



**The Influence of Technical and Organisational Risks on the  
Success of Construction projects  
The Case Study  
Sheikh Zayed Housing Programme – U.A.E**

تأثير المخاطر التقنية والتنظيمية على نجاح مشاريع البناء  
برنامج الشيخ زايد للإسكان – دولة الإمارات العربية المتحدة

by

**YOUSEF ABDULRAHMAN SALEM ALNUAIMI**

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of the requirements for the degree of  
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**Dr.Khalid Al Marri**  
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## DECLARATION

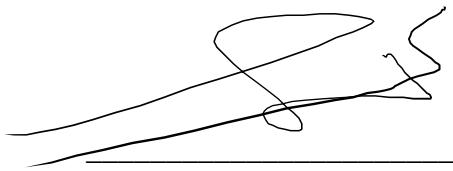
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## Abstract

It was noticed that Sheikh Zayed housing programme delayed more than it was expected by the respective stakeholders. Therefore, the study assessed the stakeholders risks that caused delay in the UAE housing programme. The main risks studied included the stakeholders organisational as well as the technical risks. In order to attain conclusive findings, the study adopted the following research questions;

- To evaluate the stakeholder's technical risks causing project delays
- To evaluate the stakeholder's organisational risks causing project delays
- Establish The direct relationship between the stakeholders technical and organisational risks.

The literature showed that the theories like the stakeholders as well as systems theory explains exactly what happens such that a project progress is hampered. Since the organisational and technical risks of the stakeholders were quantifiable, the study used quantitative research paradigm to explore the research questions.

It was found that the Sheikh Zayed housing programme completion period was indeed affected by the organisational and technical risks of the stakeholders. As such the prevalent technical risks included; technical skills, technical changes in the projects scope, lack of project management system (information and communication technology) and poor material as well as project scope definition. The organisational risks of the stakeholders included; leadership, poor financial handling practices, adopted culture, lack of human resource skills, poor communication channels and incompetent cultures. The tested hypothesis showed that the stakeholders technical and organisational risks had an impact on the overall project success. All the P-values scored below 0.05 – which was the maximum acceptable level.

It was also recommended that the project manager should align all the parties to work together while introducing project management systems to integrate all the stakeholders as synonymous elements and work together seamlessly. It was also recommended that the stakeholders should leverage the benefits of Earned Value Management as well as Building Information Modelling to generate precise information to the stakeholders and avoid assumptions. Finally, the researcher recommended that future research should assess the impact of confounding variables and their relationship with the stakeholders risks.

## نبذة مختصرة

النظر إلى مشاريع برنامج الشيخ زايد للإسكان والتي يقوم بتنفيذها أو متابعتها لوحظ وجود تأخر أكثر مما كان متوقعاً من قبل جميع أطراف التعاقد. لذلك ، تقوم هذه الدراسة على تحديد المخاطر الرئيسية التي سببت التأخير في المشاريع. وشملت المخاطر الرئيسية التي تمت دراستها المخاطر التنظيمية وكذلك المخاطر الفنية، ومن أجل الحصول على نتائج واقعية اعتمدت الدراسة نقاط بحث رئيسية :-

- تقييم المخاطر الفنية لأطراف التعاقد المسئولة للتأخير في المشروع.
- تقييم المخاطر التنظيمية لأطراف التعاقد المسئولة للتأخير في المشروع.
- تأسيس العلاقة المباشرة بين المخاطر الفنية والتنظيمية لأطراف التعاقد.

أظهرت الدراسة البحثية أن أن أطراف التعاقد ونظم العمل في المشروع لها علاقة في أسباب تأخر المشروع، وبما أن المخاطر التنظيمية والتكنولوجية لأطراف التعاقد قابلة لقياس الكمي، فقد استخدمت الدراسة نموذج البحث الكمي لاستكشاف أسئلة البحث.

وقد تبين أن فترة إنجاز مشاريع برنامج الشيخ زايد للإسكان تأثرت بالفعل بالمخاطر التنظيمية والتكنولوجية لأطراف التعاقد، على هذا النحو شملت المخاطر الفنية السائدة. المهارات التقنية، والتغيرات التقنية في نطاق المشاريع، وعدم وجود نظام إدارة المشاريع (تكنولوجيا المعلومات والاتصالات) والمواد وكذلك تعريف نطاق المشروع. كما تشمل المخاطر التنظيمية لأطراف التعاقد ؛ القيادة ، سوء ممارسات التعامل المالي ، الثقافة المعتمدة ، نقص مهارات الموارد البشرية ، ضعف قنوات الاتصال والثقافات غير الكفؤة. كما أظهرت الدراسات التي تم اختبارها أن المخاطر الفنية والتنظيمية لأطراف التعاقد كان لها تأثير على نجاح المشروع ككل. وسجلت جميع قيم  $P$  أقل من 0.05 - وهو الحد الأقصى المقبول.

توصي الدراسة بأن يقوم مدير المشروع بحث جميع الأطراف للعمل معًا أثناء إدخال أنظمة إدارة المشروع لدمج جميع أصحاب المصلحة وأطراف التعاقد كعناصر مترادفة والعمل معًا بسلامة. كما تمت التوصية بأن يستفيد أصحاب المصلحة وأطراف التعاقد من مزايا إدارة القيمة المكتسبة بالإضافة إلى بناء نماذج المعلومات لتوليد معلومات دقيقة لأصحاب المصلحة وتجنب الافتراضات. وأخيراً ، أوصى الباحث بأن الأبحاث المستقبلية يجب أن تقيّم تأثير المتغيرات المربكة وعلاقتها بمخاطر الجهات المعنية.

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## Chapter One

### Introduction

#### 1.0 Background Information

The construction industry is a key pillar in an economy development. It is on the basis of a stable infrastructure that an economy other productive activities are supported. Therefore, the construction industry is a vital component in adding development. Sev (2009) noted that in the categorisation of nations into the high, middle and low development nations, the construction and developed infrastructure component plays a key role. Although the industry has differing sectors, one of the sectors that have a direct impact on the socio-economic standards of the populace is the housing sector (Kent & Becerik-Gerber, 2010).

This is the construction industry sector mandated with the role and duty of ensuring that the population acquires quality, sufficient, and sustainable housing. In the UAE, the construction industry is among the fastest growing industries in the MENA region, only comparable to the Qatar industry growth rate. In fact, on a global scale, a World Economic Forum 2015, ranked the nations infrastructure, derived from its construction industry 17<sup>th</sup> globally (Kane, 2015). The need to develop and expedite effectiveness in the industry has been further fuelled by the nations winning the bid to host the global 2020 world Expo.

Although in most countries the construction industry operations are controlled and determined by the market forces of demand and supply, the government is a critical industry player. This is due to the fact that most of the infrastructural projects are capital intensive and thus require the government's support and contributions to acquire the required capital. Secondly, the government as a stakeholder is involved in the management and regulation of the industry. As such, the industry is directly controlled and managed under policy guidelines developed by the government through differing authorities. Moreover, the government plays an inspection and evaluation role where construction and housing projects developed must be checked and approved for quality to guarantee public safety (Omar, 2008).

Other interested stakeholders in the industry are the owners, the government; this is a different scenario for privately funded projects. In this regard, the owners are the finances of such housing projects such as the real estate developers. Others stakeholder with a high interest and power rating

in the construction industry include the industry consultants and the contractors among other stakeholders who vary on a project by project basis. From the above analysis, it is evident that the industry operations are hedged on the contributions of the different stakeholders towards the ultimate achievement of set out project objectives and deliverables at the start.

### **1.1 Project Description: Sheikh Zayed Housing Programme**

The study applied a case study of a housing programme project in the UAE construction industry. The study development and inclusion of a housing program was based on two main inclusion criterion dimensions. On the one hand, the case study should incorporate a government project. This was due to the availability of such information. In the case of privately funded housing projects, it would have been at the discretion of the developers and owners to diverge critical data such as on costs and on time project delivery, as well as the interaction between the different stakeholders (Chinyio & Olomolaiye, 2010). However, in the case of government housing projects, the required information would be accessed with ease due to the UAE Federal government and the Emirates Governments resolve for transparency and accountability in public projects. Secondly, the case study project should have been executed within the last years to allow for the relevance of the experienced issues with the current context and environment in the housing construction industry sector.

Thus, based on the thresholds, the study used the Sheikh Zayed Housing Programme. The Programme was a flagship housing project programme by the UAE government as a tool to achieving its 2021 vision. In this case, the programme aimed at offering quality standard. As such, the program was based on the tenets of increasing housing approvals and inspection to perpetuate the construction of increased houses as well as diversifying sources of funds for housing projects for Emirati nationals families (Sheikh Zayed Housing Programme, 2017). The housing program was actualized in three main strategies services delivery models. First, the government provided house loans to Emirati nationals allowing them to build new or buy houses. Secondly, the government offers housing grants to deserving families that would otherwise not manage and qualify for the loans and repayment models. Finally, for the exceptional case, the project offers government housing, where it constructs houses and offers them to deserving Emirati National families.

Besides the provision of the funding, the government regulates and inspects the construction of the houses through its staff as well as through collaborations with industry consultants. Thus, besides the loans, the government ensures that there are coordination and interactions between the stakeholders in the housing projects. The fact that the project incorporates all the stakeholders in an industry are included in the housing project, and it is a continuous programme since 1999 qualified it for inclusion in the study review, as the study template.

## **1.2 Problem Statement**

The study construction industry challenges facing the construction industry operations are not expected to reduce in the near future (Fabian, 2017). In this regard, the industry is facing a significant challenge in terms of ensuring that construction projects are completed on time. Considering Fabian (2017) findings, Sheikh Zayed housing programme is not immune to the increasing challenges. The problem that fostered the study was that; Sheikh Zayed housing programme is faced by delays in loan application as well as an increased number of projects that are not completed on time (pressreader, 2015). In the case of the Sheikh Zayed Housing Programme, the delays in the construction programmes have been evidenced in the rate of houses approvals, in the application for loans and grants approvals, and in particular in the construction of the government houses. In this regard, the government, through a partnership with the private sector constructs houses and offers them to the families (Sheikh Zayed Housing Programme, 2017). However, a majority of the houses, despite the government commitment and avocation of the required resources are not finalised on time and grants and loans funded projects are essentially delayed (pressreader, 2015). This has had a vital negative implication on the projects costing.

There is a direct connection between the project time delivery and the implied costs in the long run period (Frimpong, Oluwoye & Crawford, 2003). In this case, most of the project planning and scheduling tools are developed with cost estimates that are sensitive to the project timelines. This is because the ability to share resources across different project stages is based on the ability to such projects to finalise the stages on time. If there is a failure to finalise the project stages as enumerate don the Gantt charts on time, there is a higher risk of the projects costs increasing in the long run period. This has been a major challenge for the housing project as the grants and loans offered with strict cost descriptions are at times less than enough to meeting the housing needs. This has led to increased wastage and rising budgetary allocations to financing the loopholes.

Although the housing project remains noble project by the UAE government, the delays and the rising costs have been a major challenge in the effective utilisation of public funds as per the government strategic vision.

Overall, the project delays have been linked to a number of challenges in the industry as well as across the global construction industry. Although the causes vary, a common uniting element across the industries is the fact that they are all linked to the stakeholders, whether technical or organisational. Thus, there is a need to evaluate how the cause of delay in housing projects that would help form strategic and proactive policy and operational recommendations into the future.

### **1.3 Aims of the Research**

The overall aim of the study is to establish the stakeholders related cause of project delays in the housing industry. The study aim is based on the understanding that the construction industry operates under the systems approach process, where the functioning and actions of one of the stakeholders have a direct impact on the others and the project timelines respectively.

The case study aim for the project is to establish the causes of delay in the government housing project and as such propose operational and policy changes into the future. Overall, a generalisation aim of the study is to establish how stakeholders technical and organisational risks impact on projects on time completion, and how such interconnection between stakeholders could be enhanced.

### **1.4 Objectives**

Based on the overall study aim above, the study developed three specific objectives. These were the variables based on which the study deliverability to variables was investigated. The objectives included:

- To evaluate the stakeholder's technical risks causing project delays
- To evaluate the stakeholder's organisational risks causing project delays
- Establish The direct relationship between the stakeholders technical and organisational risks.

## 1.5 Research Hypotheses

The proposed study is developed on the alternative hypothesis that there exists a direct relationship between stakeholders technical and organisational risks and project on time completion. The study hypothesis as developed through the systems dynamics theory adoption. In this case, the theory holds that besides the interaction between independent and the dependent study variables, there is equally an existing relationship between the independent variables. Thus, the study applied the following strategic hypotheses in its analysis process

- H1: There is a relationship between stakeholders technical risks and projects success in terms of projects on time completion.
- H2: There is a relationship between stakeholders organisational risks and projects success in terms of projects on time completion
- H3: There exists a direct relationship between the stakeholders technical and organisational risks.

## 1.6 Research Rationale

The study rationale and relevance were based on two pillars, namely the theoretical and the practical relevance respectively. On the one hand, the study theoretical rationale was based on establishing the relationship between the independent variables and projects success. This was through the evaluation of how the stakeholders such as the government, the owners, and the consultants, interact and influence one another. Currently, although there is dynamic systems analysis on the relationship between stakeholders in different industries globally, there are no reviews developed in the case of the UAE manufacturing industry. Thus, the theoretical findings will help bridge the literature gap. The core findings in this regard will be on whether the variables behaviour is similar or differs from other global markets.

On the other hand, the study findings enhanced the practical risks for the project. First, the findings demonstrated the primary cause of project delays in the housing project. As such, this was a strategic approach to resolving the rising costs in housing under the project. In the last 4 years, the average cost of building houses had increased to above the market rates, due to persistent and perennial delays occasioned by the different stakeholders technical and organisational risks. Overall, the findings lay a basis through which quantitative and evidence-based judgement on the project decision to reduced costs and delays could be developed. Secondly, the study findings are

generalisable for the entire UAE and the MENA region construction industry. As such, this forms the basis through which future UAE housing and construction projects delays would be addressed. This will serve as a value enhancement process, where entities and stakeholders will align their actions with market needs to eliminate delays and consequently eliminate the risks associated with such delays in the long run period.

### **1.7 Scope of the Research Study**

Overall, the study focused on the UAE construction industry. It then focused on the housing industry. The scope of the project was on projects where the minimum number of stakeholders included the government, owners, consultants, and the contractors respectively. The study was an investigation of the factors determining project success. It sought to evaluate the nature, extent and avenues through which the stakeholders technical and organisational risks lead to project success. Although a project success could be a definitive term with varied meanings, the study sued the term to describe the ability for projects to be completed within the pre-determined timelines and with no delays. Thus, an ideal successful project in the study was a project whose completion was within the pre-set deadline. Thus, the more a project completion was delayed as contrasted to the set deadlines the less such a project was considered successful.

However, the study scope designing process was cognisant of the fact that the risks and context across construction projects vary. Therefore, in order to ensure the study practicality, the review scope narrowed down to the Sheikh Zayed Housing Programme. The program has three main components, including the loans, grants and actual houses construction. Since the review focused on delays in actual projects, it further narrowed down its scope to the third service under the programme, which is the government construction of houses for the population. In its analysis, the study evaluated how the stakeholders included in the project, namely the UAE government, the construction industry consultants the private contractors and the house owners among other stakeholders technical and organisational issues have impacted and led to the project on time delivery challenges.

## 1.8 Research Structure

The final aspect of this study chapter is the dissertation research outline. This section offers an evaluation of the structure of the dissertation chapters as outlined in the dissertation layout. The chapters include

- **Chapter 1:** This is the introduction chapter of the dissertation. The chapter lays a foundation basis for the dissertation outline. Primary aspects in the chapter included the study background and the problem statement as well as the study hypotheses.
- **Chapter 2:** This is the second chapter of the dissertation. The chapter presents a critical analysis of literature existing with respect to stakeholders technical and organisational issues ad project success aspects respectively. Further, the chapter outlines the existing research gap and the applied conceptual framework that guided the study data collection and analysis segments respectively.
- **Chapter 3:** This is the methodology chapter. It details the process through which the study data was sampled, collected, and analysed respectively. The chapter not only offered a summarised overview of the study data collection process but also the methodological arguments for the justifications of the applied methodologies.
- **Chapter 4:** This is the finding and analysis section. The chapter detailed and offered an analysis of the obtained study findings as well as the relationship between the obtained literature and previous data as analysed under the chapter 2 literature review section.
- **Chapter 5:** This is the conclusion and recommendations section. The chapter offers a summary of the obtained findings as well as formulating practical recommendations for the UAE and the MENA region construction industry. Finally, it offers theoretical recommendations through propositions for future studies development.

