

Faculty of Economics and Business

Causes and Impacts of Public Construction Delays in Rural Malaysia: Insights from Rural Transformation Projects in Sarawak

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DOCTOR OF BUSINESS ADMINISTRATION
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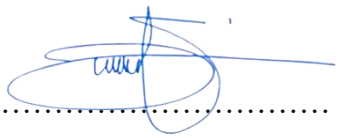
A thesis submitted

In fulfillment of the requirements for the degree of Doctor of Business Administration

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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



……

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Date: 13th Sept 2024

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ABSTRACT

Public construction projects often experience delays, especially in rural areas, posing significant challenges to sustainable development initiatives, particularly within the context of rural development. This study aimed to bridge existing research gaps by investigating the causes and impacts of delays, focussing on the unique challenges faced by public construction delays in rural Malaysia from the insights of Rural Transformation Projects (RTP) in Sarawak from 2015 until 2023. A qualitative exploratory approach, combining semi-structured interviews and a comprehensive literature review, was utilized to gather and analyse the data. Twelve respondents, comprising company owners directly involved in RTP programme implementation and execution, provided valuable insights into the causes and impacts of these delays, along with suggestions regarding the importance of implementing effective project and risk management to mitigate project delays. Through data coding and theme development analysis, the study identified twenty-six causes contributing to delays in public construction projects in rural areas, as well as their thirteen impacts. The study findings were compared with existing literature to highlight local variations in identifying the causes and impacts of public construction delays. This research enhances the understanding of the complexities surrounding public construction delays in rural Malaysia, offering practical insights for policymakers, implementation agencies, and stakeholders to improve project and risk management strategies and mitigate the risk of future delays.

Keywords: Public construction, project delays, causes of delays, impacts of delays, project management, risk management, Rural Transformation Project

Kajian Punca dan Impak Kelewatan Pembangunan Awam di Pedalaman Malaysia: Analisa Projek Transformasi Luar Bandar di Sarawak

ABSTRAK

Projek pembinaan awam sering mengalami kelewatan, terutamanya di kawasan luar bandar, dan ini menimbulkan cabaran besar kepada usaha pembangunan mampan, khususnya dalam pembangunan luar bandar di Malaysia. Ianya bertujuan untuk merapatkan jurang penyelidikan yang sedia ada dengan mengenalpati punca-punca dan impak-impak kelewatan, dengan memberi tumpuan kepada cabaran unik yang dihadapi oleh kelewatan pembinaan awam di kawasan luar bandar Malaysia dari sudut perlaksanaan Projek Transformasi Luar Bandar (RTP) di Sarawak dari tahun 2015 hingga 2023. Pendekatan kualitatif penjelasan digunakan, dengan menggabungkan temu bual separa berstruktur dengan kajian literatur yang komprehensif untuk mengumpul dan menganalisis data. Dua belas responden yang terdiri daripada pemilik syarikat-syarikat yang terlibat secara langsung dalam pelaksanaan program RTP di Sarawak, telah memberikan pandangan berharga mengenai punca-punca dan impak-impak kelewatan pembinaan projek awam. Kajian ini mendapati perlaksanaan pengurusan projek dan penegurusan risiko yang baik adalah perlu bagi setiap projek pembinaan awam untuk mengurangkan impak-impak kelewatan projek. Melalui pengkodan data dan analisis pembangunan tema, kajian ini telah mengenal pasti dua puluh enam punca yang menyumbang kepada kelewatan dalam projek pembinaan awam di kawasan luar bandar, serta tiga belas impaknya kepada kelewatan pembinaan projek luar bandar. Penemuan kajian tersebut telah dibandingkan dengan literatur sedia ada untuk menonjolkan variasi tempatan dalam mengenal pasti punca-punca dan impak-impak kelewatan pembinaan projek awam. Penyelidikan ini memberikan pemahaman yang lebih menyeluruh mengenai

kerumitan yang menyelubungi pembinaan-pembinaan projek awam di kawasan luar bandar. Ianya akan membantu pembuat-pembuat dasar, agensi-agensi pelaksana, dan pihak berkepentingan dalam memperhalusi strategi pengurusan projek dan pengurusan risiko untuk mengelakkan kelewatan dan mengurangkan risiko kegagalan projek pada masa akan datang.

Kata kunci: *Pembinaan awam, projek lewat, punca-punca kelewatan, impak-impak kelewatan, pengurusan projek, pengurusan risiko, Projek Transformasi Luar Bandar*

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LIST OF ABBREVIATIONS

ARAS	Additive Ratio Assessment
BDA	Bintulu Development Authority
BQ	Bill of Quantities
CGS	Centre for Graduate Studies
CM@R	Construction Management at Risk
DFS	Divisional Financial Secretary
DID	Department of Irrigation and Drainage
DOSM	Department of Statistic, Malaysia
EoT	Extension of Period
EPU	Economic Planning Unit
FSM	Fuzzy Synthetic Model
ICU	Implementation Coordination Unit
JBALB	Jabatan Bekalan Air Luar Bandar (Sarawak Rural Water Supply Department)
L&S	Lands and Surveys Department, Sarawak
MPs	Member of Parliaments
MiRRDA	Mid Rajang Regional Development Agency
NRDA	Northern Region Development Agency

PBT	*Pihak Berkuasa Tempatan* (Local Authority)
PMBOK	Project Management Body of Knowledge
PRM	Project Risk Management
PWD	Public Works Department
RAMCAP	Risk Analysis and Management for Critical Asset Protection
RECODA	Regional Development Agencies
RTP	Rural Transformation Projects
R&DO	Resident and District Offices
SADA	Sri Aman Development Agency
SFS	State Financial Secretary
SPA	State Planning Unit
SIMU	Sarawak Implementation and Monitoring Unit
TOPSIS	Technique for Order Performance by Similarity to Ideal Solution
ADUSs	Member of Sarawak Legislative Assembly
UNIMAS	Universiti Malaysia Sarawak

CHAPTER 1

INTRODUCTION

1.1 Introduction

The public construction project scenario and industry delays are briefly summarized in this chapter. It briefly outlines the primary motivations behind conducting this research. The purpose and expected achievements of the study are then briefly described. Finally, the chapter concludes with the inclusion of this study guideline.

1.2 Background of the Study

The Malaysia's construction sector had achieved significant growth, successfully completing 9,144 projects (Cynthia & Ignatius, 2023). Based on the quarterly construction statistic provided by the Department of Statistic, Malaysia (DOSM, 2024), the construction

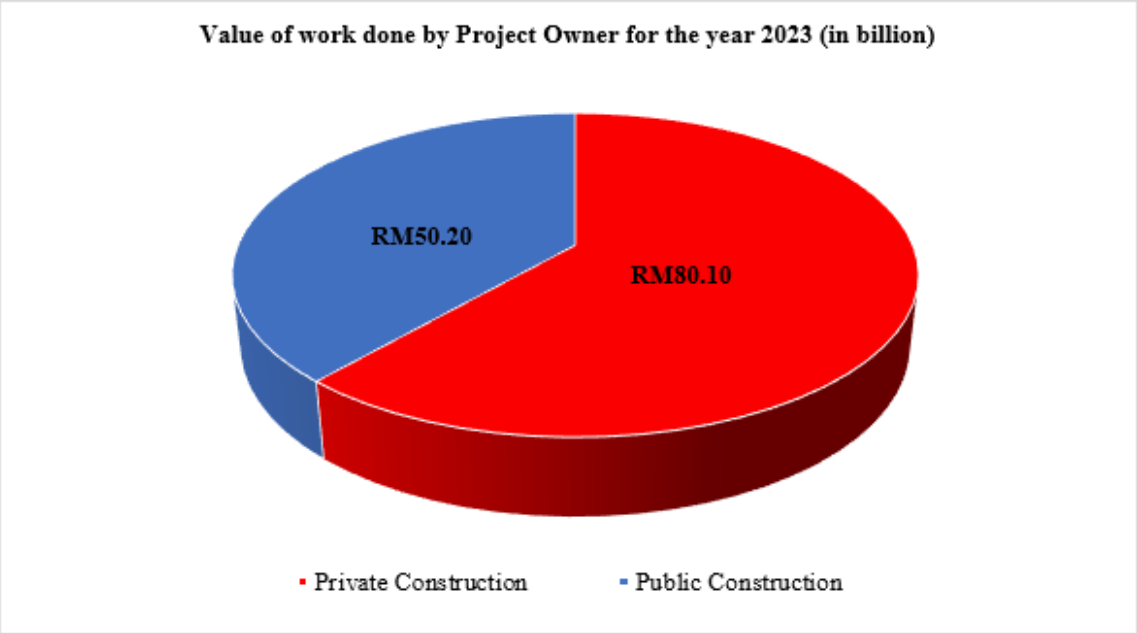


Figure 1.1 : Value of Work Done by Project Owner for the Year 2023 (in billion)
Source: Department of Statistics Malaysia (2024)

sector in Malaysia continued to grow positively in 2023 and private construction has catalyzed this growth by contributing RM80.10 billion, which is 61.47%, while public construction contributed RM50.20 billion, which is 38.53% as shown in **Figure 1.1** above.

