains out of molehills” (R)	1	2	3	4	5
SP4	I always focus on what is wrong, rather than the positive side (R)	1	2	3	4	5
SP5	I always find fault with what the organization is doing (R)	1	2	3	4	5
Altruism						
A1	I help others who have heavy workloads	1	2	3	4	5
A2	I am always ready to lend a helping hand to those	1	2	3	4	5

	around me					
A3	I help others who have been absent	1	2	3	4	5
A4	I am willing to help others who have work-related problems	1	2	3	4	5
A5	I help orient new people even though it is not required	1	2	3	4	5
Courtesy						
C1	I try to avoid creating problems for co-workers	1	2	3	4	5
C2	I consider the impact of my actions on co-workers	1	2	3	4	5
C3	I do not abuse the rights of others	1	2	3	4	5
C4	I take steps to try to prevent problems with other workers	1	2	3	4	5
C5	I am mindful of how my behavior affects other people's jobs	1	2	3	4	5
Conscientiousness						
CO1	I am one of the most conscientious employees	1	2	3	4	5
CO2	I believe in giving an honest day's work for an honest day's pay	1	2	3	4	5
CO3	My attendance at work is above the norm	1	2	3	4	5
CO4	I do not take extra breaks	1	2	3	4	5
CO5	I obey company rules and regulations even when no one is watching	1	2	3	4	5
Project Governance		Completely inaccurate				Completely accurate
PG1	The expectancy that parties keep each other informed about changes and events	1	2	3	4	5
PG2	Problems are treated as joint responsibilities	1	2	3	4	5
PG3	Flexibility in response to change requests	1	2	3	4	5
PG4	Adjusting the relationship to cope with changes	1	2	3	4	5
PG5	Flexibility in working out a new deal in case of unexpected situations	1	2	3	4	5
PG6	Provision of informal information sharing	1	2	3	4	5
PG7	Frequent and informal information sharing	1	2	3	4	5
PG8	Provision of proprietary information if important for the other party.	1	2	3	4	5
PG9	Commitment to improve the relationship as a whole	1	2	3	4	5
PG10	Parties do not mind owing each other favors.	1	2	3	4	5
Project Performance		Strongly Disagree				strongly agree
P1	Generally, our project meets their time objectives	1	2	3	4	5
P2	We are good at delivering projects within budgets	1	2	3	4	5
P3	Project specifications are usually met by the time of handover	1	2	3	4	5

P4	Key stakeholders and end users are usually happy with the results from our projects.	1 2 3 4 5

Thank you for your kind cooperation.

Appendix C: Research Publications

Wafa Rashid Alalyani and Chia Kuang Lee (2024). Investigating factors affecting project performance moderated by project governance. *Problems and Perspectives in Management*, *22*(1), 268-278. doi:10.21511/ppm.22(1).2024.23 **(Scopus Indexed Published)**

Wafa Rashid Alalyani and Chia Kuang Lee (2024). Determinants of Total Quality Management and Institutional Pressure towards Project Performance: A Review of Literature. International Journal of Academic Research in Business and Social Sciences, 14(2), 38-48. Doi: 10.6007/IJARBSS/v14-i2/19075 **(Peer Review Published)**

Wafa Rashid Alalyani and Chia Kuang Lee (2024). Investigating moderating effect of project governance between total quality management and project performance. WSEAS Transactions on Business and Economics. **(Scopus Indexed Accepted)**

Wafa Rashid Alalyani and Chia Kuang Lee (2024). A Systematic review on identifying factors influencing total quality management implementation. Ncon conference proceedings 2022_201 **(Conference paper)**