## Chapter Two

### Literature Review

#### **2.0 Introduction**

This is the second chapter of the dissertation. Chapter 2 of the study offers a critical analysis and evaluation of the already exiting literature. The rationale for the chapter development is an evaluation of how the existing literature covers the study phenomenon. This is through an evaluation of both the theoretical and the empirical literatures respectively. In order to ensure clarity in the chapter, the review used four main sections. The eventual outcome in the chapter analysis was the development of the study conceptual framework applied in the study review analysis.

#### **2.1 Impacts of Project Delays on Project Success**

This section reviews and analyses the literature, concept of project success and project delays. In this case, it was imperative for the study to lay a literature background evaluating if indeed there is any theoretical relationship between project delays on project success. Further the section conceptualises the constructs used to measure the stakeholders organisational as well technical factors that cause delay. As such, the variables from past literature covered in this section was fundamental as it was used to compile the research instrument.

##### **2.1.1 Defining Project Success**

The first evaluation section was on the concept of project success. In this case, the evaluation noted and considered that success is a subjective variable, different projects, authors and reviews offer differing definitions. On the one hand, Davis (2014) argued that a projects success is the projects ability to meet its set out objectives. In this case, the review noted that a project is only considered successful if they meet the set out needs. In the case of the housing projects, the ultimate aim of the projects is to ensure that they deliver and offer quality houses to the final clients. Therefore, in the context of the housing project, the quality of the houses built and their ability to meet the overall housing expectations in the market was the ultimate measure the project success. The second definition on the project success as developed by Alzahrani and Emsley (2013) analysis. In this case, the evaluation argued that the ultimate success in any project is its ability to meet the

set out goals and objectives against the set out financial budgets and limitations. This definition was based on the understanding that a project, unlike an organisational set up is established with a fixed financial budget. In this case a project that meets its financial targets ensures that all the planned for activities are met and planned for in the long run period. On the contrary, a project that fails to meet its financial targets for the different activities often face financial constraints and the eventual failure to accomplish the overall project goals. Therefore, the review by Serra and Kunc (2015) argued that a project that meets the financial expectations is a successful project. Finally, the review developed by Lehmann (2016) argued that a project success is classified based on the ability by such projects to be completed within the stipulated period and timelines. In this case, the review noted that through delays, projects eventually fail to meet the timeline and expectations of the clients, making them less successful.

A critical analysis of the above descriptions and definitions of a successful project indicated that successful projects are evaluated based on three main parameters, namely the on time completing, financial targets fitting, and offering quality products respectively. In this case, the study applied this context and perception of success. In particular, in order to fit in the applied study topic, the focus was specifically on the delay aspect and on time projects delivery. Thus, in the study analysis, the review perceived success as the ability by the projects to be completed on time.

### **2.1.2 Project Delays and Project Success**

The second evaluation segment in the analysis was an investigation of the impacts of project delays on projects success. This was achieved through three strategic reviews, namely the Archibald and Archibald (2016), Braglia and Frosolini (2014), and Alinaitwe, Apolot and Tindiwensi (2013) respectively. On the one hand, Archibald and Archibald (2016) study was developed in relation to the relationship between on time projects completion and resources use. In this case, the study was developed with an understanding that prior to any project roll out, a financial forecasting is developed and applied. These are the financial resources allocated to a project for its initiation, execution, and completion stages respectively (Archibald & Archibald, 2016). In its review, the study sought to establish if the presence of delays in projects execution has any direct impact on the financial resources use. In its findings, it demonstrated that there was a direct relationship between the two. In this regard, increased delays in projects were associated with increased financial uses.

As such, through an evaluation projects completed on time and those delayed, it noted that while as the financial planning on projects completed on time were as per the initial plans, delayed projects often led to additional financial costs, leading to inefficiencies. The second study was developed by Braglia and Frosolini (2014). The study was an evaluation of the impacts and relationship between project delays and effective resources use in projects. In this case, the study evaluated how the project related resources such as equipments and HR resources use is actualised in delayed projects. In its findings, it established that such delays led to confusion. This was based on the fact that in most of the projects, the activities are structured and arranged in the Gantt chart in a manner that allows for resources optimisation. As such, activities that require the same resource are often scheduled under different timelines. This has a two-fold impact where the scheduling ensures that resources are shared between different activities and ensuring that there are no ideal resources at any given period in the project execution process (Pellerin, Leclaire & Perrier, 2014).

However, Alinaitwe, Apolot and Tindiwensi (2013) study established that project delays, especially in individual projects have a direct impact in altering the scheduling merits. On the one hand, through delays in some of the activities, it means that some of the activities that ought to have shared resources cannot share the resources anymore. This leads to resources challenges and additional financial costs in the market. Secondly, the review, similar to Kikwasi (2013) findings indicated that due to delays and altering initial projects schedule leads to ideal resources, which increase the overall costs and resources constraints respectively. The above analysis demonstrated that through project delays, the overall project success is affected by delays in project execution. This has been evidenced as having impacts on resources use as well as in the effective management of the available financial operations. This was the basis through which the study was developed. In this case, the review was developed through an understanding that project delays had a direct negative impact on project success. As such, the review was developed with an aim of evaluating the shortcomings and delay areas with a strategic aim of overcoming the causes of delays and as such stimulating project success in resources utilisation in the long run period.

## **2.2 Stakeholders Organisational causes of Delays**

This section offers an evaluation of the first cluster of factors that cause project delays in projects. These are the organisational factors. In developing the section, it was critical for the review to

develop a clear definition of organisational factors. These are the factors within an organisational control and influence that have a direct control and influence over. Thus, all the organisational factors, although with the different stakeholders are within their control.

### **2.2.1 The Applied Leadership Style and Approach**

The first evaluated organisational factor leading to project delays was on the applied leadership styles. A leadership style is the manner and method through which the project operations are developed and executed. In this regard, the relationship between the applied leadership style and the project completion timeline could be evaluated through the Chandrasekaran, Linderman and Schroeder (2015) and Sunindijo (2015) respectively. On the one hand, Chandrasekaran, Linderman and Schroeder (2015) study evaluated the overall relationship between an applied leadership style and the ability by the projects to be completed on time. In this case, the review was focused on the activities and roles played by the project managers and coordinators in ensuring on time projects completion. In this regard, the evaluation focus was on the hands on and the hands off project manager leadership approaches. In this context, the evaluation noted that project managers and leaders with hands on approach ensured that the exiting challenges were evaluated and resolved on time. This finding by the review was similar and supported by the Sunindijo (2015) analysis. On their part, the authors sough to evaluate the role if the project managers and team leaders proactively planning and involving the team members. In its analysis, the review noted that though hands on approach, the leaders were informed of potential challenges and causes of delays and thus could overcome such issues easily in the market.

Thus, a critical analysis of the above findings demonstrated that the applied leadership approach, whether the hands on or the hands off approaches had a direct impact on projects completion timelines. As Zhang and Fan (2013) evidenced, the hands off approach, implied that the project managers and team leaders were not up to date with the changes in projects both internally and externally. Consequently, this was evidenced as a shortfall and failure to learn on the surrounding context systems leading to eventual projects delays.

The next evaluation on the role of leadership was applied by the Efferin et al (2015) study. The study focused on the actual style applied in managing the project teams. In this case, the review sought to evaluate the impact of the transformational leadership application in managing the project teams. The application of the style was a theoretical understanding that the use of

transformational leadership was linked to the overall productivity in organisations. The focus was to evaluate if the theoretical findings in relation to organisations impact on teams has an impact on the project teams. The study established that through the use of the transformational style, the entities were faced with lengthened decision making process. In the long run period, this implied that a majority of the projects decisions took even longer periods to develop.

Eventually, this led to delayed decisions and overall activities delays in projects. The obtained study findings were well enumerated by Zhang and Fan (2013). The review noted that although the use of transformational leadership approach was accredited as an ideal leadership style in an organisational setting; it often led to delays in projects. Thus, this led to the finding that the ideal project management leadership strategy was a balanced approach. In this case, while some of the activities would allow for the transformational and the inclusion of the team members in making the decisions, the project leaders should balance and apply the autocratic leadership styles in strategic and urgent decisions that would lead to delays in activities.

### **2.2.2 Applied Forecasting and scheduling Strategies**

The second organisational factor influencing and causing delays in projects was identified as the applied forecasting and scheduling strategies in the market. In this context, the relationship between the applied strategies and scheduling systems and delays in projects were well demonstrated through reviews developed by Martin, Wiseman and Gomez-Mejia (2015), Acebes et al (2014), and Zhang and Fan (2014) respectively. On the one hand, Martin, Wiseman and Gomez-Mejia (2015) developed a study evaluating the role of forecasting in projects success. In this case, the review evaluated the use of short term and long term forecasting strategies. In its review, the strategic aim in the study was to evaluate how the alignment between the short and the long term forecasting strategies impacted on the ability by projects to finalise and complete their mandate within the set timelines. The study noted that projects that applied long term forecasting strategies and relied on the long term forecasts to formulate their scheduling systems end up experiencing delays. The reason for this is explained by the Acebes et al (2014) study. The review noted that although most of the project charters and action plans are developed through the long term forecasting and scheduling tools, the actualisation plan is only effective if the application process and the schedule allow for the use of the short term forecasting tools. This is through allowing for changes in the systems such as the Gantt chart in activities alignment respectively.

Finally, Zhang and Fan (2014) argued that through the use of short term forecasting systems support, projects allow for the evaluation of changing systems and conditions. This flexibility offered by the short term forecasting systems inclusion ensures that projects develop proactive systems to counter any foreseeable changes in the long term forecasts. A failure to apply the changes leads to the ultimate delays in such projects.

A critical analysis of the section analysis demonstrates that overall, although there are differing organisational factors, the most critical organisational factors were the planning, forecasting and scheduling strategies used as well as the leadership approaches and the style applied respectively.

### **2.3 Stakeholders Technical Causes of Delay**

This section offers an evaluation of the technical causes of project delays. In this case, the perception in the study analysis was an understanding that the technical causes of delays are linked to the aspects and factors that the different stakeholders lack direct control and influence on. In evaluating the technical factors, the study evaluated the legal aspects and the monitoring and evaluation tools applied respectively.

#### **2.3.1 Legal changes in the market**

The first technical factor influencing and impacting on project delays are the legal factors in the market. The legal aspects and factors rest with two strategic stakeholders, namely the government and the consultants respectively. On the one hand, as Megha and Rajiv (2013) noted, the government is mandated with the role of developing the relevant and ideal legal systems guiding project operations. In this case, it is within the legal obligations for all the projects in a particular legal jurisdiction to apply and uphold any rolled out regulations. In developing projects, the foundational basis, such as the tasks scheduling and planning strategies are hedged on the exiting legal systems. A summary of relevant legal issues affecting and impacting on project operations include regulations such as on materials standards to be used in projects, the limitation of materials sources to be sued, as well as other regulations such as the safety and security variables respectively. On the one hand, Muhwezi, Acai and Otim (2014) study developed an evaluation on the impact of regulations changing materials quality to be sued in projects. In this regard, the review noted that in setting up project schedules, the materials quality play a key role in the costing strategy. Thus, in the event that the existing regulations are adjusted, requiring the use of different

materials quality, this has an impact on increasing the financial needs and overall project costs. The resulting outcome from such changes is delayed projects as the project managers seek additional funding to meet the material changes needs. Additionally, Sovacool, Gilbert and Nugent (2014) argued that the relied sources of materials play a primary role in determining the rate and timelines within which the materials are delivered into a project. The time of delivery of the different materials influence the ability by the projects to complete the activities within the timelines. In terms of the scheduling strategies such as in setting up the critical path and the Gantt chart tools, the forecasting is based on the projected materials delivery timelines, hedged on the required material sources. Thus, new regulations have an impact on the materials possible sources. As Aziz and Abdel-Hakam (2016) mentioned, different global nations have their differing and varied trade systems., This has an impact on the differing business indices as well as the required timelines to import materials from such markets. Consequently, in the event that new regulations are developed on material sources, this has a technical impact on the access process, a virtual with a high potential and capability for increasing projects completion time and as such fostering delays. Once the government has rolled out legal systems changes, it is bestowed on the project consultants to help the project managers mitigate the impacts of such changes. In this regard, Safa et al (2014) argued that one of the proactive mandates and roles played by the consultants in any project process is offering a market context analysis to the clients. In most of the cases, legal changes in management of projects are not impacted through an impulse approach and often offer enough safety periods for the projects to adjust their systems. This falls under the consultant stakeholders to advice and guides such projects on the proactive systems to apply and enrol to counter the potential delay impacts of the legal system changes. Thus, Aziz and Abdel-Hakam (2016) argued that the failure by the consultant stakeholders to proactively guide project clients led to overall project delays as a result of legal systems and regulations changes.

### **2.3.2 Monitoring and evaluation systems**

The second primary technical factor noted as a contributing factor for delays in projects was the applied monitoring and evaluation tools. In this case, the monitoring tools are the applied systems for evaluating the progress and status of projects performance. The monitoring tools are theoretically aimed at investigating the level and extent to which the applied systems meet the overall expectations. In the case of projects, the monitoring tools are applied as tracking systems of the activities execution and the timelines within which the set responsibilities are executed. Serra and Kunc (2015) study argued that there is a direct relationship between the applied monitoring systems and the project completion timelines. In this case, the review, similar to Otoo, Agapitova and Behrens (2015) arguments noted that through the use of strategic and proactive monitoring systems, projects are able to identify the potential challenges in their operations and as such correct such challenges prior to resulting into delays. However, Serra and Kunc (2015) noted that the applied planning and scheduling tools such as Gantt charts in most of the projects allow for minimal monitoring. In this context, the review noted that through the use of the Gantt charts, although activities timelines are indicated, the process and causes of any delays are not accounted for. This makes it relatively complex to implement a monitoring system. Consequently, the lack of effective monitoring and the evaluation system often at the end of the projects lead to eventual project delays.

## **2.4 Theories and Models**

This section offers a critical analysis and evaluation of the models and theories impacting and influencing project management operations. The evaluation of the theories is aimed at investigating the practical principles and foundations guiding the theoretical systems.

### **2.4.1 The systematic Theory**

One of the core theories guiding project management operations is the systems theory approach. It is applied in the evaluation of how different processes and strategies operate in an entity. In the management of entities, there are different categories that function to achieve the overall strategic goals. However, in order for an entity to achieve its strategic goals and objectives the different strategies and segment must function jointly and in collaboration (Pahl & Beitz, 2013). This brings about the systematic approach theory. The theory is applied with the principle that all functions in

any management aspect are joint and function in relation to each other. This theory is applicable in the management of projects in the projects. In managing and operating any project, it includes the alignment of different activities and functionalities in the process (Keong Choong, 2014). For instance, the systems and activities are arranged in a manner that not only allows for critical activities to follow each other, but also allow for the sharing of resources that are often scarce. In this case, the effective systems function process includes the alignment of the systems in a manner that enables the systems and activities to coordinate and share the resources. This has a direct impact on the delay and completion of such projects on time (Kiraly, 2014). For instance, the projects face the challenge of delays if the activities and the different systems that are supposed to allow for resource sharing are not actualised and effected in the right manner (Charmaz, 2014). For instance, if two activities that apply and require the same resources use are supposed to be conducted one following the other, a significant delay in the preceding activity would imply that the consequent activity faces significant delays challenges, leading to an overall delay of the activities in the long run period. Thus, the fact that the theory principles and the ability to function as a system has a dirt impact on project delays and effectiveness on the on-time completion capabilities qualified the theory for inclusion in the study review.

#### **2.4.2 The Stakeholders Theory**

The second strategic theory applied in the study was the stakeholders theory. The stakeholders theory is pegged on the stakeholders approach in activities. The foundational principles in the stakeholders theory is the use of a diverse perception an organisational operations. Overall, the stakeholders are described as the group or the sets with interests in an organisational operations and systems (Hanstad, 2015). Overall, stakeholders are classified and evaluated based on two main variables. These are the variables that form the basis of segmenting and aligning the stakeholders. The first evaluation element is the stakeholder interests. In this case, the interests of the stakeholders noted are the amount of drive and commitment they have on a given organisations or project. As such, the most rates stakeholders are those with a high interest as their needs are aligned with the project at hand needs. In this context, stakeholders with a high interest on the variables have the highest ranking on the stakeholders matrix system. The second stakeholder analysis matrix is the stakeholders power (Cornelissen, 2014).