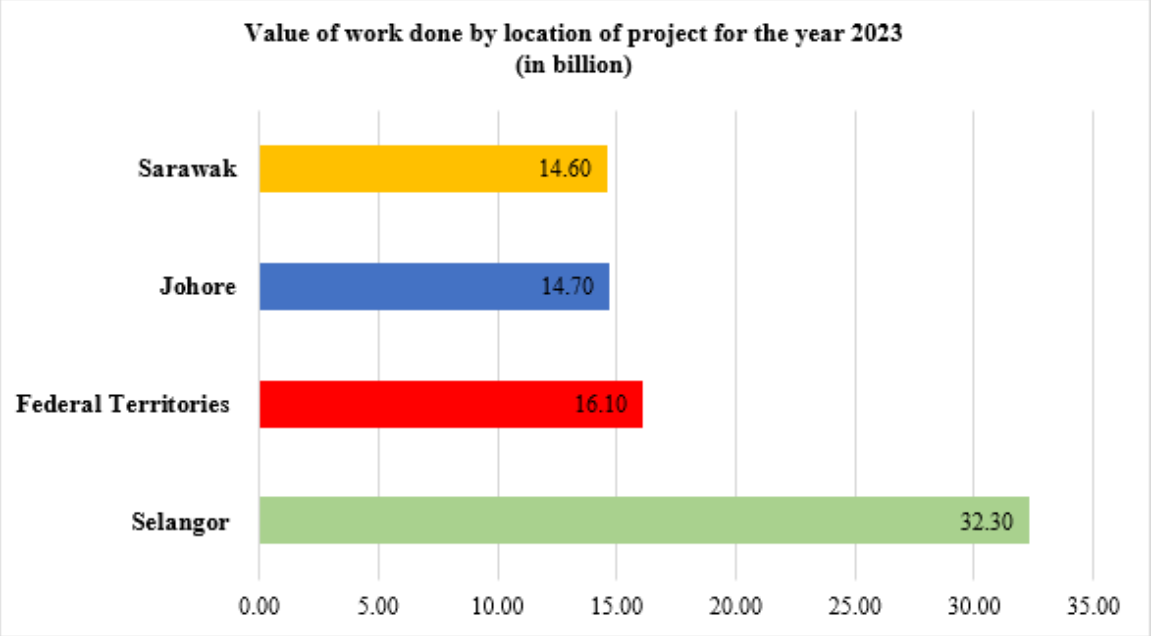


Figure 1.2 : Value of Work Done by Location of Project for the Year 2023 (in billion)

Source: Department of Statistics Malaysia (2024)

Roughly 59.63% of the construction industry's overall work value, RM130.30 billion, came from Selangor (RM32.30 billion @ 24.79%), the Federal Territories (RM16.10 billion @ 12.36%), Johore (RM14.70 billion @ 11.28%) and Sarawak (RM14.60 billion @11.20%) as shown in **Figure 1.2** above.

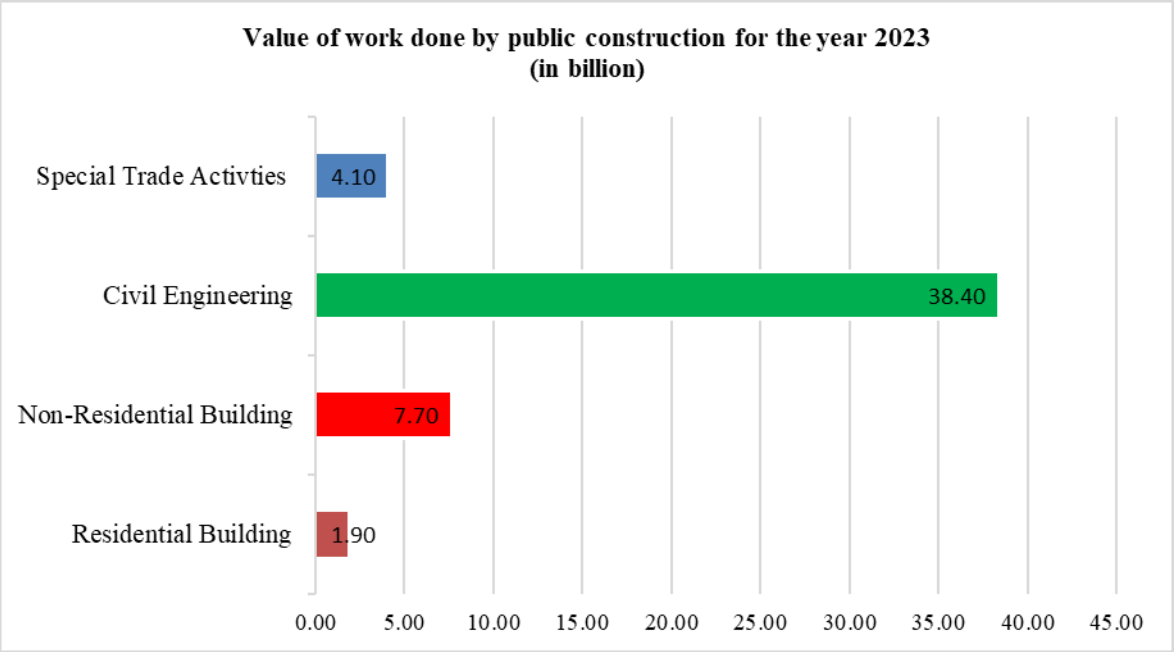


Figure 1.3 : Value of Work Done by Public Construction for the Year 2023 (in billion)

Source: Department of Statistics Malaysia (2024)

As displayed in **Figure 1.3** above, about 73.70% (RM38.40 billion) of the total value of public construction works was used in civil engineering, involving the construction of basic infrastructure for public use such as access roads, drainages, and social amenities like community halls, schools, and even government buildings.

The government has allocated RM99 billion for development purposes (Astroawani.com., 2022) and RM90 billion for 2024 (Saidi, 2023) in 2023's annual budget. Construction of public or government projects are essential to the growth and change of an area, especially in rural areas where infrastructural enhancements are vital for socio-economic progress. According to Sambasivan et al. (2007), despite contributing significantly to Malaysia's economic growth, the construction sector has experienced delays since 2005 and 17.3% of public construction projects were either behind schedule or problematic. Shehu et al. (2014), in their study also mentioned completion deadlines as specified inside contracts

were not met by public and private projects by 79.5% and 66.7%, respectively. Furthermore, Joshi (2009) reported that a substantial 80 percent of government projects in Malaysia experienced delays. There has been a significant decline in the probability of government construction projects being completed on schedule, and this scenario may have commenced around the year 2000 (Abd Karim, 2008; Joshi, 2009; and Jatarona et al., 2016). In 2022, a total of 178 public construction projects monitored by the Department of Malaysia's Prime Minister, under the responsibility of the Implementation and Coordination Unit (ICU), were categorised as sick or delayed projects, more than 20 percent over the planned schedule. While 31 out of 727 projects under the Public Works Department nationwide were identified as 'sick projects' due to delays in construction by contractors (Muhamad, 2023). As reported on January 27, 2003, of the 215 ongoing projects, 149 were progressing according to the established schedule, 29 projects were experiencing delays, and 34 projects were identified as critically delayed (Tawie, 2023).