In this case, the concept of power is defined as the amount of control and influence that stakeholders have on the project or the organisations respectively. In this regard, a high power index ranking for the stakeholders would be classified as an ability to influence strategic decisions in an entity or project. Additionally, this would mean that the operations and functions is such high power stakeholders would have direct impact on the projects decisions and directions respectively (Schnackenberg & Tomlinson, 2016). Based on the above analysis, it is clear that the stakeholders analysis and classification is based on the power yielded by the stakeholder and the amount of interest the stakeholder has on a project.

Additionally, in describing the stakeholders theory, the project stakeholders are further categorised into two main clusters. On the one hand, are the internal stakeholders. These are the stakeholders that are working within an organisation or a project. In this case, the process of executing the projects mandates is executed by the internal stakeholders. Such stakeholders include the employees, the project managers, the coordinators and the contractors respectively (Bridoux & Stoelhorst, 2014). The second clusters of the stakeholders in projects are the external stakeholders. These are stakeholders who are outside the projects management teams and operational systems but have an interest and yield power on the project operations. Such stakeholders include the government and other external parties such as consultants among others in the market.

In applying the stakeholders theory in the study, the review argued that in the management and in the execution of the projects, each of the different stakeholders play a critical role. It is the combined functions and responsibilities buy the different stakeholders that ensure such projects success. Consequently, as part of the entities systems, a failure by one of the stakeholders to effectively function and implement their expected duties would have an impact on the projects success (Schnackenberg & Tomlinson, 2016). This would have a direct impact on activities delays as well as the overall projects delays in the long run period.

The study applied the two theories discussed above as the core guiding principles for the review. In its strategic focus, the review aimed at evaluating the technical and the organisational causes of delay in housing projects. As such, this required an evaluation of the different stakeholders role in the delays or the eventual successful completion of the projects. This provided an opportunity for the review to apply the stakeholders theory (Bridoux & Stoelhorst, 2014). Additionally, due to the interrelated nature of the activities, the study was guided by the theoretical understanding that the

activities by each of the stakeholders impact on the overall projects. This allowed for the application of the systems approach theory.

## **2.5 Summary**

A critical analysis of the above findings indicates that there are different technical factors related to increased project delays. Although not focusing on the housing projects in particular, the section applied differing reviews on diver industries to demonstrate that overall all other factors, the applied monitoring and evaluation systems as well as the legal situation and context changes are the antecedents of project delays in the housing projects. the obtained literature above was used as the basis through which the technical variables and causes of delays in housing projects, thus the questionnaire was built from the critical analysis, each risk was taken from three studies at least to build up the questionnaire which was divided base on the four stakeholders ( Owners, Contractors, Consultants and the government authorities).

In summary, the chapter offers a review of the existing literature in relation to the guiding theories for the review, namely the stakeholders and the systems approach respectively. Additionally, the chapter described the definition of projects success, as well as the organisational and the technical factors respectively.

## **Chapter Three**

### **Research Methodology**

#### **3.0 Introduction**

This is the third chapter in the dissertation. The chapter offers a detailed analysis and review of the applied study methodology approach. The chapter provides a detailed process for which the applied methodology aspects are identified and discussed as well as justification for the non-applied research methodologies. To ensure chapters clarity, it is categorised into segments such as research philosophy, approach, strategy, tools, and data analysis approaches respectively. They are as discussed below.

#### **3.1 Research Philosophy**

A research philosophy is the guiding perception and theory that directs and orients a given research study. In this case, the applied and adopted worldview has a direct impact and influence on the nature and type of data collected and analysed in a research study. Overall, Blaikie (2010) noted that there are three main guiding research philosophies namely the positivist, the interpretive, and the mixed philosophies respectively. On the one hand, the positivist research philosophy includes the perception that evaluated research phenomena are static and are not influenced by changes over a specific period. As such, the immediate contextual variables on a phenomenon are not considered as important. However, it is vital to note that the philosophy only holds over a specific period and not on a perpetual basis. The second applicable philosophy is the interpretive research philosophy. On its part, the philosophy argues that a research philosophy is influenced and largely defined by its immediate environment. As such, the exiting social construct variables are considered as a primary tool and basis for collecting data on a phenomenon. The overall assumption applied in adopting this research approach is that a research phenomenon is highly dynamic and changes over the period within which the study data is collected and analysed respectively. Therefore, static measures cannot be applied to such a phenomenon. The final research philosophy is the mixed research philosophy. The philosophy is applied to resolve the challenges and assumption developed by both the positivist and the interpretive philosophies. In this case, it develops the overall view that a research phenomenon is comprised of different variables and dimensions. In this regard, while as some of the variables could be static, others could be dynamic and change at

the same period (Blaikie, 2010). Therefore, the philosophy allows for the application of both the positivist philosophy of the static variables and the interpretive philosophy for the changing variables within the same single social science research study.

An evaluation of the study dimensions demonstrated that the variables were static. In this case, the review focused on the organisational and technical factors influencing the success or failure of the Sheikh Zayed housing project. In this case, the evaluation was a historical evaluation of the projects past. As such, this led to the evaluation of a fact-based process of the causes that influenced the success rates or failure of the project operations. As such, a general perception of the process leads to the conclusion that the cause was not bound to change. Consequently, this allowed the study to apply the positivist research philosophy where static data was collected.

### **3.2 Research Approach**

Once the study research philosophy as the overall guiding framework is developed, the next stage in the methodology section is the development of the applied study approach. There are two main factors that influence and determine the applied research approach; they are the study objectives and their nature as well as the applied research philosophy. The adopted approach should serve in meeting the study objectives and deliverables, and should support and complement the applied research philosophy. A contrast between the two would lead to the collection of irrelevant and in analysable data in a study.

Overall, as Altheide and Schneider (2013) mentioned, there three alternative research approaches that a study review can apply and adopt. They include the qualitative, the quantitative, and the triangulation approaches respectively. First, the qualitative approach includes the collection of data that is not quantifiable or statistically measurable. This approach is applied in the collection of data that is highly pegged on the expertise and opinions of the respondents. As such, this approach supports the interpretive research philosophy use which evaluates the social constructs influencing the study phenomenon. The second alternative approach is the quantitative approach. This approach includes the collection of statistical data from a perceived static research phenomenon. The approach allows for the evaluation of the statistical variables and elements of a research study such as relationships and impacts between two study variables. On its part, the research approach supports the adoption of a positivist research approach. Finally, the triangulation approach includes the combination of both the qualitative and the quantitative data sets (Altheide & Schneider, 2013).

This is pegged on the same principle as applied by the mixed research philosophy that the same study phenomenon could have both quantifiable and non-quantifiable data forms.

An evaluation of the study on the success factors in the Sheikh Zayed Housing plan demonstrated that the sort after data was on the organisational and the technical success factors, In particular, the objectives were on evaluating the different cause of delays in such projects. As such, it sought to evaluate the relationship between different factors presence and the projects completion on time rates. This required a statistical evaluation process to establish the relationships between the two. The use of any alternative tool and approach would have limited the study ability to correlate and establish the actual relationship between the variables. Secondly, the decision to adopt the quantitative approach was pegged on the already applied research philosophy. As already mentioned, an applied approach is determined by the applied research philosophy. Therefore, the review adopted the quantitative research approach to supplement the already applied positivist research philosophy.

### **3.3 Research Strategy**

A research strategy is a context within which a study is developed. In this regard, a strategy is at times considered as the scope within which the study variables' are investigated. Theoretically, there are three different alternative strategies that can be applied to a social science research study. They include the experimentation, the case study, and the survey strategies respectively. On the one hand, the experimentation strategy includes controlling some of the independent variables impacting on a study dependent variable (Edson, Buckle & Sankaran, 2017). As such, through the use of a controlled environment; the actual and absolute relationship between two variables is established. However, the major limitation in this study strategy is the fact that the obtained findings represent ideal market contents and cannot be applied in developing typical market context decisions, as no variables interact in isolation. The second alternative strategy is the case study approach. In this regard, the case study approach, either through a single or a multiple case study approach includes the use of a typical market context on a few entities. The major merit and benefit for this strategy are its focus on a unique and specific study issues. However, as Creswell (2013) mentioned, the obtained findings cannot be relied upon for accurate generalisation to a large population base. The third strategy is the survey strategy. It includes the sampling out of a

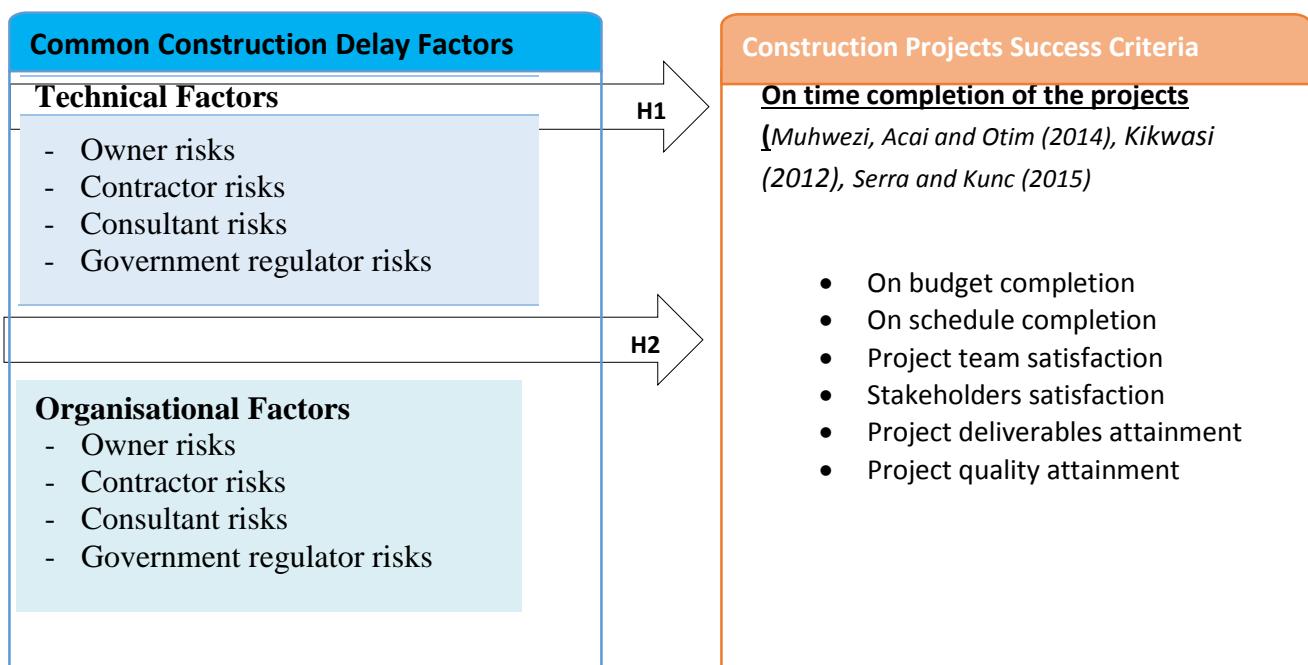
sample base from a large population base and ensures that obtained findings represent a larger population base and can be generalised accordingly.

An evaluation of the study context led to the determination that the study applies the survey approach. On the one hand, there was no need to control the variables in the review, as the study was using factual and already existing data on the variables interaction. Secondly, the review required to be generalised not only for the Sheikh Zayed housing project context but for other projects in the UAE market. Therefore, both the experimentation and the case study strategies could not be relied upon for adoption.

### 3.4 Data Collection Process

The data collection process is the approach in which the required data was collected. In developing this decision, a strategic study determination is developed on whether to collect the primary or the secondary data forms. A preliminary analysis of the topic as developed as demonstrated in chapter 2 of this review. Although there is secondary data on the contexts, no much information was directly available on the organisational and technical factors for delay and success of the Sheikh Zayed housing project. Thus, the study concludes that it could rely on primary data collected directly from the industry and involved stakeholders including the government, consultants, contractors, and the owners respectively. The primary data collected included the stakeholders technical as well as organisational factors shown in the figure below.

Figure 1: Conceptual Framework – Common causes of delays in Construction projects



The figure 1; conceptual framework shows the main constructs used to collect data from the Sheikh Zayed Housing Programme Stakeholders. There are two risks introduced by each and every stakeholders in the project scope namely; technical and organisational risks. The sub constructs of technical and organisational factors that were used in the research instrument were sourced from different studies as shown in the Table below:

	<b>Research Reference</b>								
<b>Construction Delays</b>	Chandrasekaran, Linderman and Schroeder Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
<b>Organizational Risks</b>									
<b>Owner</b>									
Leadership	Y	Y		Y					
Delays in design approvals		Y		Y			Y		
Late decision making	Y		Y				Y		
Failure to provide incentives to contractors for excellent performances	Y	Y	Y						
HR skills		Y		Y			Y		
<b>Contractor risks</b>									
Change of requirements after tender award		Y	Y		Y				
Corporate culture		Y		Y			Y		
Failure to arrange for effective financial management			Y		Y		Y		

		Research Reference								
<b>Construction Delays</b>		Chandrasekaran, Linderman and Schroeder Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
Lack of proper internal control systems		Y	Y	Y						
Lack of enough labour workforce and equipments			Y			Y		Y		
<b>Consultant</b>										
Diversity in global market needs and trend changes	Y	Y	Y		Y				Y	
Management systems		Y			Y				Y	
Consultants systems management incompetences	Y		Y		Y					
Tasks and project experience		Y	Y						Y	
External market changes and dynamics	Y	Y		Y						
<b>Government authority</b>										
Political goodwill		Y	Y				Y			
Political systems	Y	Y			Y				Y	
National culture		Y	Y				Y			
Project management skills			Y		Y		Y			
Political stability	Y				Y				Y	
<b>Technical Risks</b>										
<b>Owner</b>										
Lack of technical knowledge by the client					Y	Y	Y	Y	Y	Y

		Research Reference								
<b>Construction Delays</b>		Chandrasekaran, Linderman and Schroeder  Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
Project technical requirement changes	Y									
Lack of ICT and project management tools management expertise					Y					
Change of order in course of the project			Y				Y			
Changes and the delivery of poor quality materials		Y		Y						
<b>Contractor risks</b>										
Lack of project teams coordination				Y	Y		Y			
Ineffective and incompetent management of project management tools				Y		Y		Y		
Lack of competent HR skills for project execution						Y	Y	Y		
Poor and inaccurate project drawings and plans				Y	Y		Y			
Contractor and sub-contractor disputes					Y	Y	Y			
<b>Consultant</b>										
Lack of clear material needs specification			Y		Y			Y		
Lack of proper project scope specification			Y		Y			Y		

		Research Reference								
<b>Construction Delays</b>		Chandrasekaran, Linderman and Schroeder  Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
Material and drawings late approvals			Y		Y		Y			
Supervision staff on site not available					Y	Y		Y		
The consultants inflexibility and stubbornness					Y	Y	Y			
<b>Government authority</b>										
External market changes		Y				Y		Y		
Project technical requirement changes						Y		Y		Y
Legal system changes		Y						Y		Y
ICT development and changes		Y				Y				Y
Project management skills shortage		Y				Y		Y		

### ***Owner Technical and Organisational factors***

The owners technical factors included; lack of technical knowledge by the client, project technical requirement changes, lack of Information and communication technology and project management tools management expertise

Change of order in course of the project, and changes and the delivery of poor quality materials. The organisational factors included; leadership, delays in design approvals and late decision making, failure to provide incentives to contractors for excellent performances and the HR skills.

### ***Contractors Technical and Organisational factors***

The contractors technical risks include; lack of project teams coordination, ineffective and incompetent management of project management tools, lack of competent HR skills for project execution, poor and inaccurate project drawings and plans, and contractor and sub-contractor disputes. While on the other hand the organisational risks included; change of requirements after tender award, corporate culture, failure to arrange for effective financial management, lack of proper internal control systems, lack of enough labour workforce and equipment.

### ***Consultants Technical and Organisational factors***

The technical risk are; lack of clear material needs specification, lack of proper project scope specification, material and drawings late approvals, supervision staff on site not available and consultants inflexibility and stubbornness. The organisational factors included; diversity in global market needs and trend changes, consultants systems management incompetence, Tasks and project experience and external market changes and dynamics.

### ***Governments Technical and Organisational factors***

The governments technical factors were; external market changes, project technical requirement changes, legal system changes, lack of Information and communication technology development and changes and project management skills shortage while the organisational risks included; political goodwill, political systems, national culture, project management skills and political stability.

Based on the fact that the review applied a quantitative approach, it implied that the review could only use data collection tools that supported the collection if such kind of data. As Edson, Buckle and Sankaran (2017) stated, the collection of primary quantitative data could be through two main tools, namely the questionnaires and the observational approaches. On the one hand, the questionnaires are applied in the collection of study data that is not physically observable. On the

other hand, the observational data collection tool was ideal for physically observable data and information.

A critical evaluation of the study evaluated cause of delays both technical and the organisational ones illustrated that they were not physical. As such, this implied that the observational approach could not be used. On the contrary, the review used the questionnaire approach, where closed-ended questions, with the five-point Likert scale were used.

Regarding collecting the required study data, the review distributed the questionnaire through an online survey monkey platform. The use of the platform was based on the understanding that it allowed for the targeting and reaching out to a large population and targeted sample base. Additionally, it reduced the overall time and costs related to the data collection process (Creswell, 2013). Finally, simple random sampling approach was applied. In this case, There are four categories of stakeholders and Each one has a chance to be chosen.

### **3.5 Data Analysis**

The final study segment in the methodology chapter was the data analysis methods applied. The analysis in this segment was hedged on Olsen (2010) arguments that a study review is developed through the evaluation of the type and nature of the data collected. Thus, the guiding pillar in developing an analysis matrix is the type and nature of data sampled. Overall, the review collected primary quantitative data. This meant that the nature of the sampled data was that it was as quantifiable and statistically measurable. This allowed for the statistical analysis of the data and the formulation of factual and statistically sound review findings. To support the process, the study applied the SPSS software, offered as a compliment by the survey monkey platform to analyse the obtained data. The analysis process included the use of both the descriptive and the inferential statistical tools. The independent variables for the research were the technical and organisational factors that were introduced by the stakeholders while the dependent variable was the project success.

The technical and organisational factors causing delays in the housing programme were analysed through mean and standard deviation. This showed how different factors from the stakeholders caused project success. The hypothesis were tested through Chi-Square at a confidence level of  $p \leq 0.05$ . Though there are various means of testing the hypothesis, Chi square was chosen due to the nature of the data collected. As such, the data collected was categorical in nature which suits

Chi-square test of independence. Therefore, The independent variables were tested individual, Thus, other similar analysis methods of testing a hypothesis such as ANOVA could not be used since they require continuous data.

In Chi-square, the acceptable significance level was  $p \leq 0.05$ . Therefore, if the p value of the tested hypothesis was within the confidence range, then the null hypothesis was rejected in favour of alternate hypothesis. Therefore, the confidence level shows that the chances of making a mistake of observing a highly unlikely occurrence were minimal such that the accuracy level stands at 95%.

Finally, the obtained study data was presented graphically. This was through the use of tables respectively. The last component in the analysis process was relating the study findings to the already analysed literature in chapter 2 as an interpretation tool.

### **3.6 Summary**

In summary, chapter 3 of the study offers a critical analysis of the applied study methodologies as well as a logical justification for the alternative methodologies not applied. As such, the chapter demonstrated with theoretical justification the basis on which the study applied the positivist philosophy supported by the quantitative approach and the survey strategy respectively. The next chapter is the obtained data findings, analysis, and interpretations chapter.

## Chapter Four

### Results and Discussion

#### 4.0 Introduction

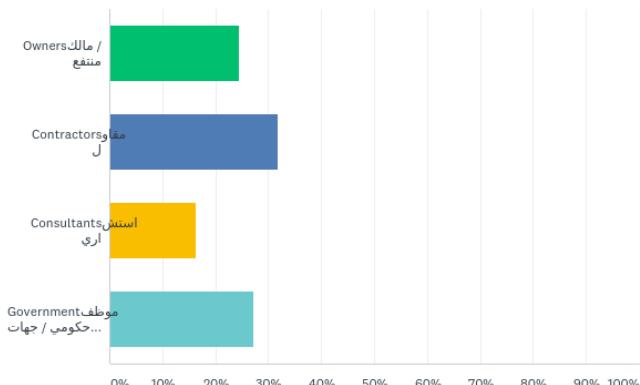
This section presented the results of the study in empirical form and synthesised with the existing literature. Thereof, the research questions and the hypotheses developed in chapter one was also addressed in this chapter. The data was presented in tables as well as figures for ease of comprehension.

#### 4.1 Data Preparation

As previously covered the data was collected from the stakeholders who included the owners, contractors, consultant and finally the government officials directly overseeing the Sheikh Zayed Housing programme. Before the actual activity of data collections, a pilot study was conducted to few participants derived from each stakeholders strata. The pilot study helped in validating the instruments validity and consistency that shows the ability of the questionnaires to collect relevant data.

Since the expected response rate was 120 respondents, checking the response rate is fundamental. As such, since only 110 responses were garnered, then the response rate was 91.7%. Therefore, the response rate was satisfactory to present conclusive results of the study. The data from the 110 participants was then coded in Excel and exported to SPSS for analysis.

Figure 2: The Stakeholders Participants



## **4.2 Explaining the Scale Measuring Tool**

The data from the four stakeholders was collected through a five point Likerts scale. As such the lowest the number in the scale the strongly the respondent disagreed whereas the bigger the number the strongly the respondents agreed to the question administered. Therefore, 1 represented strongly disagree, 2 represented agree, 3 represented neutral, 4 represented agree and 5 represented strongly agree. Since individual responses could not be computed, a point of measurement had to be made. Therefore computed the mean of the responses to find a central point of the scale. The computed mean was presented though mean and standard deviation was discusses through the following scale. The computed mean that was between 1 to 1.80 represented strongly disagree, 1.81 to 2.60 represented disagree, 2.61 to 3.40 represented neutral, 3.41 to 4.20 represented agree and 4.21 to 5 was within the range of strongly agree.

## **4.3 Internal Consistency of the Questionnaire and Data Reliability**

Lee and Baskerville (2003) noted that for the results to be generalisable to a larger scope, then the reliability as well as the internal consistency of the study data was fundamental. Thus considering the literature view the researcher computed for reliability and internal consistency of the collected data. The statistical test was also pivotal in validating if the collected data from the respondents was worth to continue conducting more statistical tests on. The consistency and suitability of the questions used to collect the data pertaining to the study was calculated through communalities under factor analysis while the reliability of the collected data was conducted through Cronbachs Alpha.

The following tables shows the communalities as well as the Cronbachs Alpha from the collected data

**Table 1: Presentation of the Questionnaire Communalities**

Study Variables	Initial	Extraction
Leadership	1.000	.712
Delays in design approvals	1.000	.710
Failure to provide incentives to contractors for excellent performances	1.000	.613
HR skills	1.000	.686
Change of requirements after tender award	1.000	.626
Corporate culture	1.000	.677
Failure to arrange for effective financial management	1.000	.769
Lack of proper internal control systems	1.000	.679
Lack of enough labor workforce and equipment	1.000	.736
Diversity in global market needs and trend changes	1.000	.800
Management systems	1.000	.774
Consultants systems management incompetences	1.000	.767
Tasks and project experience	1.000	.674
External market changes and dynamics	1.000	.679
Political goodwill	1.000	.716
Political systems	1.000	.803
National culture	1.000	.776
Project management skills	1.000	.711
Political stability	1.000	.585
Lack of technical knowledge by the client	1.000	.619
Project technical requirement changes	1.000	.666
Lack of Information and communications technology and project management tools management expertise	1.000	.675
Change of order in course of the project	1.000	.800
Changes and the delivery of poor quality materials	1.000	.691
Lack of project teams coordination	1.000	.727
Ineffective and incompetent management of project management tools	1.000	.774
Poor and inaccurate project drawings and plans	1.000	.639
Lack of competent HR skills for project execution	1.000	.705
Contractor and sub-contractor disputes	1.000	.554
Lack of clear material needs specification	1.000	.794
Lack of proper project scope specification	1.000	.754
Material and drawings late approvals	1.000	.778
The lack of on-site Supervision staff	1.000	.679
The consultants inflexibility and stubbornness	1.000	.642
External market changes	1.000	.757
Project technical requirement changes	1.000	.797
Legal system changes	1.000	.741
Information and communications technology development and changes	1.000	.814
Project management skills shortage	1.000	.730
On Schedule completion	1.000	.657
On Budget completion	1.000	.758
Project team satisfaction	1.000	.824
Stakeholders satisfaction	1.000	.808
Project deliverable attainment	1.000	.820
Project quality attainment	1.000	.847

Extraction Method: Principal Component Analysis.

The computed communalities show that the questionnaire was well suited to collect the data for analysis. The set communalities level was 0.55 which means any question in the questionnaire with value less than 0.55 was omitted as it was considered not be dedicated to collect data related to the Sheikh Zayed housing programme constraints.

**Table 2: Data Reliability Test through Cronbachs Alpha**

	Cronbach's Alpha
Leadership	.913
Delays in design approvals	.912
Failure to provide incentives to contractors for excellent performances	.916
HR skills	.914
Change of requirements after tender award	.914
Corporate culture	.913
Failure to arrange for effective financial management	.911
Lack of proper internal control systems	.911
Lack of enough labor workforce and equipment	.912
Diversity in global market needs and trend changes	.911
Management systems	.910
Consultants systems management incompetences	.911
Tasks and project experience	.911
External market changes and dynamics	.913
Political goodwill	.911
Political systems	.911
National culture	.912
Project management skills	.912
Political stability	.912
Lack of technical knowledge by the client	.915
Project technical requirement changes	.912
Lack of Information and communications technology and project management tools management expertise	.912
Change of order in course of the project	.912
Changes and the delivery of poor quality materials	.912
Lack of project teams coordination	.911
Ineffective and incompetent management of project management tools	.911
Poor and inaccurate project drawings and plans	.911
Lack of competent HR skills for project execution	.911
Contractor and sub-contractor disputes	.910
Lack of clear material needs specification	.909
Lack of proper project scope specification	.910
Material and drawings late approvals	.910
The lack of on-site Supervision staff	.910
The consultants inflexibility and stubbornness	.911
External market changes	.911
Project technical requirement changes	.911
Legal system changes	.911
Information and communications technology development and changes	.912
Project management skills shortage	.912

On Schedule completion	.912
On Budget completion	.913
Project team satisfaction	.912
Stakeholders satisfaction	.912
Project deliverable attainment	.911
Project quality attainment	.912

The table above (Table 3) shows that the collected data was relevant and dedicated to collect the relevant phenomenon in relation to the area of study. This conclusion was reached since the overall Cronbachs Alpha was 0.913. As such, the literature on statistics considers the collected data to be reliable if the Cronbachs Alpha is over 0.7. Therefore, having validated that the data is both consistent and reliable, further analysis on the data was conducted as follows.

#### 4.4 Results of the Study

The analysis of the collected data was presented in a sequence in regards to the research objectives contained in chapter one of the study

***Research Objective One: To evaluate the stakeholder's technical risks causing project delays***

The responses were also analysed according to the different stakeholders taking part in the Sheikh Zayed Housing Programme

**Owner technical causes of delays in housing projects**

The perception of the owners as the key stakeholders in the housing units construction was collected as presented as shown below.

**Table 3: Owners Technical Risks Causing Project Delays**

	N	Mean	Std. Deviation
Lack of technical knowledge by the client	110	4.04	.995
Project technical requirement changes	110	3.87	.900
Lack of Information and communications technology and project management tools management expertise	110	3.73	.985
Change of order in course of the project	110	4.10	.898
Changes and the delivery of poor quality materials	110	3.79	1.015
Valid N (listwise)	110		
Overall Mean		3.26	

Table 4 above shows that owners to the government sponsored Sheikh Zayed housings in the UAE have some technical factors that hamper the success of the projects. As such, order change in course of the project was perceived as a detrimental technical factor that delayed the completion of the housing units ( $M=4.10$ ,  $SD=0.898$ ). The mean shows that the stakeholders to the housing units agreed that the changing the order deliverables in course of the construction hampered the progress. The standard deviation which is also relatively low shows that the responses had a relatively homogeneity in the agreeing that change of projects dimensions had a detrimental effect on the houses construction.

The responses showed that the lack of technical knowledge by the housing unit owners was also significant factor that delayed their completion ( $M=4.04$ ,  $S=0.995$ ). The computed standard deviation showed that the respondents had a varied homogeneity in agreeing that owners had little or no understanding of the technicalities surrounding the project which is a similar case to Martin, Wiseman and Gomez-Mejia (2015) findings.

The projects technical requirement changes by the owners were also perceived as technical issues that could also affect projects completion rate ( $M= 3.87$ ,  $SD=0.9$ ). More so, changes and the delivery of poor quality materials was also agreed as technical factor that limited the capacity to complete the housing units in time. The standard deviation was however high ( $SD=1.015$ ) meaning that the variable had a somehow divergent responses along the scale. As such, the responses were non-uniformly distributed along the measurement scale. Several studies have agreed that low quality materials have a significant impact on a projects completion schedule (Martin, Wiseman and Gomez-Mejia, 2015; Acebes et al, 2014; Zhang and Fan, 2014) Similarly, though Lack of Information and communications technology and project management tools management expertise responses ( $M= 3.73$ ,  $SD= 0.985$ ) shows that the respondents agreed, there was a diversity in recognising the variable as a technical factor derailing completion of housing units. In comparison, Serra and Kunc (2015) study argued that there is a direct relationship between the applied monitoring systems and the project completion timelines.

## Contractor technical causes of delays in housing projects

**Table 4: Contractors Technical Risks Causing Project Delays**

	N	Mean	Std. Deviation
Lack of project teams coordination	110	4.02	.995
Ineffective and incompetent management of project management tools	110	4.05	1.008
Poor and inaccurate project drawings and plans	110	3.49	1.098
Lack of competent HR skills for project execution	110	3.79	1.015
Contractor and sub-contractor disputes	110	3.94	1.119
Valid N (listwise)	110		

Ineffective and incompetent management of project management tools was the high ranking technical issue introduced by the contractors in the project scope. As such, the standard deviations showed that the respondents had varied perception that incompetencies in their project management as a technical factor ( $M=4.05$ , and  $SD =1.008$ ). The finding can also be associated to Otoo, Agapitova and Behrens (2015) study that noted that delays were preventable if only proactive monitoring systems were used to identify the potential challenges in the operations for corrections. Following, incompetent management and monitoring had a relatively equal detrimental effect the showed that lack of project teams coordination played a significant role as a technicality derailing the accomplishment of the projects objectives ( $M=4.02$ ,  $SD=.995$ ).

The disputes entangling the contractor and sub-contractor ( $M=3.94$ ,  $SD=1.119$ ) as well as the lack of competent HR skills for project execution ( $M=3.79$ ,  $SD=1.015$ ) were also significantly ranked as variables or technicalities that impeded the Sheikh Zayed housing programme progress in the set time frame. Similarly, Megha and Rajiv (2013) and Muhwezi, Acai and Otim (2014) recognise the technical issues as derailing factors respectively.

Poor and inaccurate project drawings and plans ( $M=3.49$ ,  $SD=1.098$ ) was weakly agreed as a technical factor by the contractors handling the construction of the housing units that inhibited on time completion. Additionally, the standard deviation showed that there were varied responses pertaining to the view to the extent that inaccurate drawings impeded the progress of the project (Gilbert and Nugent, 2014)

***Consultants technical causes of delays in housing projects***

**Table 5: Consultants Technical Risks Causing Project Delays**

	N	Mean	Std. Deviation
Lack of clear material needs specification	110	3.69	1.179
Lack of proper project scope specification	110	3.74	1.089
Material and drawings late approvals	110	3.90	1.100
The lack of on-site Supervision staff	110	3.87	1.174
The consultants inflexibility and stubbornness	110	3.60	1.159
Valid N (listwise)	110		

The consultants were perceived to delay in approving material and drawings for the Sheikh Zayed housing programme ( $M=3.90$ ,  $SD=1.100$ ). as such, the respondents agreed that these was one of the high ranking technical issue emanating from the contractor that lead to the deviation of the project from its time schedule. The lack of on-site staff to supervise the progress of the construction activities was also another technicality that the respondents agreed to cause delay of the projects ( $M=3.87$ ,  $SD=1.174$ ). The respondents also agreed that another technical issue related to the projects consultant was the lack of proper project scope specification ( $M=3.74$ ,  $SD=1.089$ ). Finally, the propensity of consultants to fail in providing clear material needs and their specification ( $M=3.69$ ,  $SD=1.179$ ) as well as the consultants inflexibility and stubbornness ( $M=3.60$ ,  $SD=1.159$ ) had a relative score as technical factors the delayed the completion of Sheikh Zayed housing units. Though, the standard deviation of the variables showed that despite the high rate of respondents who agreed, there were also responses that were sparsely distributed along the measuring scale. Accordingly, Aziz and Abdel-Hakam (2016) further portray the consultants as failures as they led to project delays due to poor guiding to the project clients.