Project delays and interruptions are a common problem that is not limited to less developed nations. Developed nations are also not exempt from this issue. According to Pourrostam et al. (2011), Sunjka & Jacob (2013) and Culfik et al. (2014), this problem is a worldwide issue rather than an isolated occurrence in certain nations. All construction projects in the world may have been completed beyond the stipulated time by giving an example, an Asian Development Project that received an "Outstanding Award", but the project was completed 9 months behind schedule (Acharya et. al., 2004). According to Aibinu and Jagboro (2002), either solely or collectively, both parties (contractor and owner) can contribute causes for failure of the project to meet its timeline. Project delays as defined by Assafand and Al-Hejji (2006) and Kumar (2016),"exceeding period occurring after the expiration of the contract or exceeding the deadline mutually agreed by both sides for the

completion of the contract." Previous studies gave different definitions of project delays. Sambasivan et al. (2007), in their research to determine and figure out both the reasons for and consequences of project delays on completion from an opinion of 150 respondents comprising clients, consultants, and contractors in Malaysia, defined project delays as situations where there is a delay of more than three months or abandonment.

In Malaysia, the government defines project delays as instances where completion exceeds more than 10% behind the expected schedule (Idrus et al., 2019). While, Jabatan Perumahan Negara, Kementerian Pembangunan Kerajaan Tempatan, Malaysia has defined project delay as a project that has experienced a delay of more than 30% compared to its scheduled progress or has expired the Sale & Purchase Agreement (Projek Sakit, 2023). Therefore, the definition of project delay in Malaysia varies depending on the terms and references agreed by both parties, the project owner, and the project contractor in their agreement. Numerous research has been done to explore the causes and impacts of delays in construction projects.; Shehuet al. (2015), for instance, examined the views of contractors, customers, consultants, and members of the public and private sectors in comparison to identify of variables found in the literature that related to project delays. Further, Assaf & Al-Hejji (2006), Sambasivan and Soon (2007), Theodore (2009), and Wei (2010) conducted a study in which they described seven categories of causes contributing to these delays. These related causes categories include owners, contractors, consultants, materials, equipment, labour, and external.

Numerous researchers were conducted to explore the causes and impacts contributed by project delays, such as when a project owner failed to provide access to the project site (Ahmed et al., 2002), site condition unable to be predicted and insufficient ground study (Lo

et al., 2006), limitation space cause difficulty to move within the project site (Wu & Yen, 2010), underground utilities has to be relocated (Department of Public Work, 2008), fluctuation of the price of project material can lead to cost overrun (Khaloufi, 1956), complication of material delivery and difficulty in recruit and retain labour (McAnulty and Baroudi, 2010), shortage of man power cause work overloaded that effect construction productivity (Dheenadhayalan and Alean (2015) , difficulty in getting skilled labours (Tran et. al., 2014), inexperienced and incompetence contractors were awarded with projects (Salleh, 2009), poor site management (Sidawi and Email, 2012), delay in making decision due to the extensive physical distance (Deng, 2001), and weather disruptions (Bulut et. al., 2008). Shehu et al. (2014), investigates the causes that contribute to problematic projects in rural areas by examining 359 projects, with insights from 111 experienced respondents, the results show high percentages of public projects not meeting contract timelines. The Relative Importance Index (RII) analysis highlights the top five causes: improper construction methods, weather challenges, delivery difficulties, equipment breakdowns, and inadequacies in contractor staff qualifications. While Ramli et al. (2018) in their study had highlighted the primary causes contributing to project construction delays are as follows: the implementation of an inappropriate technique of construction by the contractor, adverse weather conditions (such as heavy rain), challenges in delivering materials to the site, equipment breakdowns on the site, and a lack of qualification among the contractor's technical staff. Understanding the causes that contribute to project delays at rural construction projects is crucial in ensuring effective project management and the successful implementation of initiatives aimed at rural development. This understanding enables the formulation of targeted solutions, fosters more efficient project timelines, and, ultimately, enhances the positive impact of development initiatives on rural communities.

The need for study to find a solution to this issue has grown as a result of project completion delays that have continuously occurred. Priority should be given to this study because there is currently insufficient study has been done on project delays in rural area of Sarawak. Researching the causes and consequences of delays in progress for public projects in remote areas becomes important as an outcome. Therefore, this study's primary goal is to explore the causes that contribute to the Sarawak RTP project's delay and how it affects the contractor, implementation agency, end users, and customers.

1.3 Rural Transformation Project (RTP) and Its Structure

Sarawak has made significant efforts in recent years to improve its infrastructure and raise living conditions. One notable effort is the launch of the Rural Transformation Project (RTP) in 2015. This initiative symbolizes the coordinated actions taken to reduce developmental inequalities and enhance socio-economic advancement in the region. The RTP initiative has focused on executing various projects, with a particular emphasis on enhancing basic infrastructure, including road access, utilities, social amenities, or any other projects aimed at the well-being of the people. RTP significantly contributes to fostering sustainable development and elevating the quality of life in communities by narrowing the development gap between urban and rural areas.

The implementing agencies involved in the management and implementation of RTP are as follows: the State Financial Secretary (SFS), Economic Planning Unit (EPU), the Department of Premier of Sarawak, Sarawak Implementation Monitoring Unit (SIMU), the Land and Survey Department, Sarawak (L&S), the Public Works Department (PWD), the Department of Irrigation and Drainage (DID), Bintulu Development Authority, Sarawak

Rural Water Supply Department (JBALB), the Local Authorities, Resident & District Offices (R&DO), and the Divisional Financial Secretary (DFS).

i. The Sarawak State Financial Secretary's Office (SFS) plays a role in establishing procurement procedures and guidelines for RTP projects and disbursing funds to SIMU.

ii. The State Implementation Monitoring Unit (SIMU), under the Department of Premier Sarawak, serves as the secretariat for managing and monitoring the RTP's implementation.

iii. The State Planning Unit (SPU), under the Department of Premier Sarawak, finalizes the list of RTPs after obtaining approval from relevant parties, such as the State Planning Authority.

iv. The Department of Lands and Surveys, Sarawak serves as the secretariat for land-related matters and land-related work.

v. The Public Works Department (PWD), Drainage and Irrigation Department (DID), Bintulu Development Authority (BDA), Sarawak Rural Water Supply Department (JBALB), and relevant Local Authorities (PBT) serve as the technical agencies.

vi. Other parties involved in RTP’s construction include contractors. Those are directly responsible for the construction work, and the schedule below shows the project capacity, contractor's grade, and minimum paid-up capital required to enable contractors to participate in the construction of RTP projects.

To ensure smooth project implementation, each Member of Parliament or Member of State Assembly is required to manage and resolve land-related issues, ensuring that proposed sites do not involve compensation or land acquisition—"no land/siting issue." The Resident Office and District Office will assist in this matter at their respective levels. If the land is registered state land, it must be referred to the Lands and Surveys Department (JTS) for the Minister's approval.

Table 1.1: The Project Capacity, Contractor's Grade, & Minimum Paid-Up Capital Required

Category	Project Capacity (RM)	Contractor's Grade	Minimum Paid-Up Capital (RM)
1.	RM100,000.00 and below	F	1,500.00
2.	More than RM100,000.00 until RM200,000.00	F and EX	4,500.00
3.	More than RM200,000.00 until RM350,000.00	EX and E	8,250.00
4.	More than RM350,000.00 until RM750,000.00	E and D	16,500.00
5.	More than RM750,000.00 until RM1,000,000.00	D and C	26,250.00

Source: Sarawak's State Financial Secretary (2020)

vii. Local YBs such as Member of Parliament (MP) and Member of Sarawak State Assembly (ADUN). Acts as a representative to apply for RTP on behalf of the rakyat on the ground.

viii. Consultants: There are professionals providing expertise in project design, planning, or management. The technical agencies like PWD, DID and Local Authority or PBT have their own technical experts.

ix. End Users / Recipients: There are consists of communities or individuals benefiting from the completed projects. Mostly end users are those people who

stay in villages or longhouses all over Sarawak. Including communities' leaders like "Ketua Kampung", "Tuai Rumah", "Penghulu" etc.

The components of RTP Project consists of; (1) Infrastructures (Roads, Bridges, Bund, Drainage and etc), (2) Building (Community Halls, Churches, Mosques, School and etc), (3) Sports Facilities (Futsal Court, Football Field, Recreation Centre and etc); (4) Site Preparation & Clearing (Longhouse, Cemetery, Mosques, Church and etc); (5) Utilities (Wiring, Water Tank, Water Gravity Feed an etc), and (6) Others (Gate & Fencing, Bus Stop, Public Toilet and etc).

The procurement method used for the implementation of RTP projects to ensure that these projects are carried out promptly, transparently, and systematically is as follows:

i. by balloting draw; and

ii. by open tender specifically for Bumiputera contractors.

All RTP project procurements valued up to RM 1 million shall be conducted by balloting draw. However, balloting draw participation is limited to local Bumiputera contractors who are registered and valid with the Contractor and Consultant Registration Unit (UPKJ) in the relevant field of work, class, and head of work in the district where the project will be implemented. The contractor qualification assessment and the management of balloting draw processes shall be conducted by the RTP Procurement Committee. The membership of the RTP Procurement Committee is as follows:

i. Chairperson - Divisional Resident

ii. Members:

a. Divisional Engineer, Public Works Department (PWD) / representative;

b. Divisional Engineer, Drainage and Irrigation Department (DID) / representative; and

c. Relevant implementing agencies such as District officer / representative.

After the contract is awarded, the implementing agency is obligated to record, monitor, and compile contractor performance reports into the Contractor Registration Information System (CORIS), Contractor and Consultant Registration Unit (UPKJ), Sarawak State Financial Secretary's Office. A performance bond shall be required for contracts, as follows: For contracts exceeding RM100,000.00, contractors are required to furnish a performance bond amounting to five percent (5%) of the contract value. The validity period of the performance bond shall extend from the contract's effective date to twelve (12) months after the conclusion of the defect liability period. In the event of a contractor's failure to provide the performance bond within the stipulated timeframe, the implementing agency is authorized to deduct the value of the performance bond from interim progress payments. The implementing agency shall promptly report to the Contractor and Consultant Registration Unit (UPKJ), under the State Financial Secretary's Office, if the following matters occur:

i. Contractors withdraw their tenders within the valid tender period after the closing date and before a decision is made; or

ii. Contractors withdraw their tenders after their tender has been accepted by the government; or

iii. Contractors refuse to sign the contract after their tender has been accepted by the government; or

iv. Contractors show reluctance in fulfilling the obligations stipulated in the contract; or

v. The contract is terminated due to the contractor's failure to fulfill the obligations stipulated in the contract.

The line charts below (**Figure 1.4)** illustrate the amount of allocation spent on construction of RTP in Sarawak from 2015 to 2023.

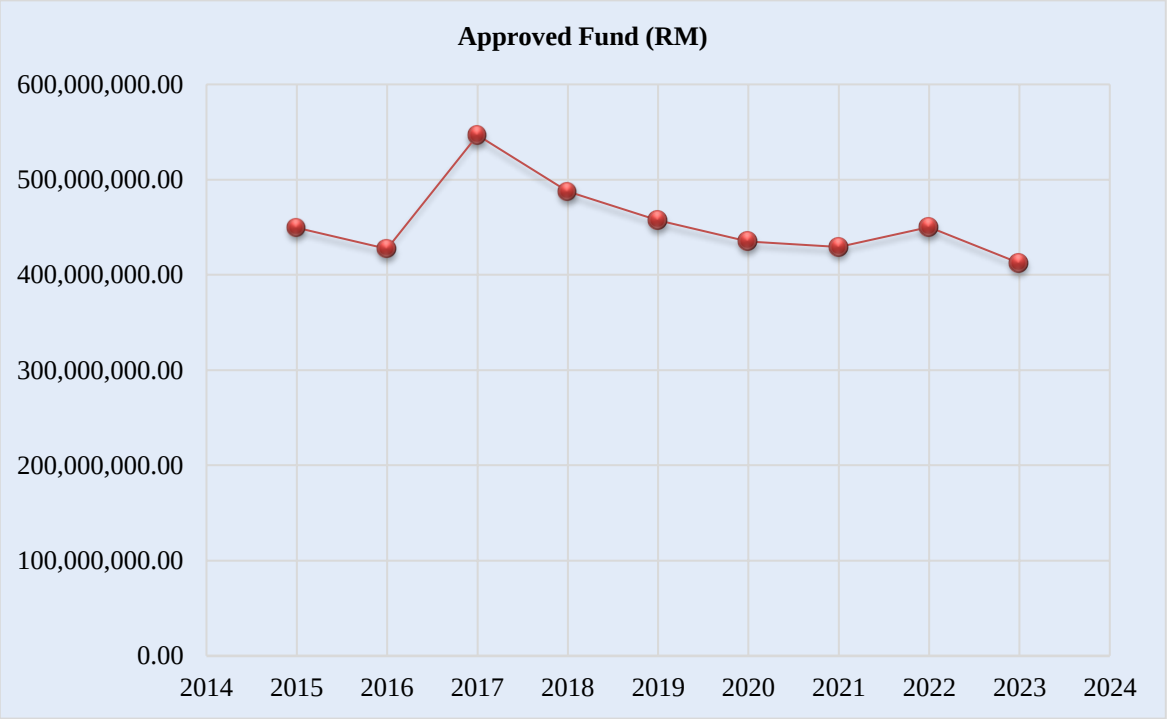


Figure 1.4 : Approved Fund (RM) for Implementation RTP in Sarawak for the 2015-2023
Source: Sarawak Implementation and Monitoring Unit (2024)

Project delays in the context of the RTP in Sarawak consist of two categories. The first category refers to projects that are behind schedule; these projects are late in between

10% to 19% of the original schedule, while the second category refers to projects exceeding 20% of the original schedule that are considered critically delayed. Based on records provided by SIMU, the number of project delays has started to increase since 2019 as shown in **Figure 1.5** below.

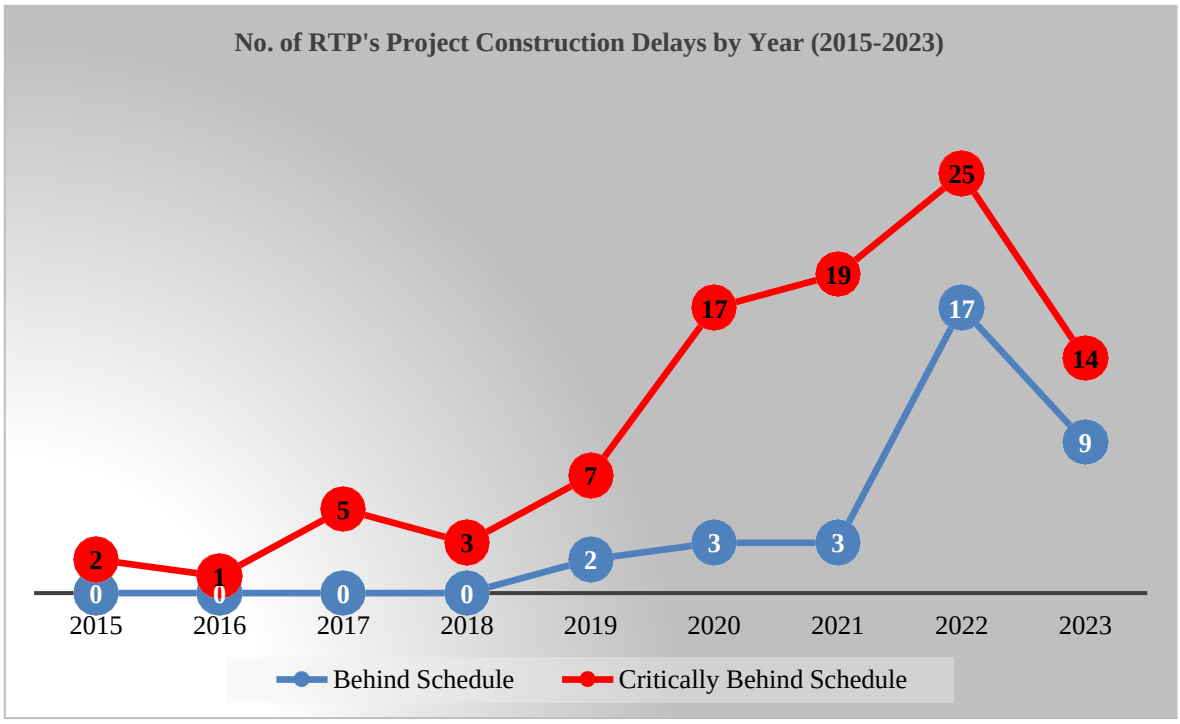


Figure 1.5 : Number of RTP Construction Delays in Sarawak for the 2015-2023

Source: Sarawak Implementation and Monitoring Unit (2024)