***Government authorities technical causes of delays in housing projects***

**Table 6: Government authorities Technical Risks Causing Project Delays**

	N	Mean	Std. Deviation
External market changes	110	3.10	1.157
Project technical requirement changes	110	3.42	1.008
Legal system changes	110	3.57	1.104
Information and communications technology development and changes	110	3.20	1.124
Project management skills shortage	110	3.50	1.090
Valid N (listwise)	110		

The government, which was the founder, sponsor and regulatory body to the Sheikh Zayed housing initiative, was also perceived to introduce certain technicalities that impeded the progress and completion of the project. As such, the change of the legal system by the authorities was perceived to be the most significant technical factor that delayed the progress. Therefore, the computed mean ( $M=3.57$ ,  $SD=1.104$ ) showed that change in some government policies and other congruent factors was implicated to the other stakeholders thus leading to deviation from the projected time course depicting the completion date. This finding was similar to Megha and Rajiv (2013) and Aziz and Abdel-Hakam (2016) findings that legal aspects delayed a projects success.

Further, the respondents agreed that the government authorities project management skills shortage had a relative impact on the projects delay ( $M=3.50$ ,  $SD=1.09$ ). This shows that the respondents agreed that the failure by the government to establish a knowledgeable body in respect to the best project management was detrimental and delayed the overall progress similar to the findings by Muhwezi, Acai and Otim (2014).

The propensity by the government authority to change the projects technical requirement was a technicality that made the progress deviate from the established time schedule ( $M=3.42$ ,  $SD=1.008$ ).The mean shows that the respondents agreed weakly that it was a significant technical factor while the standard deviation shows that the responses had a tendency to be distributed along the measurement scale. On the other hand, changes of information and communications technology by the government authorities ( $M=3.20$ ,  $SD=1.124$ ), as well as the external market changes ( $M=3.10$ ,  $SD=1.157$ ) were technical factors emanating from federal government that had a dichotomous nature and dynamic ability to derailed the progress and completion of the housing units project. As such, the stakeholders as such, the stakeholders had a neutral view pertaining to the variables. This shows that the factors could take any dimension and influence on the project completion period. Further, the standard deviation shows heterogeneity in the responses connoting that they had been unevenly spread along the measuring scale.

***Research Objective Two: To evaluate the stakeholder's organisational risks causing project delays***

The responses were analysed in respect to the different stakeholders taking part in the Sheikh Zayed Housing Programme

***Owner organisational risks causing project delays***

**Table 7: owner organisational causes of delays in housing projects**

	N	Mean	Std. Deviation
Leadership	110	3.61	.987
Delays in design approvals	110	3.57	1.088
Failure to provide incentives to contractors for excellent performances	110	3.47	1.239
HR skills	110	3.32	1.013
Valid N (listwise)	110		

The leadership of the clients was also perceived an organisational factor that had the most significant influence on the Sheikh Zayed project completion rate ( $M=3.61$ ,  $SD=.987$ ). The mean showed that the stakeholders perception agreed with a relative homogeneity that leadership was an organisational factor derailing the stakeholders from attaining their objectives. On a similar note, Chandrasekaran, Linderman and Schroeder (2015) as well as Sunindijo (2015) noted that leadership practices had a relative impact on a projects success.

On a relatively similar level, the clients delay before approving the designs was also perceived as another organisational issue that impacted on the projects completion schedule ( $M=3.57$ ,  $SD=1.088$ ). though, there were some stakeholders with diversified views, most of the responses agreed that delay in designs approval played a role.

The propensity by the clients to fail to provide incentives to contractors for excellent performances was also another factor that affected housing projects completion schedule ( $M=3.47$ ,  $SD=1.239$ ). The effect of the absence of contractor(s) based incentives had a relatively equal impact with the human resource skills ( $M=3.32$ ,  $SD=1.013$ ). As such the respective means shows that the stakeholders weakly agreed that absence of incentives to the contractor by the clients as well as limited human resource skills had detrimental impact on the projects delay. Incentives have been found by Bhuiyan, Al-Shammari and Jefri (1996) to boost the overall performance of organisations as well as the commitment. Although, on top of the low levels of agreeing, the standard deviation further shows that the responses were distributed over the measuring scale

*Contractors organisational attribute causing project delays*

**Table 8: Contractors organisational causes of delays in housing projects**

	N	Mean	Std. Deviation
Change of requirements after tender award	110	3.87	1.150
Corporate culture	110	3.74	1.011
Failure to arrange for effective financial management	110	3.95	1.091
Lack of proper internal control systems	110	3.82	1.051
Lack of enough labor workforce and equipment	110	3.63	1.218
Valid N (listwise)	110		

The stakeholders showed that the failure to arrange for effective financial management by the contractors delayed the Sheikh Zayed projects completion ( $M=3.95$ ,  $SD=1.091$ ). As such, the respondents agreed that poor financial handling measures had a high impact towards the completion of the projects. Similarly, the change of requirements after tender award ( $M=3.87$ ,  $SD=1.150$ ) by the contractor has a relatively same impact on the project completion period.

Further, the lack of proper internal control systems ( $M=3.82$ ,  $SD=1.051$ ) as well as the adopted corporate culture ( $M=3.74$ ,  $SD=1.011$ ) were perceived as organisational factors emanating from the contractor that delayed the completion of the projects. Therefore, despite the low level of heterogeneity in the distribution of the responses along the scale, most of the stakeholders agreed that the two variables were equally significant and able to derail the progress of the housing units projects.

The stakeholders also perceived the absence of enough labour workforce and equipment as an organisational factor that delayed the project completion ( $M=3.63$ ,  $SD=1.218$ ). Though there was heterogeneity, most of the respondents still agreed that lack of working capacity by the contractors had an effect on the adherence to the projects schedule. In respect to the contractors influence on a project delay, Zhang and Fan (2013) and Aziz and Abdel-Hakam (2016) highlight that lack of sufficient capacity by the contractors and undedicated monitoring system hampered overall progress of project based organisations.

*Consultant organisational risks causing project delays*

**Table 9: Consultant organisational causes of delays in housing projects**

	N	Mean	Std. Deviation
Diversity in global market needs and trend changes	110	3.21	1.134
Management systems	110	3.65	1.010
Consultants systems management incompetences	110	3.84	1.088
Tasks and project experience	110	3.84	1.009
External market changes and dynamics	110	3.33	1.101
Valid N (listwise)	110		

the stakeholders perceived that the consultants systems management incompetency was one of the organisational factor that caused delay in projects completion from the consultants side ( $M=3.84$ ,  $SD=1.088$ ). The variable had an exact impact on the completion rate as seen with the consultants experience in tasks and project management ( $M=3.84$ ,  $SD=1.009$ ). This connotes that the participants had an exact number of responses on the agree point of measurement in the scale. However, the standard deviation being different in the two variables shows that the rest responses were distributed over the other points of measurement with a relative low level of heterogeneity.

The management systems of the consultants was also perceived to have a derailing impact on the projects completion schedule ( $M=3.65$ ,  $SD=1.010$ ). This connotes that the adopted management system by the consultants was agreed with a relative low levels of homogeneity to make the stakeholders implement and carryout the project at relatively longer periods than expected

External market changes and dynamics ( $M=3.33$ ,  $SD=1.101$ ) was also perceived by the stakeholders to be organisational factor that delayed completion of projects. According to the mean, there was a relative low rate of perception of the factor as an element inhibiting a projected progress. Finally, diversity in global market needs and trend changes in the consultant side had very low levels of agreement ( $M=3.21$ ,  $SD=1.134$ ) as an organisational factor that lead to delay.

Relating, Safa et al (2014) argues that consultants have the mandates to help mitigate any constraints related to the project by constantly indulging in market context analysis in order to understand the diversity in global market and trend changes.

#### ***Government Authority organisational risks causing project delays***

**Table 10: Government Authority organisational causes of delays in housing projects**

	N	Mean	Std. Deviation
Political goodwill	110	2.96	1.173
Political systems	110	3.07	1.155
National culture	110	3.22	1.128
Project management skills	110	3.80	.917
Political stability	110	3.46	1.246
Valid N (listwise)	110		

The responses showed that the project management skills by relevant body in the authority caused delays in the project completion as per the schedule ( $M=3.80$ ,  $SD=.917$ ). The mean showed that the respondents agreed with a relatively high homogeneity as shown by the computed standard deviation. Therefore, most of the responses were concentrated in the measurement point agree on the Likerts scale.

Political stability ( $M=3.46$ ,  $SD=1.246$ ) was also another organisational factor emanating from the government as stakeholder that caused delays in the Sheikh Zayed housing initiative completion rate. However, the rest perception from the respondents were distributed in different measurement scales as shown by the computed standard deviation

The national culture ( $M=3.22$ ,  $SD=1.128$ ) was insignificantly viewed as an organisational factor that introduced aspects of delay in the project. On the other hand, the Political systems ( $M=3.07$ ,  $SD=1.155$ ) as well as the Political goodwill ( $M=2.96$ ,  $SD=1.173$ ) was perceived as dichotomous or as a variable that could take any shape in influencing the projects completion rate. However there were some levels of heterogeneity in the stakeholders perceptions, the most count of the participants had a neutral view concerning the two variables associated with the authorities as organisational factors. Apart from the corporate culture impact on a projects success, Asafet et al (2005) recognises the political system as a factor that contributes to project delay. On a specific note, the national culture is pinpointed as dynamic and capable of introducing negativities into the overall project progress and the ability to stick to the schedule.

#### 4.5 Testing the Study Hypothesis

The study hypothesis that had been derived from the literature was tested if they were true through Chi Square test. The test of the hypothesis was arranged as per the hypothesis number. The

significance value was set at  $p \leq 0.05$ . This showed that the researcher had 5% chances of making an error while accepting or rejecting the null hypothesis. Additionally, any alpha value above 0.005 was therefore considered to be insignificant connoting that there was no direct positive relationship between the variables.

**H1: There is a relationship between stakeholders technical risks and projects success in terms of projects on time completion.**

The following table shows the results of the hypothesis test.

**Table 11: The Relationship between Owners Technical Risks and Projects Success**

Owners Technical Risks and Projects Success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	760.981a	252	.000
Likelihood Ratio	505.080	252	.000
Linear-by-Linear Association	20.845	1	.000
N of Valid Cases	271		

As shown in Table 12 above, the Chi Square significance test alpha was  $<0.001$ . since the p values was less than 0.05, it was conclusive that there was a positive and a significant relationship between the owners technical risks the Sheikh Zayed housing programme success. As such, the hypothesis stating that owners technical factors had a relationship with the progress of the housing project was accepted.

**Table 12: The Relationship between Contractor Technical Risks and Projects Success**

Contractor Technical Risks and Projects Success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	839.527a	270	.000
Likelihood Ratio	522.166	270	.000

Linear-by-Linear Association	35.819	1	.000
N of Valid Cases	271		

The table above presented the Chi Square significances values as <0.001. This shows that contractors technical factors had a positive relationship with the project success. As such the contractors technical risks could lead to delay of the housing programme. Therefore, the tested hypothesis was accepted.

**Table 13: The Relationship between Consultant Technical Risks and Projects Success**

Consultant Technical Risks and Projects Success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1016.929a	306	.000
Likelihood Ratio	554.714	306	.000
Linear-by-Linear Association	21.615	1	.000
N of Valid Cases	271		

Since the p value was below 0.05 which was set as the maximum value, it was concluded that the hypothesis inferring that consultant technical risks were related to the projects success was true.

**Table 14: The Relationship between Government Authority Technical Risks and Projects Success**

Government Authority Technical Risks and Projects Success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	772.790a	324	.000
Likelihood Ratio	522.832	324	.000
Linear-by-Linear Association	10.064	1	.002
N of Valid Cases	271		

The p value (<0.001) showed that there was a positive relationship between the government authorities technical risks and the projects progress. This was summarized with the view that the governments authority technical risks had a positive and significant relationship with the projects success.

**H2: There is a relationship between stakeholders organisational risks and projects success in terms of projects on time completion**

**Table 15: relationship between owners organisational risks and projects success in terms of projects on time completion**

owners organisational risks and projects success in terms of projects success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	675.017a	216	.000
Likelihood Ratio	456.822	216	.000
Linear-by-Linear Association	3.225	1	.073
N of Valid Cases	271		

Considering that the p value shown in table 16 above is <0.001, then it was conclusive that the owners organisational risks had a significant relationship with the Sheikh Zayed housing programme success.

**Table 16: relationship between contractors organisational risks and projects success in terms of projects on time completion**

contractors organisational risks and projects success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	588.568a	270	.000
Likelihood Ratio	445.258	270	.000
Linear-by-Linear Association	7.922	1	.005
N of Valid Cases	271		

The computed Chi Square significance value was <0.001. Since the value was less than the set significance level of the study, then it was concluded that the contractors organisational factors had a direct and significant relationship with the housing programme project success.

**Table 17: relationship between consultants organisational risks and projects success in terms of projects on time completion**

Consultants organisational risks and projects success	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	782.198a	306	.000
Likelihood Ratio	515.726	306	.000
Linear-by-Linear Association	16.551	1	.000
N of Valid Cases	271		

The p value (<0.001) showed that there was a positive and direct relationship between the consultants organisational issues and the success of Sheikh Zayed housing programme.

**Table 18: relationship between government authorities organisational risks and projects success in terms of projects on time completion**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	940.309a	324	.000
Likelihood Ratio	529.732	324	.000
Linear-by-Linear Association	24.929	1	.000
N of Valid Cases	271		

The computed Chi Square showed that there was a relationship between government authorities organisational risks and projects success. Therefore, this validated the tested hypothesis since the significance level was below the set value.

***H3: There exists a direct relationship between the stakeholders technical and organisational risks***

**Table 19: direct relationship between the stakeholders technical and organisational risks**

Which of the following best describes you	Value	df	Asymp. Sig. (2-sided)
owner	Pearson Chi-Square	540.000b	.263
	Likelihood Ratio	159.247	1.000
	Linear-by-Linear Association	16.535	.000
contractor	N of Valid Cases	27	
	Pearson Chi-Square	1423.333c	.000
	Likelihood Ratio	411.744	1.000
consultant	Linear-by-Linear Association	21.638	.000
	N of Valid Cases	70	
	Pearson Chi-Square	567.000d	.000
government	Likelihood Ratio	253.936	.000
	Linear-by-Linear Association	8.833	.003
	N of Valid Cases	54	
	Pearson Chi-Square	2018.000e	.000
	Likelihood Ratio	621.544	.000
	Linear-by-Linear Association	70.808	.000
	N of Valid Cases	120	

From an overall perspective, the stakeholders organisational and technical risks generated p values (<0.001) showed that there was a relationship between contractors, consultants and government authorities technical risks had a direct and significant relationship with the stakeholders organisational factors. Though, the owners significance level (0.263) which is above the set alpha

value showed that there was no significance between the owners Organisational risks and the technical attribute.

#### **4.6 Summary**

As such the technicalities of the owners; were perceived to change the order in course of the project, construction material changes and delay and lack of ICT infrastructures as well as projects management tools. The organisational factors impacting delay of the programmes were the leadership competencies, delaying before approving designs, failure to incentivise contractors and lack of human resource skills.

On the contractors side, the main findings were; organisational issues such as poor financial management, changing the scope of project after award, non-conformed control systems and corporate culture as well as less workforce capacity. Technical issues were poor coordination of project team and failure to use coordination tools, inaccurate house plans, lack of HR skills, and the involved contractors disputes.

The consultants organisational causes of delay were found to be; dynamic market needs, the adopted management system incompetencies, lack of experience in project handling, the technical issues included; lack of clear specification of materials as well as project scope specification, late approval of drawings as well as materials, lack of professional support staff in project impletion, and lack of agility

The main organisational issues delaying projects success from the government included the poor project management skills, political instability, changing national culture, existing systems and the political goodwill. The technical governmental risks hampering projects success were, changes in legal system, lack of project management skills, change of project technical scope, lack of ICT competencies and dynamic market aspects.