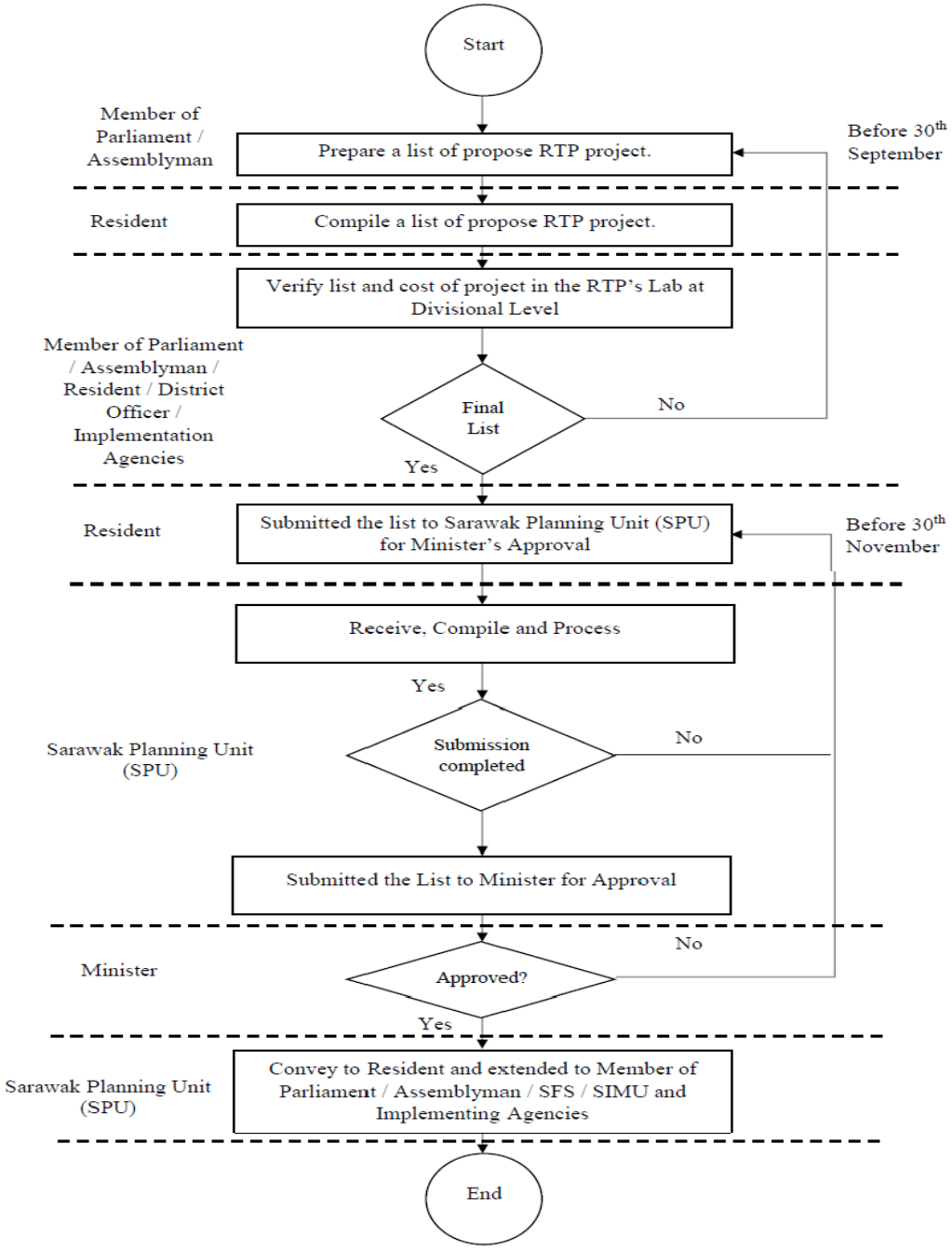


Figure 1.6 : Flow Chart for an Application of the RTP

Source: Sarawak Implementation and Monitoring Unit (2024)

Figure 1.6 illustrates a flowchart detailing the application process for an RTP (Rural Transformation Project). The flow starts with a proposed list of RTP projects, typically

submitted by a Member of Parliament (MP) or a State Legislative Assembly Member (ADUN). This proposal is then submitted to the Resident Office before the deadline in September each year. The process continues through several steps of evaluation and approval, culminating in a notification from the State Planning Unit (SPU) regarding the approval and implementation of the project.

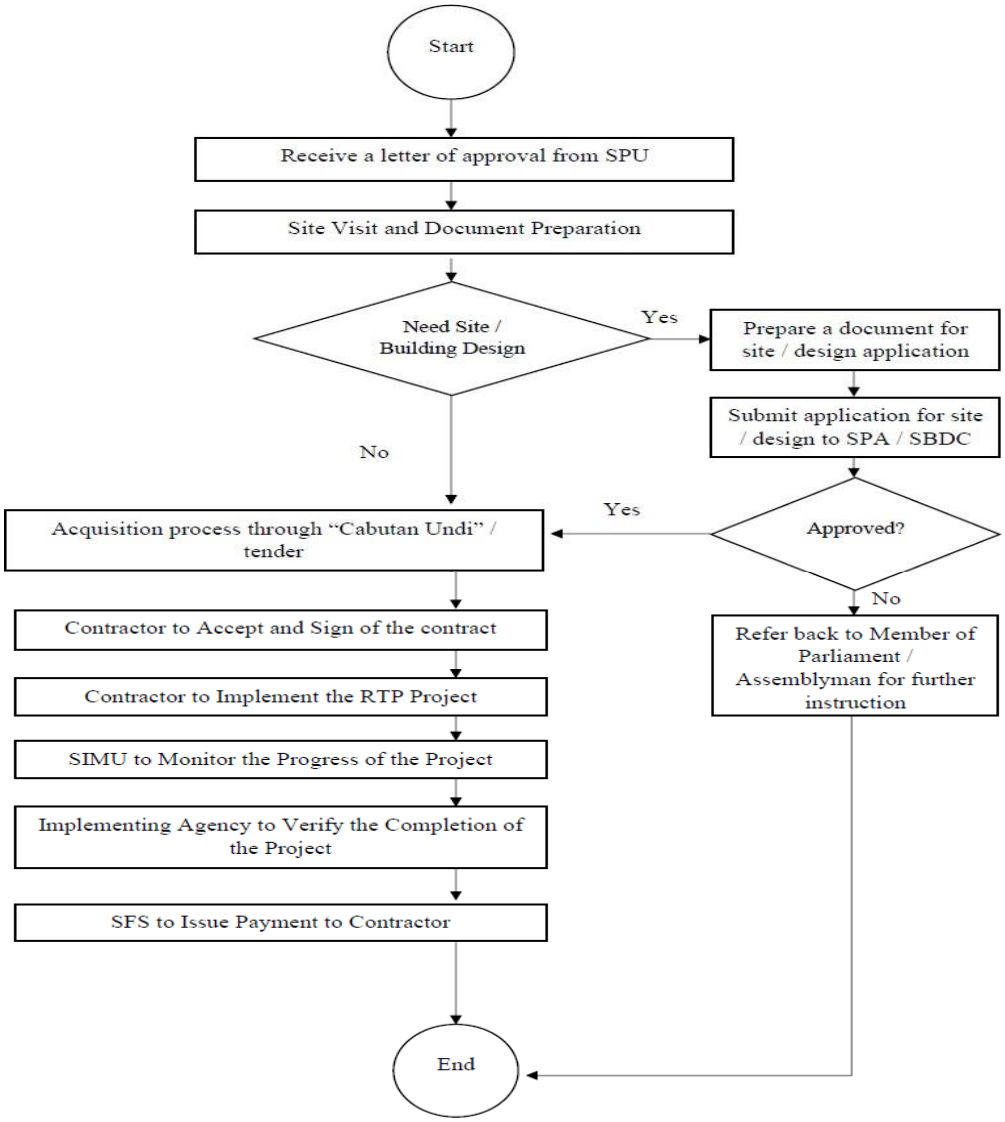


Figure 1.7 : Flow Chart for an Implementation of the RTP Project

Source: Sarawak Implementation and Monitoring Unit (2024)

Figure 1.7 illustrates the flowchart for the implementation process of an RTP (Rural Transformation Project). The process begins with the receipt of project approval from the State Planning Unit (SPU). The flowchart continues through different stages of execution, and the process concludes with the issuance of payment to the contractor by the State Financial Secretary (SFS), signalling the completion of the financial aspects of the project.