Muhwezi, Acai and Otim (2014), Kikwasi (2012), and Serra and Kunc (2015) studies that made the theoretical presumptions that stakeholders organisational factors as well as technical factors have an impact on a projects success was ratified by the study by concluding that there was a significant and direct relationship. Even though the organisation and technical factors of the

stakeholders had an impact on the projects success, the relationship between the owners organisational issues and technical factors was not established.

## **Chapter Five**

### **Summary of the Findings, Discussion**

#### **5.0 Introduction**

The chapter concludes the study by summarising the study findings and listing their implications. Additionally, the chapter also outlines the recommendations as well as the limitation of the research. Therefore, the chapter contains all the factors leading to the delay of Sheikh Zayed housing programme linked to all the stakeholders.

#### **5.1 General Overview**

The purpose of the study was to list the technical as well as the organisational factors that contribute to the delay of the government sponsored housing programme. As such to list the factors leading to the delay, all the team members herein referred to as the stakeholders were studied. The stakeholders included the owners, government, consultants and the contractors. The following research objectives were formulated in order to guide the research process

- To evaluate the stakeholder's technical risks causing project delays
- To evaluate the stakeholder's organisational risks causing project delays
- Establish The direct relationship between the stakeholders technical and organisational risks.

After the data were empirically collected, it was analysed through the help of a statistical package (SPSS). Additionally, the statistical analysis allowed the researcher to test the hypothesis derived from the existing literature. The knowledge created after the analysis was deductive in nature.

## 5.2 Summary of the Main Findings

### 5.2.1 Research Objectives

The section summarises the research findings as per the research objectives. All the findings pertaining to the stakeholders risks causing delay have been outlined from the most significant influencer to the less significant influencers under each stakeholders section contained under the research objectives.

#### *Research Objective One: The stakeholder's technical risks causing project delays*

##### **1<sup>st</sup> stakeholder technical causes of delays in housing projects**

###### **Owner**

The main technical issues emanating from the programme beneficiaries (owners) of the Sheikh Zayed housing programme included; the change of order in course of the project, the level technical knowledge by the housing unit owners, changing of projects technical requirement by the owners, changes and the delivery of poor quality materials, lack of information and communications technology and project management tools management expertise. In this context most of the respondents agreed with a relative homogeneity that the listed houses owners technical aspects led to the delay. As such, the overall mean of all the houses owners technicalities was 3.26 which was within the ‘agree range on the scale of measurement.

##### **2<sup>nd</sup> stakeholder technical causes of delays in housing projects**

###### **Contractor**

The technical aspect of contractors that led to the project delay included; ineffective and incompetent management of project management tools, lack of coordination from the project teams, disputes between the contractor and sub-contractor, lack of competent HR skills for project execution, poor and inaccurate project drawings and plans. The technical factors introduced by the contractors in the housing programme had an average score of 3.86. The mean depicts that most of the participants agreed that the above-listed contractors technicalities lead to the project delay.

### **3<sup>rd</sup> stakeholder technical causes of delays in housing projects**

#### **Consultants**

The technical factors introduced by the consultants included; consultants delay in approving material and drawings, lack of on-site staff to supervise the progress of the construction activities, lack of proper project scope specification, failing to provide clear material needs and their specification, consultants inflexibility and stubbornness

### **4th Stakeholder technical causes of delays in housing projects**

#### **Government authorities**

The government; which was the main sponsor of the housing programme introduced several externalities that delayed the programme completion period. They included; change of the legal system by the authorities, government authorities project management skills shortage, change of the projects technical requirement, changes in information and communications technology by the government authorities, as well as the external market changes. The respondents agreed with a relative homogeneity that the government technical factors contributed to the delay of the programme.

### ***Research Objective Two: The stakeholder's organisational risks causing project delays***

#### **1st Stakeholder: organisational risks causing project delays**

##### **Owner**

The following owners organisational risks were found as capable of derailing the progress of the housing initiative. The leadership of the clients, clients delay before approving the designs, failure of the clients to provide incentives to contractors for their excellent performances, and lack of human resource skills were the main owners organisational factor derailing progress completion as per the set schedule. The organisational factors of the clients were introduced to the housing programme thereby causing project delay.

## **2nd Stakeholder organisational attribute causing project delays**

### **Contractors**

The following organisational risks were seen as inhibitors to the progress of the Sheikh Zayed housing programme. They included the contractors failure to arrange for effective financial management, poor financial handling measures, change of requirements after tender award, lack of proper internal control systems, adopted the corporate culture, and finally the absence of enough labour workforce and equipment.

## **3rd Stakeholder organisational risks causing project delays**

### **Consultant**

The consultants systems management, incompetent consultants and their experience in tasks and project management, external market changes and other dynamics, diversity in global market needs and trend changes, were the issues associated with the housing programme consultants that fostered the divergence of the housing programme from the set time schedule.

## **4th Stakeholder organisational risks causing project delays**

### **Government Authority**

The organisational risks of the government included lack of project management skills, political instability, the prevalent national culture, the political system, and the political goodwill. As such, change of the above-named factors can be associated with positive changes in meeting the housing programme deadlines or negative implications pertaining to the completion date.

#### **5.2.2 Research Hypothesis**

The following are the findings from the tested research hypothesis that were derived from the literature.

***H1: There is a relationship between stakeholders technical risks and projects success in terms of projects on time completion.***

The owners technical risks p value,  $<0.001$ , confirmed the research hypothesis that there was a positive and a significant relationship between the owners technical risks the Sheikh Zayed housing programme success.

The consultants technical risks showed that the consultants technical risks were related to the projects success ( $p<0.001$ ).

The government authority ( $p<0.001$ ) showed that governments authority technical risks had a positive and significant relationship with the projects success.

***H2: There is a relationship between stakeholders organisational risks and projects success in terms of projects on time completion***

Considering that owners technical risks  $p<0.001$ , then it was conclusive that the owners organisational risks had a significant relationship with the Sheikh Zayed housing programme success.

The contractors organisational attribute ( $p< 0.001$ ) showed that the contractors organisational factors had a direct and significant relationship with the housing programme project success.

The p-value ( $<0.001$ ) of consultants risks showed that there was a significant relationship between the consultants organisational risks and the success of Sheikh Zayed housing programme.

The government authority organisational risks and projects success were concluded to be significantly and directly related ( $p<0.001$ ).

***H3: There exists a direct relationship between the stakeholders technical and organisational risks***

Collectively, the stakeholders organisational and technical risks ( $p<0.001$ ) showed that there was a direct and significant relationship between stakeholders technical risks and the stakeholders organisational risks. Though, the owners organisational risks and the technical attribute had no relationship.

### 5.3 Discussion

The main findings of the study were that each and every stakeholder had organisational as well as technical factors that were impacted on the Sheikh Zayed Housing Programme. The findings of the study show that Sheikh Zayed Housing programme is derailed by stakeholders organisational as well as technical factors were expected. This is due to the fact that for completion of the government projects, its imperative that different stakeholders should work together. Considering that Hanstad (2015) noted that the differences exhibited by relating parties had the potential to introduce poor working condition, then stakeholders theory is supported (Bridoux & Stoelhorst, 2014). From another point of view Schnackenberg and Tomlinson (2016) showed that there are different types of stakeholders; internal and external. As such, this characterises the actual scenario in Sheikh Zayed housing programme whereby the internal and external stakeholders level of interest differ. Such differences lead to poor commitment to common goal and finally leads to the delay of the housing projects.

The findings signifies that in order for the Sheikh Zayed housing Programme to work effectively, then the role players in the initiative must have consensus pertaining to the most probable way to relate and eliminate individual factors impeding proper relationship.

Overall, considering that the UAE region is changing and characterised with different market conditions, tastes, political shift and technological change, the projects more so in the construction industry is also affected. As such, the owners may tend to change their specifications of the project they enter into with the other stakeholders due to change of taste as well as the influence from the western culture that the population is gradually assimilating to. But in regards to the extensiveness of the changes wished changes or scopes the clients may tend to delay before improving the designs. The contractors are also affected by the dichotomous market conditions and different capacities like managerial capacities leading to delays or change of the designs due to the lack the needed capacity to handle such projects. Considering Sovacool, Gilbert and Nugent (2014) noted that the source of raw materials needed for a construction project is fundamental, delay by the raw materials sources greatly impede contractors progress. For instance, if the sub-contractors fail to source the materials from the suppliers in time as agreed with the main contractors, then a dispute may arise between the contractors and the subcontractors. Similarly, Bhuiyan, Al-Shammari and Jefri (1996) noted that incentives introduced in Saudi Arabia during Saudi Arabia led to

commitment and higher productivity. The same case would lead to low productiveness of the contractors due to the lack of incentives from the clients.

The leadership skills also mattered more so for the consultants. Through, such findings were expected considering that Efferin et al (2015) noted that the use of transformational leadership style delayed the decision making progress. Even though the transformational leadership style always gave good results, Efferin et al (2015) suggests integrating autocratic leadership skills is a superior practice. On another scope, since new firms of construction consultation sprung up in Dubai with a motive of benefiting from the Expo 2020 development initiatives as well as Sheikh Zayed housing programme. The start-up consultation firms tend to have little experience thus they take time while approving the house designs or poor specification of the materials needed. Other limitations include lack of agility in the dichotomous environment of operation.

The dynamic political environment present challenges to the government authority managing the housing programme. Though, unexpected findings were that ICT competencies had a multifaceted nature such it could impact negatively on the housing projects success. This was not expected since the Dubai region has greatly developed in terms of adopted technology. Such technological infrastructures are at disposal of the government that can leverage such systems to manage and control the Sheikh Zayed housing programme and its success. Considering that government authority is a high power stakeholder and influential in delivering the projects then the authorities dedication to use all means as per the stakeholders theory is necessary. This connotes that government should have a direct impact on the projects decisions and directions (Schnackenberg & Tomlinson, 2016; Cornelissen, 2014). Since it has been found that the involved stakeholders have little or no coordination then the adoption of a good management system as well as ICT infrastructures among other frameworks is cumbersome approach by the government. Keong Choong (2014) and Pahl and Beitz (2013) also drives forward that in systems theory, managing and operating any project there must be an alignment of different activities and functionalities in the process. Considering that alignment of the key channels by the stakeholders is absent, then poor managerial competencies and loosely applied ICT systems may also rank low as depicted by the study.

The hypothesis testing the relationship between stakeholders technical, organisational risks and project success shows that indeed there was a direct and significant impact of the stakeholders

technical risks on the Emiratis houses completion. This signifies that the technical risks introduced in the housing initiative were not due to chances but due to tangible factors that overarched positive contributions from the stakeholders. Again, this shows that the stakeholders theory is a significant and predictive factor that emerges from relations pertaining to diversified parties (Hanstad, 2015; Schnackenberg and Tomlinson, 2016). Therefore, it can be generalised that project based organisations with different role players is faced by organisational as well as technical factors. This connotes that at a national level Mohammed Bin Rashid Housing Establishment has the potential to be affected by such constraints unless proactive measures are put in place to mitigate the risks.

The hypothesis testing the relationship between the stakeholders technical and organisational risks show that there is the potential to predict the potential impact of technical risks from the stakeholders organisational risks and vice versa. This signifies that in case any stakeholders risk is identified, then the other can also be estimated as they have a significant relationship. However, the owners organisational and technical risks had a divergent finding whereby no direct relationship was established. This can be explained through the fact that the other stakeholders follow a formal recruiting strategy thereby sourcing human resource players with homogenous characteristics. This is contrary to the owners who do not hire and depend on their personal traits to make decisions that can tend to be less predictable.

#### **5.4 Implications of the Research Findings**

Collectively, the inefficiencies introduced by the stakeholders lead to the delay of the Sheikh Zayed housing programme. Since the different stakeholders had their respective organisational as well as technical risks that caused delays, then it implies that harmonising or else mitigating the factors that lead to the delay could not be effective if they were addressed from the one-dimensional look. As such, the mitigation of the stakeholders effects on the progress of the project must be addressed from multi-dimensions making sure that all the risks connected to the owners, contractors, consultants, and government authorities are properly attended to reduce their overall effect. This is due to the fact that enhancing a single stakeholder, such as the contractors risks would lead to effectiveness in only one facet since the rest stakeholders risks would still introduce derailing factors in the progress of the initiative. Therefore, the finding implies that the systems theory effectiveness is fundamental. In the context of the theory, different facets must work

together synonymously in order to realise the overall objectives. This is also similar to the stakeholders theory whereby the interest level of each and every relating element must be homogenous and dedicated to finish the task at hand. Failure to that, the divergent interests of the stakeholders transition to delays.

In research objective one, the owners of the houses made the project delay due to their propensity to change the order after it had been implemented. In reality after all the in advance processes of planning the project beforehand are complete, the stakeholders ensure changes from the stakeholder (owner) are accounted for even if it entails a change of the order. However, since the owners were also seen to have no technical knowledge pertaining to the project, the changes requested may have surpassed the allocated timelines and capacity to handle the changes.

Additionally, the lack of technical skills and capacity by the owners implies that they could not make proper choices pertaining to the materials quality and appropriateness. Arguably, considering that the owners lacked information and communications technology, project management tools and management expertise. This implies that the lack of systems to manage project was a common phenomenon since the owners were mostly indulged in such projects for maybe once – during their current construction activity. Therefore, investing in systems to manage projects was not important considering it was a one-time activity. This also implies that the lack of technical capability; which was the source of each and every owners inefficiency, is caused by the fact that the owners had not participated in such activities previously.

In the contractor and consultant risks causing delay, the systems inefficiency or else lack of competent technologies to manage the project were the main causes of project delay. Another theme eminent in the contractors and consultants risks was the inaccurate project scope definition and related inaccuracies. This implies that the lack of technological competency can lead to the inaccuracies exhibited by the two stakeholders. Upon the emergence of the inaccurate project plans, then the project may deviate from the owners expectations. Arguably, the owners may also tend to correct the aspects of the delivered projects to fit their expectations thereby causing further delay as the corrective measures are applied.

The government authority legal change implies that the regulations affected the project scope leading to the need to change the project requirements to fit the authorities legal requirements.

Further, the information management system was also a prevalent issue associated with the government risks. This implies that poor project management was also an issue that derailed project progress.

In objective two, the overarching theme in organisational factor was managerial skills and competency. Considering that for efficiency to be realised in different settings of the stakeholders, the managerial competency must be optimal. Since all the stakeholders have been characterised by managerial incompetency, then the leadership skills, financial handling and project human resource management diverges from the intended course. The poor management transitions to broken down communication and poor interest to suffice the systems theory requirements.

The stakeholders organisational factors as well as the technical risks had significant direct impact on the project success. This implies that as previously stated, the systems theory as well as the stakeholders theory is a fundamental aspect of working together with the stakeholders will lead to project success and mitigation of risks that can lead house completion delay.

Finally, the research findings contributes to future research by noting that the project owners are not easily predictable therefore, this implies that more interest should be directed to the project owners as they are the most unpredictable stakeholders. To future researchers, the finding implies that more studies should be carried out on the owners impact on project success while accounting for third variables such as the owner demographical characteristics among other factors.

## Chapter Six

### Conclusions, and Recommendations

#### **6.0 Introduction**

The chapter concludes the study by outlines the recommendations as well as the limitation of the research. Therefore, the chapter contains all the factors leading to the delay of Sheikh Zayed housing programme linked to all the stakeholders.

#### **6.1 Conclusion**

The study concludes that indeed the Sheikh Zayed housing programme is affected by the stakeholders organisational and technical risks. When the organisational and technical factors that are introduced by the stakeholders are merged together, then the overall effect leads to the noted project delay. The study also shows that the owners and government authority technical and organisational risks have a relatively lower impact on the project delay as compared to the contractors as well as the consultants technical and organisational risks. Therefore, it can be concluded that more aligning and sensitisation should be done to the contractors and the consultants for them to be more dedicated to achieve project success.

Additionally, the study also shows that the stakeholders organisational risks can be used to predict the respective technical risks of the stakeholders with a certain level of accuracy. Though, the owners technical and organisational risks proved that the relationship they have could not be used to predict the effect of any the variables towards project success. Therefore, it can be concluded that the owners technical and organisational risks are multi-faceted and can introduce uncertainty in the projects success. Whereas the total effect and extensiveness of the contractors, consultants and government authorities can be mapped through prediction, the owners attribute impact extensiveness can only be mapped if only the technical and organisational factors are available and quantifiable.