1.4 Problem Statement

The RTP was initiated by the Sarawak government in 2015, is a good effort to improve rural areas through the construction of comprehensive infrastructure. The RTP involves three main phases; Phase 1: Application, Phase 2: Physical Development, and Phase 3: Payment. Despite an allocation of RM4.095 billion for the past nine years and the involvement of various government agencies, the timely completion of the RTP project faced ongoing challenges, leading to construction delays.

Since its establishment in 2015, RTP has faced issues with project construction delays every year. As shown in **Figure 1.5** above, the number of RTP projects that were completed beyond the time agreed upon by both the contractors and the project owners. According to Ramya et al. (2015), construction delays occur when projects exceed their planned schedule, and this is a recurring problem in construction projects. While, construction delay, as defined by Aibinu and Jagboro (2002), occurs when the project's duration exceeds the initially specified contract period due to actions or circumstances contributed by either the contractor, the project owner, or a combination of both. Conversely, the Sarawak Implementation and Monitoring Unit (SIMU) classifies the implementation of RTP projects as delayed in two situations. The first situation refers to construction projects that are behind schedule, with delays ranging from 10% to 19% compared to the

predetermined timetable. The second situation refers to construction projects that are critically behind schedule, with delays exceeding 20% of the planned schedule. Delayed in the implementation of the RTP projects incur additional costs due to increase in construction costs involving labor cost, material cost and administrative cost. These additional expenses are shared burdens among the stakeholders as well as the government and contractors. Furthermore, communities anticipating the completion of RTP projects may encounter disruptions in accessing vital services and amenities, resulting in dissatisfaction and inconvenience among residents. The most critical one is that delays in RTP projects result in missed opportunities for socioeconomic development and community empowerment. Resources allocated to delayed projects could have been utilized more effectively elsewhere, impacting overall regional development efforts.

Delays in RTP projects usually arise from challenges encountered during the physical development phase, with contractors often being blamed and held accountable for these obstacles. According to Cinderella (2023), underperforming contractors, lack of integrity, and unauthorized use of licenses are identified as significant reasons for RTP projects' inability to adhere to its schedule. Additionally, contractors face challenges such as labor shortages, financial constraints, and difficulties in sourcing construction materials, leading to project delays (News, S., 2023; Utusan, S., 2023). Consequently, the Sarawak government has taken a zero-tolerance stance towards incompetence or negligence among contractors engaged in state infrastructure projects, emphasizing the importance of professionalism and commitment in executing projects funded by the government (The Sun, 2023). Thus, it is imperative for contractors to uphold integrity and professionalism throughout the RTP implementation process. Continuous monitoring is essential to ensure the successful

implementation of every project funded by the Sarawak government for the benefit of the community (Utusan, S., 2020).

Therefore, effective project management and risk management are crucial to the successful implementation of rural development initiatives. However, it depends on understanding the specific causes contributing to these delays from a local perspective, as the causes may vary based on the type of project, location, and area (Ramli et. al., 2018). Previous research by Assaf & Al-Hejji (2006) and Sambasivan & Soon (2007) among others, has categorized construction delays into various causes, including those related clients, contractors, consultants, materials, labour and equipment, financial aspects, contract-related causes, and external causes. Ramli et al. (2018) in their study on rural construction project in Malaysia, have identified causes such as inadequate site access, unpredictable site conditions, logistical challenges, and weather disruptions as contributors to delays. While previous studies provide a broad overview of the causes contributing to construction delays, there are significant gaps in research focusing on the unique challenges faced by RTP projects in Sarawak's rural areas. The existing literature touches on the failure of the government's construction project in general, but the complexity of rural development in the Sarawak context has not been adequately explored because a comprehensive examination of these causes specifically within the framework of Sarawak's RTP has yet to be conducted.

The objective of this research is to fill the existing gap by conducting a thorough examination of the causes contributing to delays and their impacts on the implementation of the RTP in Sarawak. The investigation will center on gaining insights from the perspectives of contractors involved in RTP, with the aim of shedding light on the intricacies of rural construction project implementation through their experience in the execution of the RTP projects. The study seeks to identify contributing causes, determine the impact of delays, and

propose comprehensive solutions. Anticipated outcomes include valuable insights that can guide policymakers, implementation agencies, and stakeholders in refining project management strategies, thereby facilitating the timely completion of RTP projects. Ultimately, this research endeavors to make a significant contribution to the sustainable development of rural areas in Sarawak.

1.5 Research Questions

1.5.1 How do contractors perceive the causes contributing to delays in public construction projects, particularly within the context of implementing the Rural Transformation Project (RTP) in Sarawak? What causes are perceived by them?

1.5.2 How do construction delays in the Rural Transformation Project (RTP) in Sarawak potentially expose contractors to risks and consequences?

1.5.3 Why are effective management and monitoring practices essential in mitigating the risks and consequences associated with project delays in public construction projects?

1.6 Research Objectives

1.6.1 To identify and analyse the causes perceived by contractors as contributing to delays in public construction projects, focusing specifically on the implementation of the Rural Transformation Project (RTP) in Sarawak.

1.6.2 To assess the potential risks and consequences faced by contractors engaged in the Rural Transformation Project (RTP) in Sarawak due to construction delays.

1.6.3 To explore the importance of effective project management and monitoring practices in mitigating the risks and consequences associated with project delays in public

construction projects, with a particular emphasis on the context of Sarawak's Rural Transformation Project (RTP).

1.7 Scope of the Study

This study's scope includes three main components. First, it focusses on studying Sarawak's Rural Transformation Projects (RTP), with a particular emphasis on understanding the causes and impacts of construction delays in this initiative from 2015 to 2023. Second, this study used a geographical approach to select respondents, targeting contractors from each of Sarawak's twelve administrative divisions, followed by one district from each division. Third, the study selected respondents from these districts based on their expertise and experience with RTP, resulting in a total of twelve respondents who provided valuable insights into project implementation and challenges. The respondents are contractors in grades C, D, E, and F, with project values not exceeding RM1,000,000.00.

1.8 Importance of the Research

The research would be beneficial as mentioned below:

1.8.1 Significance to Policy Makers and Implementation Agencies

According to Pourrostam et. al. (2012), frequent delays in construction projects are often due to the client's delayed decision-making. In this study, decision-makers refer to policymakers and implementation agencies. They must enhance their decision-making capabilities to ensure the smooth completion of construction projects. However, the lack of documents and information related to construction project delays hinders their decision-making process, thereby affecting project performance. This situation can lead to conflicts between policymakers, implementation agencies, and contractors (Owalabi et. al., 2014).

Therefore, the outcomes of this study will offer crucial insights for policymakers and implementing agencies engaged in the planning, execution, and monitoring of RTP in Sarawak. By understanding the specific challenges faced by RTP projects in Sarawak, this research will enable the intervention of policy makers and implementing agencies by ensuring more effective implementation of RTP projects and timely completion through the formulation of comprehensive policies and improved project management strategies in the future.

1.8.2 Significance to Literature

Various studies have been conducted to identify the causes and impacts of delays in construction projects. Some of the findings are similar, while others differ. Therefore, based on different literature reviews, the causes and impacts of delays are categorized into different groups or subgroups (Daba et. al., 2018) and each type of project experiences different causes of delays due to varying levels of difficulty. The causes of delays are influenced by the type of project, location, and area (Ramli et. al., 2018). Therefore, by focusing on the reasons and consequences of construction delays in relation to Sarawak's RTP, the study makes an empirical contribution to the body of literature already in existence. This empirical approach provides the larger body of knowledge on construction project management with more depth and specificity. As a result, academics and researchers might build on these discoveries to further investigate project management difficulties in related contexts in the future.