Finally, the main theme in stakeholders technicalities included; lack of information technology systems to manage the projects and request of changes and other technical aspects of the project while the project has already commenced. The organisational factors associated with the stakeholders were thematically summarised to be lack of managerial skills and competency as well

as poor leadership skills. This introduced other factors that lead to mismanagement of resources and poor coordination between the stakeholders.

## **6.2 Recommendations**

### **6.2.1 Recommendations to the Sheikh Zayed Housing Programme Stakeholders**

The risks introduced by the technical as well as managerial risks of the stakeholders can be mitigated upon application of the following recommendations.

Considering that the stakeholders had incompetent systems to manage the project and its progress, it is therefore recommended that all the stakeholders should jointly establish project management system supporting each and every stakeholder interfaces whereby they can monitor if their key deliverables are met. Additionally, the project management system can further link all the stakeholders in the Sheikh Zayed housing programme such that it would be possible to develop human resource plan, acquire project team, develop project team, and manage the project team. From another perspective, the system can help the stakeholders to initiate, plan, execute and control the project.

It is also recommendable that the stakeholders in the Sheikh Zayed housing programme to use Earned Value Management (EVM) systems so as to check the schedule variance and cost variance in the project deliverables. Therefore, noting such inefficiencies ensures that all the stakeholders are aware if they are behind schedule or on time. It is also through earned value managements that the stakeholders can mitigate the inefficiencies related with financial mismanagement (Lipke, Zwikael, Henderson, and Anbari, 2009).

Since it was also found that the stakeholders (contractors) had poor and inaccurate project drawings and plans, it is therefore recommended that the stakeholders should use Building Information Modelling (BIM). As such, most of the project scope, cost, materials requirements and other relative information are easily shared between the shareholders. This makes project planning and management in its life cycle simpler and well aligned (Eastman, Eastman, Teicholz, and Sacks, 2011).

### **6.2.2 Recommendations to the Researchers**

Considering that the study was conducted in the UAE region, it is recommended that the study to be conducted in another global region so that the findings from the different study findings can be compared to each other to confirm if the Hofstede cultural dimensions theory is applicable in projects management.

Future results should also consider assessing the moderating effect of other variables like the climate changes in the region. It is presumable that apart from the stakeholders risks, other factors can play a role in derailing the project progress.

### **6.3 Limitations of the Study**

Project success can be depicted by the project completion period among other indicators. Therefore, the project success can also be measured through other constructs such as the satisfaction level of the owner. Therefore, the research concentrated on the causes of delay only making it impossible to map other stakeholders risks that inhibit project success. Therefore, the study findings cannot be passed or else be validated as the only factors that lead to poor project success as other variables are equally detrimental. To enhance the generalizability of the study findings pertaining to projects success, other key indicators denoting project success should be incorporated among the studied variables.

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## Appendix I: Questionnaire

The Influence of Technical and Organisational Risks on the Success of Construction Projects - U.A.E  
تأثير المخاطر الفنية والتنظيمية على نجاح مشاريع البناء في دولة الإمارات العربية المتحدة

SurveyMonkey

الاسم - اختياري ( Optional )

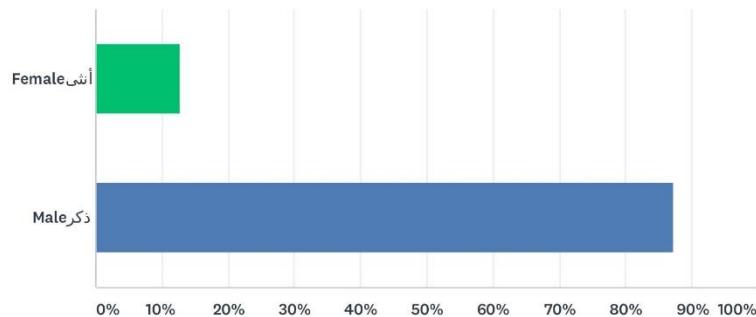
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The Influence of Technical and Organisational Risks on the Success of Construction Projects في دولة الإمارات العربية المتحدة - U.A.E تأثير المخاطر الفنية والتنظيمية على نجاح مشاريع البناء

SurveyMonkey

### Q2 What is your gender؟؟ الجنس؟

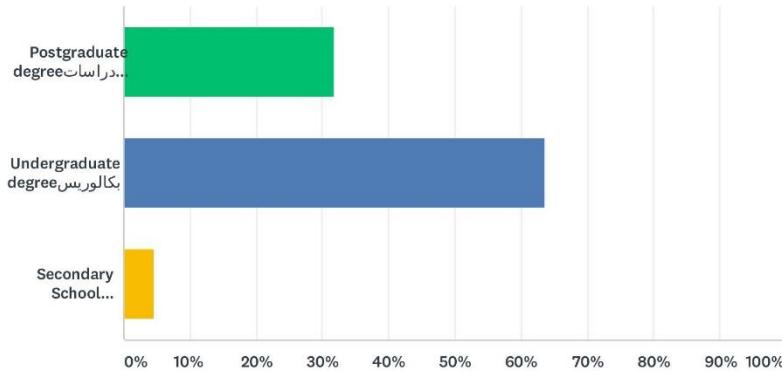
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ANSWER CHOICES	RESPONSES
Female إناث	12.73% 14
Male ذكور	87.27% 96
TOTAL	110

### المستوى التعليمي؟ Q3 Education Level?

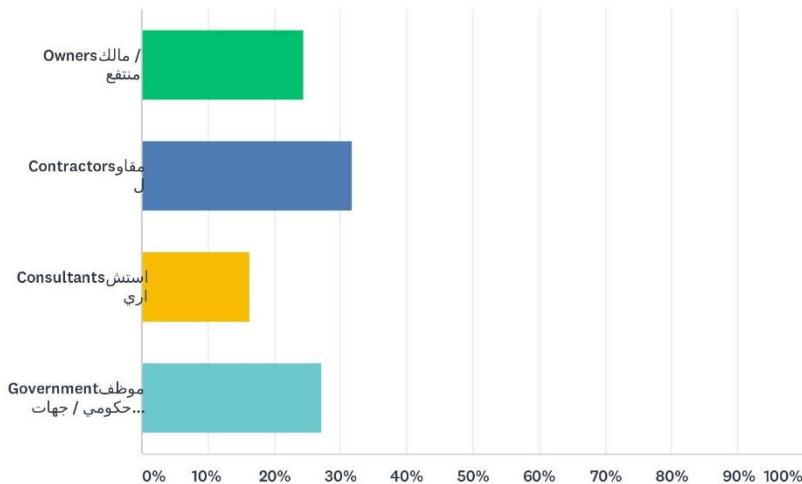
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ANSWER CHOICES	RESPONSES
Postgraduate degree (دراسات عليا)	31.82%
Undergraduate degree (بكالوريس)	63.64%
Secondary School degree (ثانوية عامة)	4.55%
<b>TOTAL</b>	<b>110</b>

**Q4 Which of the following best describes you? في دولة الإمارات العربية المتحدة؟**

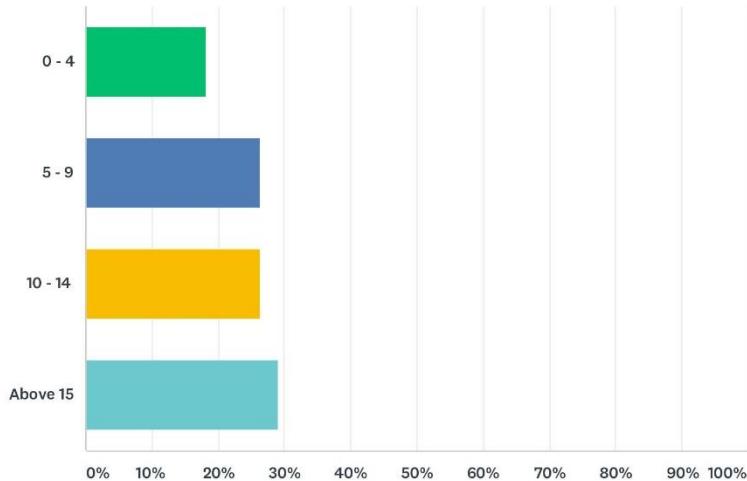
Answered: 110 Skipped: 0



ANSWER CHOICES	RESPONSES
Owners / منتفع	24.55%
Contractors	31.82%
Consultants	16.36%
Government	27.27%
<b>TOTAL</b>	<b>110</b>

### سنوات الخبرة؟ Q5 Experience years?

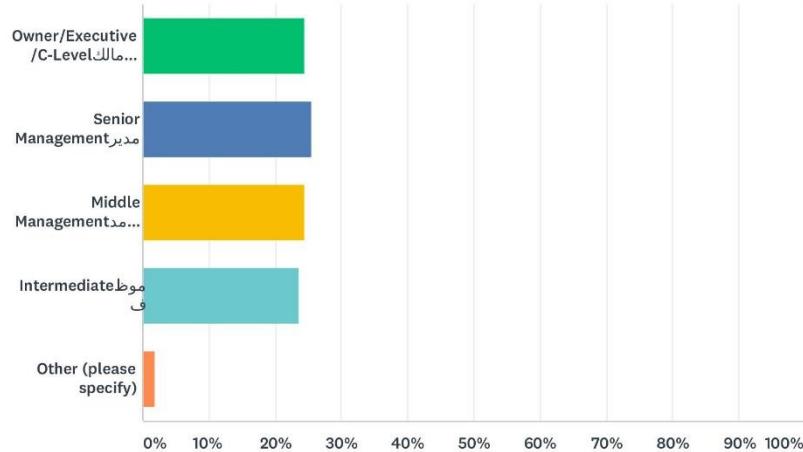
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ANSWER CHOICES	RESPONSES
0 - 4	18.18% 20
5 - 9	26.36% 29
10 - 14	26.36% 29
Above 15	29.09% 32
TOTAL	110

**Q6 Which of the following best describes your job position?**  
**أي وصف ينطبق على درجة الوظيفة؟**

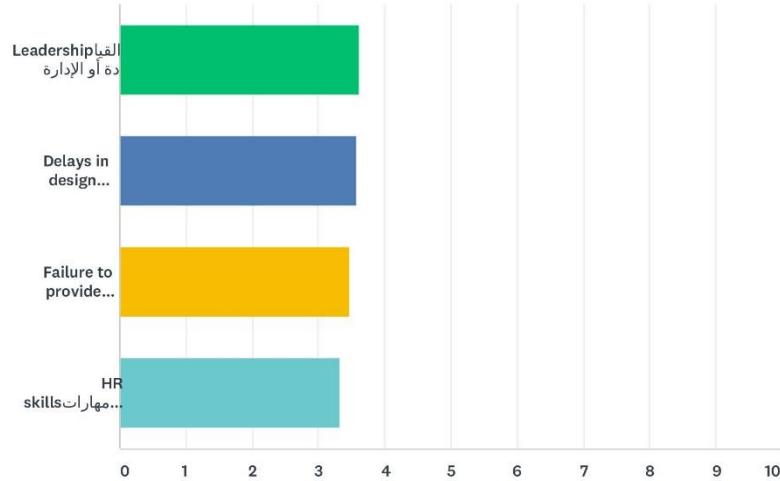
Answered: 110 Skipped: 0



ANSWER CHOICES	RESPONSES
Owner/Executive/C-Level	24.55%
Senior Management	25.45%
Middle Management	24.55%
Intermediate	23.64%
Other (please specify)	1.82%
<b>TOTAL</b>	<b>110</b>

**Q7 To what extent would you agree with the following statements on the owner organisational causes of delays in housing projects?**  
 إلى أي مدى تتوافق؟  
 مع العبارات التالية حول الأسباب التنظيمية المتعلقة بالمالك / المنفع في حالات التأخير في مشاريع الإسكان؟

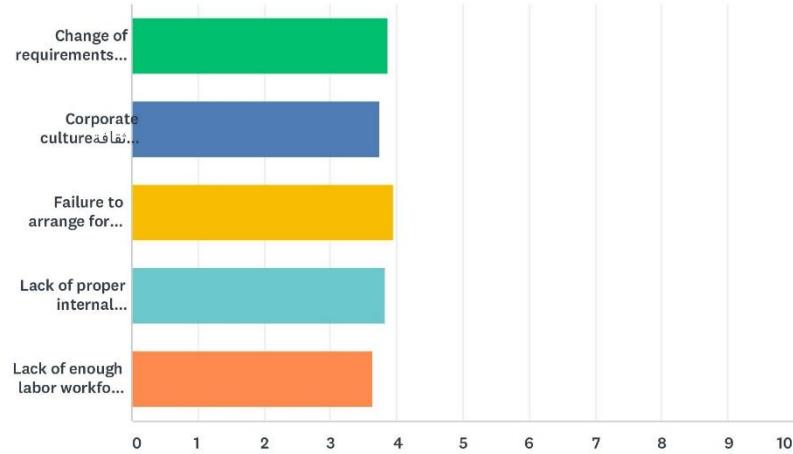
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Leadership	2.73% 3	10.00% 11	29.09% 32	40.00% 44	18.18% 20	110	3.61
Delays in design approvals	3.64% 4	14.55% 16	23.64% 26	37.27% 41	20.91% 23	110	3.57
Failure to provide incentives to contractors for excellent performances	6.36% 7	18.18% 20	23.64% 26	25.45% 28	26.36% 29	110	3.47
HR skills	3.64% 4	19.09% 21	29.09% 32	38.18% 42	10.00% 11	110	3.32

**Q8 To what extent would you agree with the following statements on the contractor organisational causes of delays in housing projects?**  
 إلى أي مدى تتوافق مع العبارات التالية حول الأسباب التنظيمية المتعلقة بالمقابل في حالات التأخير في مشاريع الإسكان؟

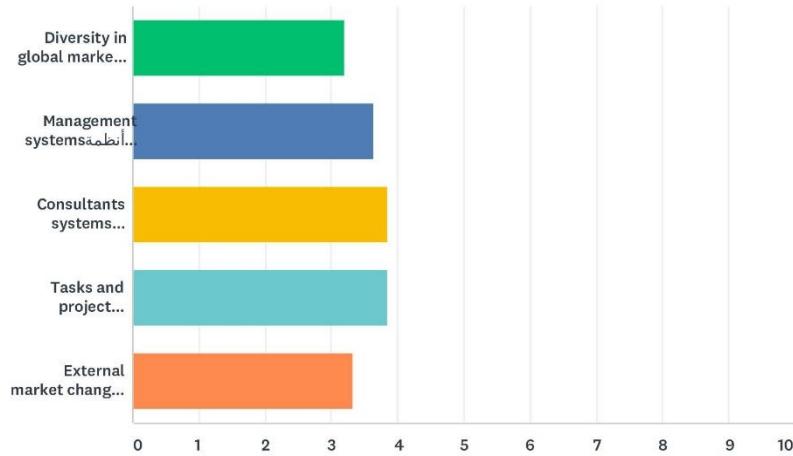
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
الإامر التغييرية بعد توقيع العقد	4.55% 5	10.91% 12	12.73% 14	36.36% 40	35.45% 39	110	3.87
ثقافة الشركة	3.64% 4	7.27% 8	23.64% 26	42.73% 47	22.73% 25	110	3.74
الفشل في الإدارة المالية	2.73% 3	10.00% 11	15.45% 17	33.64% 37	38.18% 42	110	3.95
عدم وجود أنظمة رقابة داخلية	1.82% 2	11.82% 13	19.09% 21	37.27% 41	30.00% 33	110	3.82
وجود نقص في المعدات والمواد والعمالة	4.55% 5	19.09% 21	14.55% 16	32.73% 36	29.09% 32	110	3.63

**Q9 To what extent would you agree with the following statements on the consultants organisational causes of delays in housing projects?**  
 إلى أي مدى تتوافق مع العبارات التالية حول الأسباب التنظيمية المتعلقة بالاستشاري في حالات التأخير في مشاريع الإسكان؟