1.8.3 Significance to society

According to Langer et. al., (2017) the success of a construction project depends on its ability to meet the needs and expectations of the involved community. This study is

important to society because by identifying and mitigating causes that contribute to delayed RTP in Sarawak, this study directly addresses challenges that affect the timely delivery of essential infrastructure, it has the potential to raise the standard of living for those who live in rural areas. It can ensure that rural communities gain timely access to critical infrastructure such as roads, utilities, and social amenities. Indirectly facilitates better connectivity, access to services, and overall convenience for residents in rural areas. Hussain et. al., (2017), found that delays in construction projects, particularly in rural areas, have negatively impacted economic growth, social life, and sustainability in the affected areas. Therefore, to identify the causes and impacts of delays in rural construction projects, the government should consider them from the perspective of the community, especially rural society.

1.8.4 Significance to contractor

The study's findings are crucial for contractors, as they provide insights into improving operational efficiency. Strategies derived from the study can help contractors streamline processes, reduce downtime, and achieve cost savings through optimized resource utilization. Contractors' management capability significantly impacts cost and time performance; therefore, it is crucial for them to understand the causes and impacts of project delays (Aje et. al., 2009). By understanding the impact of project delays, contractors can design effective strategies for mitigation and proactively manage risks associated with project execution. This helps preserve the contractor's reputation by minimizing the likelihood of project overruns, and then positive relationships with project stakeholders, including government agencies, clients, and local communities, can be built.

1.9 Study’s Organization

The five chapters that make up this dissertation report are as follows:

1.9.1 Chapter One: Introduction

This chapter serves as the study's starting point, encompassing the study's background, problem statement, research questions, objectives, limitations, and significance.

1.9.2 Chapter Two: Literature Review

Offering comprehensive review of various key elements, such as public construction projects, project delays, rural transformation initiatives, and contractors. This in-depth exploration is designed to furnish the researcher with a clear picture of the subject matter, serving as a foundational guide for the subsequent discussion on the research methodology in Chapter Three. The latter part of this chapter introduces a research framework derived from a prior study, which has been both adapted and adopted to enhance its applicability to the current research context.

1.9.3 Chapter Three: Methodology

The research methodologies used in this study are covered in detail in this chapter. It serves as an empirical foundation, explaining the way the research design and methodology are being deployed. Furthermore, the chapter included a discussion on the selected data gathering method to be applied in this study.

1.9.4 Chapter Four: Research Findings and Discussion

Encompassing the outcomes and the study’s discussion, focusing on data analysis primarily derived from interviews with respondents, and case studies The analysis involves identifying delay causes and impacts from the standpoint of RTP’s contractors, implementing agencies, end users, and clients.

1.9.5 Chapter Five: Implications, Recommendations and Conclusions

The chapter offers recommendations based on the study's findings and discusses them. The main objective of this study is to address the problem of construction project behind schedules in rural areas meant for public use, and subsequently establish a strong basis for efficiently mitigating these delays.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The focus of this chapter is on the literature review as a tool for creating conceptual frameworks and mitigation plans for public construction delays. Therefore, the chapter will discuss the results of previous studies as well as provide insights into the main problems of the research. To identify the reasons behind construction project delays, the study will review previous research. Each finding will be thoroughly discussed. Additionally, it seeks out studies that validate existing research and provide further insights into the limitations that the study was unable to address. As consequently, it assesses the literature and looks into the characteristics and sources of variables that lead to delays in the execution of rural transformation initiatives. The study gaps found in this review of the literature have a significant impact on the accomplishment of the study's primary objectives. The data gathered will serve as the basis for subsequent discussions in the study. Related studies will be reviewed to offer support to ongoing research; these studies contain relevant information and findings that will be utilized. Ultimately, related research areas have been identified, offering crucial baseline information to direct the study to the next stage.

2.2 Construction Project Delays

Tombran and Ahmed (2020) defined project construction delays as the necessity for extra time to finalize a project beyond the initial contract date mutually agreed upon by the stakeholders. In the study conducted by Wei (2010), Amarasinghe (2016), and Ahmed et al. (2017), they provided a definition of construction delays: delays arise when a project exceeds

the initially specified deadline in the contract or surpasses the mutually agreed-upon date by both parties involved in the project. Marzouk et al. (2014) define a delay in a construction project as the situation where the construction takes longer than the originally scheduled timeline stated in the contract. In essence, a delay entails any extra time needed by the project contractor to finalize the project, exceeding the predetermined time, irrespective of responsibility or the project stage at which it occurred. If the delay is due to unforeseen causes such as weather or customer reasons, the contract will take more time to complete. However, if the delay is due to the incompetence of the contractor, then compensation will be given to the customer, or the contractor will be fined. Construction of the project beyond the predetermined completion date will affect the owner and contractor, especially the financial factor such as the as the increase in cost (Assaf and Al-Hejji, 2006). If a project delay occurs, it will affect the three main things: (1) time, (2) cost, and (3) quality of the project. It directly affects productivity (Sambasivan and Soon, 2007).

Construction delays are a prevalent challenge in the public construction sector of developing countries, and Sarawak is no exception to this scenario. Sarawak currently faces the challenge of having 340 projects that are experiencing difficulties, with 36 of them being critically delayed (Chua, 2023). Project performance is evaluated using indicators like budget, schedule, quality, and client satisfaction. (Giri, 2019). According to Chan and Kumaraswamy (1997), it is commonly known that one of the most important causes in determining a project's success is its timely completion. According to Kassem et al. (2019), a construction project delay is an occurrence or situation that leads to the extension of the project's duration beyond the originally established contract timeframe and is contributed by multiple causes related to the consultant, contractor, or client, as emphasized by Afshari et

al. (2010). According to Hossain (2022), it is a complex, expensive, and widespread problem that poses serious problems for all parties involved.

The consequences of delays have broad impacts, affecting project cash flow, completion schedules, and stakeholder satisfaction. Shahsavand (2018) states that when projects are delayed, extra expenses are generated, and conflicts may emerge among the parties involved. This acknowledgement underscores how complicated and varied construction project delays can be and how crucial it is to act proactively to reduce their impact on project outcomes and stakeholder relationships. The impact of project delays, such as the client's right to terminate the contract, appoint a new contractor, impose penalties on project delays, and direct the contractor to bear additional costs, is stipulated within the contractual agreement between both parties, the client and contractors. (Almonayyer, 2021). Therefore, project delays will affect the contractor's image and negatively affect the economy (Subedi & Joshi, 2020).

2.3 The Project Management Theories

In an organizational setting, specific rules serve as essential guidelines for carrying out tasks. The ability of the organisation to manage a task effectively determines whether it succeeds or fails. Therefore, mastering the concept of project management is a crucial element in project success. The Project Management Institute (PMI), in its Project Management Body of Knowledge (PMBOK) Guide, divides management processes into five main stages: initiating, planning, executing, controlling, and closing. Effective planning is paramount in project management and holds significance at every management level. Fewing (2005) defined project management as the act of planning, controlling, and

managing all aspects of a construction project to achieve the project objectives, which include time, cost, quality, and performance.

A study by Tereso et al. (2019) established a relationship between planning and four project management practices: (1) planning-initiating, (2) planning-executing, (3) planning-controlling, and (4) planning-closing. Sofberi and Zainal (2020) emphasized that poor planning leads to the failure of construction projects. Thorough preparation, especially during the planning phase, is crucial for effective decision-making in project management. Liu et al. (2020) found that good management procedures significantly contribute to project success, where the project's outcome often reflects the amount of time invested in its initial phases. They stated that project managers' inability to meet objectives may be related to the selected project management practice, and choosing the appropriate practice, along with better planning, enhances the probability of achieving project success.

Tereso et al. (2019) identified five common project management approaches that have a major impact on project outcomes: (1) baseline planning, (2) Gantt charts, (3) progress meetings, (4) activity lists, and (5) kick-off meetings. These approaches emphasize the significance of planning, suitable processes, and the selection of efficient project management approaches for achieving positive project results.

Initiating a project involves determining its goals, objectives, and work scope, often referred to as the development project. The planning stage requires a comprehensive project blueprint that connects previously gathered concepts with the information collected during initiation. According to Tereso et al. (2019) and Heldman (2018), planning is critical for project success and impacts everything from scope definition to risk management.