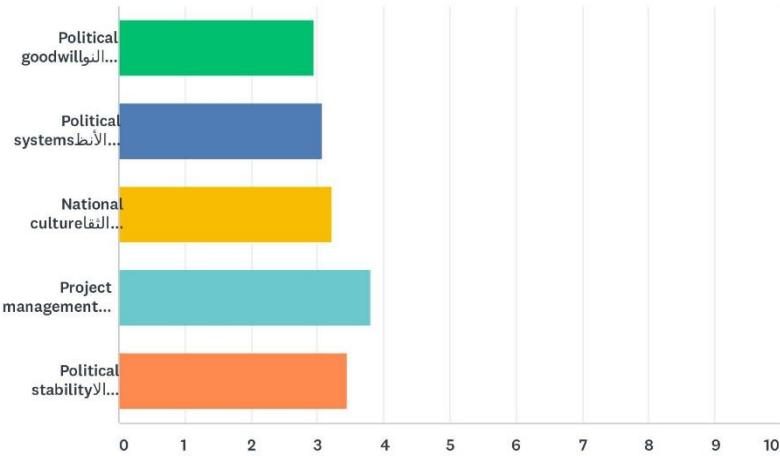
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Diversity in global market needs and trend changes	10.91%	10.00%	39.09%	27.27%	12.73%	110	3.21
Management systems	2.73%	9.09%	30.91%	35.45%	21.82%	110	3.65
Consultants systems management incompetence	1.82%	12.73%	19.09%	32.73%	33.64%	110	3.84
Tasks and project experience	3.64%	7.27%	16.36%	47.27%	25.45%	110	3.84
External market changes and dynamics	8.18%	10.91%	34.55%	32.73%	13.64%	110	3.33

**Q10 To what extent would you agree with the following statements on the government authorities organisational causes of delays in housing projects?**  
 إلى أي مدى تتوافق مع العبارات التالية حول الأسباب التنظيمية المتعلقة بالجهات الإسكانية؟  
 والبلديات في حالات التأخير في مشاريع الإسكان؟

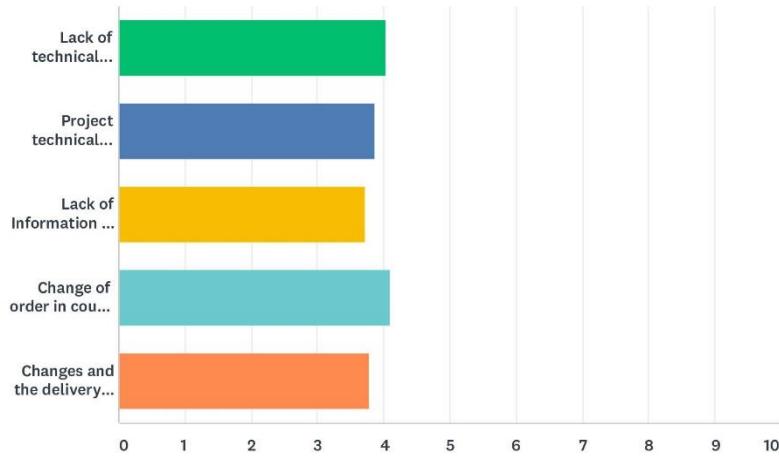
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Political goodwill	13.64% 15	18.18% 20	37.27% 41	20.00% 22	10.91% 12	110	2.96
Political systems	11.82% 13	16.36% 18	35.45% 39	25.45% 28	10.91% 12	110	3.07
National culture	10.00% 11	10.91% 12	40.00% 44	25.45% 28	13.64% 15	110	3.22
Project management skills	0.00% 0	10.00% 11	23.64% 26	42.73% 47	23.64% 26	110	3.80
Political stability	10.00% 11	8.18% 9	33.64% 37	21.82% 24	26.36% 29	110	3.46

**Q11 To what extent would you agree with the following statements on the owner technical causes of delays in housing projects?**  
 إلى أي مدى تتوافق مع العبارات التالية حول الأسباب الفنية المتعلقة بالمالك في حالات التأخير في مشاريع الإسكان؟

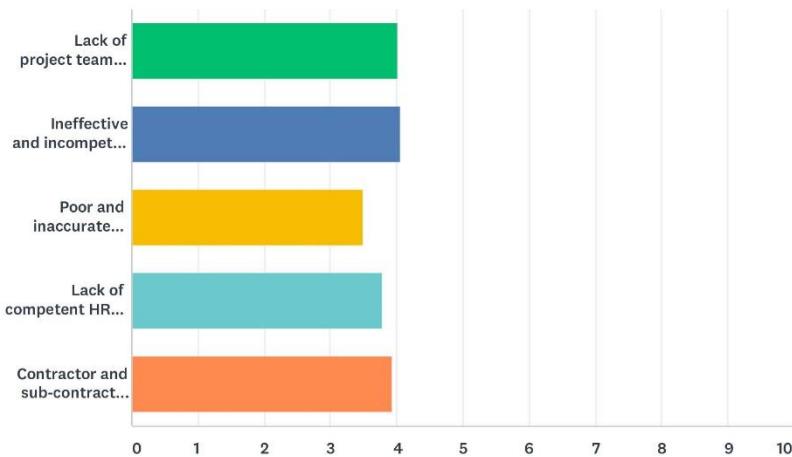
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Lack of technical knowledge by the client نقص خبرات ومهارات العملاء نقيمة عند المالك	0.91% 1	10.00% 11	11.82% 13	39.09% 43	38.18% 42	110	4.04
Project technical requirement changes تغير المتطلبات التقنية للمشروع	1.82% 2	7.27% 8	14.55% 16	54.55% 60	21.82% 24	110	3.87
Lack of Information and communications technology and project management tools management expertise نقص المعلومات والاتصالات وخبرة أدوات إدارة المشاريع	3.64% 4	8.18% 9	19.09% 21	50.00% 55	19.09% 21	110	3.73
Change of order in course of the project تغير المتطلبات في المشروع	1.82% 2	3.64% 4	13.64% 15	44.55% 49	36.36% 40	110	4.10
Changes and the delivery of poor quality materials استلام مواد ذات جود منخفضة	3.64% 4	8.18% 9	17.27% 19	47.27% 52	23.64% 26	110	3.79

**Q12 To what extent would you agree with the following statements on the contractor technical causes of delays in housing projects?**  
 إلى أي مدى تتوافق؟  
**مع العبارات التالية حول الأسباب الفنية المتعلقة بالمقاول في حالات التأخير في مشاريع الإسكان؟**

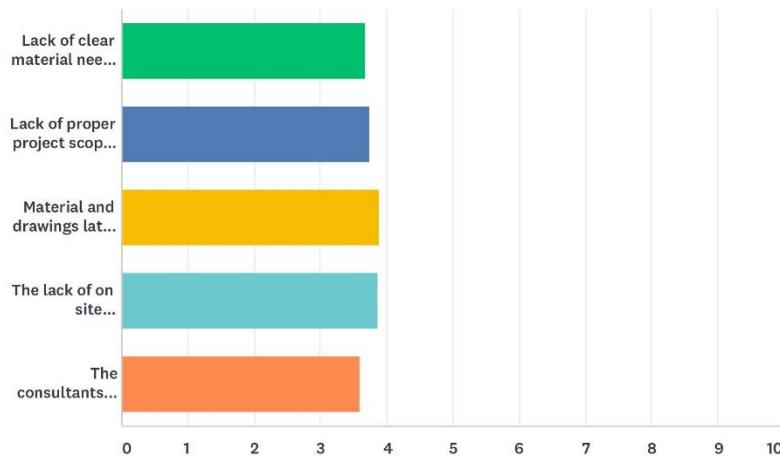
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Lack of project teams coordination	1.82% 2	8.18% 9	12.73% 14	40.91% 45	36.36% 40	110	4.02
Ineffective and incompetent management of project management tools	1.82% 2	7.27% 8	15.45% 17	35.45% 39	40.00% 44	110	4.05
Poor and inaccurate project drawings and plans	1.82% 2	22.73% 25	19.09% 21	37.27% 41	19.09% 21	110	3.49
Lack of competent HR skills for project execution	0.91% 1	10.91% 12	25.45% 28	33.64% 37	29.09% 32	110	3.79
Contractor and sub-contractor disputes	1.82% 2	15.45% 17	8.18% 9	36.36% 40	38.18% 42	110	3.94

**Q13 To what extent would you agree with the following statements on the consultants technical causes of delays in housing projects?**  
 إلى أي مدى تتوافق؟  
 مع العبارات التالية حول الأسباب الفنية المتعلقة بالاستشاري في حالات التأخير في مشاريع الإسكان؟

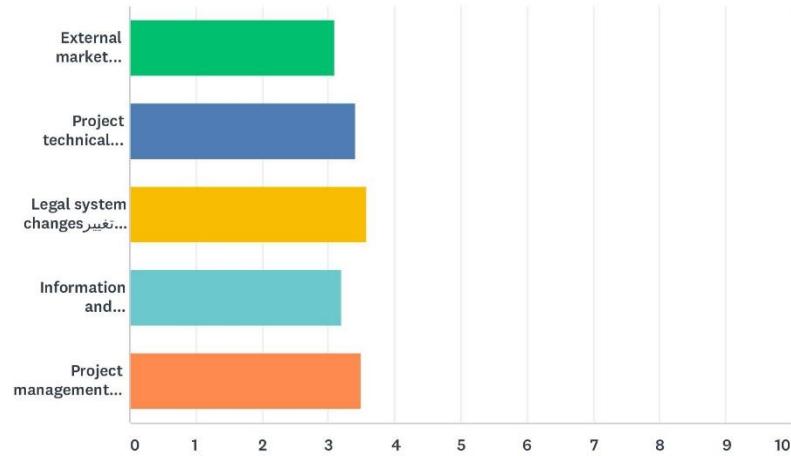
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
Lack of clear material needs specification	4.55% 5	16.36% 18	12.73% 14	38.18% 42	28.18% 31	110	3.69
Lack of proper project scope specification	2.73% 3	14.55% 16	15.45% 17	40.91% 45	26.36% 29	110	3.74
Material and drawings late approvals	1.82% 2	11.82% 13	19.09% 21	29.09% 32	38.18% 42	110	3.90
The lack of on site Supervision staff	4.55% 5	10.91% 12	15.45% 17	30.91% 34	38.18% 42	110	3.87
The consultants inflexibility and stubbornness	3.64% 4	14.55% 16	29.09% 32	23.64% 26	29.09% 32	110	3.60

**Q14 To what extent would you agree with the following statements on the government authorities technical causes of delays in housing projects?**  
 إلی أي مدى تتوافق مع العبارات التالية حول الأسباب الفنية المتعلقة بالجهات الإسكانية والبلديات في حالات التأخير في مشاريع الإسكان؟

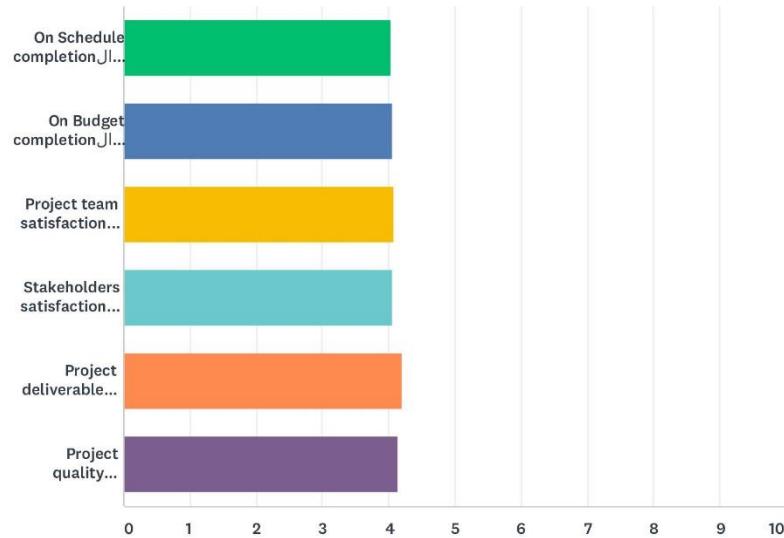
Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
External market changes	8.18% 9	24.55% 27	29.09% 32	25.45% 28	12.73% 14	110	3.10
Project technical requirement changes	3.64% 4	14.55% 16	30.91% 34	38.18% 42	12.73% 14	110	3.42
Legal system changes	4.55% 5	11.82% 13	28.18% 31	32.73% 36	22.73% 25	110	3.57
Information and communications technology development and changes	8.18% 9	18.18% 20	30.91% 34	30.91% 34	11.82% 13	110	3.20
Project management skills shortage	3.64% 4	13.64% 15	33.64% 37	27.27% 30	21.82% 24	110	3.50

**Q15 To what extent would you agree with the following statements on the success of Housing Projects?**  
 إلى أي مدى توافق على العبارات التالية فيما يخص نجاح مشاريع الإسكان؟

Answered: 110 Skipped: 0



	1	2	3	4	5	TOTAL	WEIGHTED AVERAGE
On Schedule completion	2.75%	13.76%	8.26%	27.52%	47.71%	109	4.04
On Budget completion	0.91%	8.18%	14.55%	36.36%	40.00%	110	4.06
Project team satisfaction	0.00%	8.26%	16.51%	34.86%	40.37%	109	4.07
Stakeholders satisfaction	0.91%	8.18%	15.45%	34.55%	40.91%	110	4.06
Project deliverable attainment	0.00%	6.36%	13.64%	33.64%	46.36%	110	4.20
Project quality attainment	1.82%	7.27%	11.82%	32.73%	46.36%	110	4.15

## Appendix II: Risks and Conceptual Framework

### Causes of project delays in Construction Projects

	Research Reference								
Construction Delays	Chandrasekaran, Linderman and Schroeder Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
Organizational Risks									
Owner									
Leadership	Y	Y	Y						
Delays in design approvals		Y	Y				Y		
Late decision making	Y		Y				Y		
Failure to provide incentives to contractors for excellent performances	Y	Y	Y						
HR skills		Y		Y			Y		
Contractor risks									
Change of requirements after tender award		Y	Y		Y				
Corporate culture		Y		Y			Y		
Failure to arrange for effective financial management			Y		Y		Y		
Lack of proper internal control systems		Y	Y	Y					
Lack of enough labour workforce and equipments			Y		Y		Y		
Consultant									

	Research Reference								
<b>Construction Delays</b>	Chandrasekaran, Linderman and Schroeder Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
Diversity in global market needs and trend changes	Y	Y	Y	Y					
Management systems		Y		Y				Y	
Consultants systems management incompetences	Y		Y	Y					
Tasks and project experience		Y	Y						Y
External market changes and dynamics	Y	Y		Y					
<b>Government authority</b>									
Political goodwill		Y	Y			Y			
Political systems	Y	Y		Y				Y	
National culture		Y	Y			Y			
Project management skills			Y	Y	Y				
Political stability	Y			Y				Y	
<b>Technical Risks</b>									
<b>Owner</b>									
Lack of technical knowledge by the client				Y	Y	Y		Y	Y
Project technical requirement changes	Y							Y	
Lack of ICT and project management tools management expertise				Y					

	<b>Research Reference</b>								
<b>Construction Delays</b>	Chandrasekaran, Linderman and Schroeder  Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
Change of order in course of the project		Y				Y			
Changes and the delivery of poor quality materials	Y		Y						
<b>Contractor risks</b>									
Lack of project teams coordination			Y		Y		Y		
Ineffective and incompetent management of project management tools			Y			Y		Y	
Lack of competent HR skills for project execution						Y	Y	Y	
Poor and inaccurate project drawings and plans			Y		Y		Y		
Contractor and sub-contractor disputes					Y	Y	Y		
<b>Consultant</b>									
Lack of clear material needs specification		Y			Y			Y	
Lack of proper project scope specification		Y			Y			Y	
Material and drawings late approvals		Y		Y		Y			
Supervision staff on site not available				Y	Y			Y	

		Research Reference								
<b>Construction Delays</b>		Chandrasekaran, Linderman and Schroeder  Asafet et al (2005)	Zhang and Fan (2013)	Kikwasi(2012)	Martin, Wiseman and Gomez-Mejia (2015)	Megha and Rajiv (2013)	Muhwezi, Acai and Otim (2014)	Sovacool, Gilbert and Nugent (2014)	Aziz and Abdel-Hakam (2016)	Serra and Kunc (2015)
The consultants inflexibility and stubbornness				Y	Y	Y				
<b>Government authority</b>										
External market changes		Y			Y		Y			
Project technical requirement changes					Y		Y		Y	
Legal system changes		Y					Y		Y	
ICT development and changes		Y			Y				Y	
Project management skills shortage		Y			Y		Y			