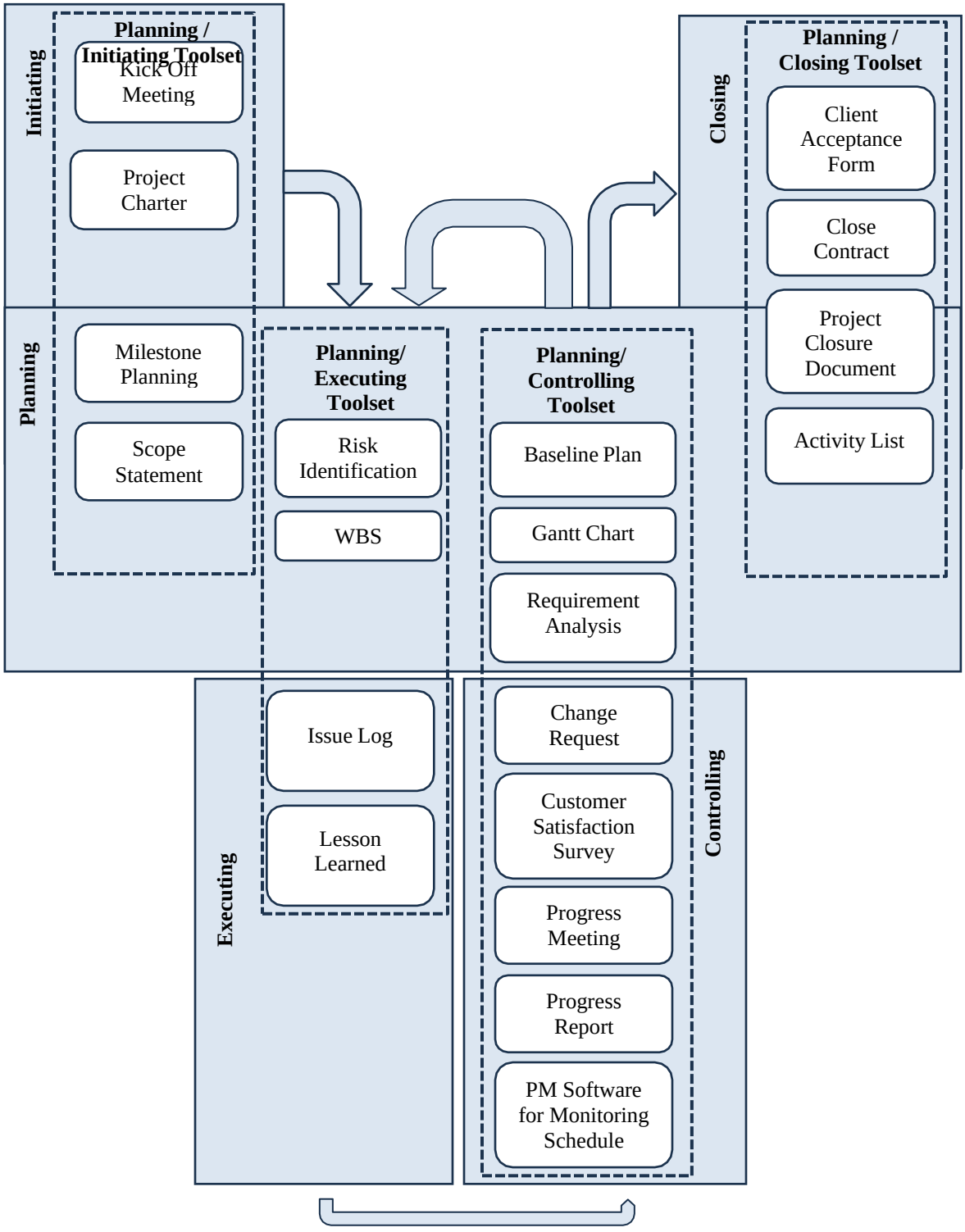


Figure 2.1: Theories of Project Management

Source: Adopted from Tereso et al. (2019)

Execution involves implementing the predetermined plans, coordinating the design project on paper with the actual progress of project work on the ground. Tereso et al. (2019)

suggests monitoring and controlling the project's progress throughout the development period using tools like periodic progress meetings or Gantt Charts. The closing stage involves concluding the project through documentation, agreement among involved parties, and the smooth transfer of resources. This comprehensive strategy, grounded in efficient planning, initiation, execution, monitoring, and closure, underscores the importance of thorough project management techniques in ensuring the success of project outcomes.

2.3.1 Theory of Initiation

In project management, the first stage is initiation, which begins by asking "why" a task needs to be done and establishing defined objectives. The project charter, outlining scope and goals, is developed with input from stakeholders, and a kick-off meeting is held to involve all parties. The need for the project, sponsors, and project management is crucial at this phase. Research by Tereso et al. (2019) ranks kick-off meetings and project charters as part of the initiation phase, with the latter being the most-used tool overall. Kick-off meetings are frequently used in opening planning, while project charters are used to a lesser extent (Besner & Hobbs, 2006). There are four essential entities at the initial project management level: the project team, project location, project type, and client/owner. The project team collaborates to choose the right site, involving stakeholders early on. Active stakeholder participation in initial planning, as suggested by Matu et al. (2020), fosters understanding and motivation throughout the project (Petersen et al., 2003). Therefore, the RTP in Sarawak shall begin by identifying the need for rural transformation and defining specific objectives. These objectives may include improving access to education, healthcare, infrastructure, and economic opportunities in rural areas, ultimately aiming to enhance the overall quality of life for rural residents.

2.3.2 Theory of Planning

Planning in project management involves a step-by-step outline of all elements before a project begins. It builds on the information gathered during the initiation phase and aims to achieve set objectives within a given timeframe (Sofberi and Zainal, 2020). Tereso et al. (2019) emphasizes the importance of the planning stage, highlighting it as an essential obligation for project management practitioners. According to Heldman (2018), significant time and resources are invested in the planning phase, including forecasting project activities, progress reporting, and evaluating project outcomes. The success or failure of a project is closely tied to the effectiveness of the initial plans. Effective planning, as argued by Taniguchi and Onosato (2018), enhances reporting skills and contributes to successful task completion. Heldman (2018) breaks down the components of planning, stating that schedule development relies on processes such as scope planning, definition, resource planning, activity definition, sequencing, duration estimating, risk management planning, and cost estimating. These processes, along with schedule development, feed into the final planning process of project plan development. Mardiani (2018) suggests that in construction projects, evaluating the scheduled project helps identify potential risks, allowing planners to make adjustments. Taniguchi and Onosato (2018) emphasize three key aspects of project management success: staying on schedule, working within the budget, and providing detailed work information to achieve project goals.

In summary, effective planning is crucial for time management, cost control, and overall project quality, directly influencing project success (Sofberi and Zainal, 2020). The theory of planning provides a systematic approach to project development and execution, which is essential for the successful implementation of the RTP in Sarawak. By adhering to

sound planning principles, the project can overcome challenges, capitalize on opportunities, and achieve its objectives of transforming rural communities for the better.

2.3.3 Theory of Execution

Execution in project management involves putting into action the plans made during the forecasting stages. Coordination between the design and the actual project is crucial for successful implementation. In construction projects, the architectural design, emphasized during planning, guides project managers in executing the plan (Leicht et al., 2020). During project execution, the focus is on following the schedule with stakeholders and utilizing available resources to achieve the project charter's objectives. Wen, Qiang, & An (2017) highlight the importance of collaboration between clients/owners and construction management consultants for successful project execution. The execution stage involves bringing together all the specifications from the project charter to complete the desired project. Tereso et al. (2019) note that planning and execution occur simultaneously, with the execution stage involving managing information, maintaining personnel, and adhering to processes outlined in the schedule.

However, Koskela and Howell (2002) argue that project managers often struggle to meet project schedules due to the lack of standard policies for project management. Fashina, et al., (2020) identify poor communication among stakeholders and project managers as a major challenge in project execution. Liu et al. (2020) emphasize that effective communication and adherence to the plan are essential for a smooth project execution. Tereso et al. (2019) categorizes project implementation under the planning/execution toolset, including risk identification, Work Breakdown Structure (WBS), issue log, and lessons learned. However, these tools are not commonly used by project managers, with the issue

log ranking fifteenth and lessons learned ranking eighteenth. This suggests that while these tools are familiar, they are not frequently employed.

In conclusion, the execution process requires delegation of responsibilities among all parties involved, with regular information flow to ensure a strong working team (Wen, Qiang, & An, 2017). Successful execution relies on effective communication and adherence to the plan. The theory of execution in project management is highly pertinent to the RTP in Sarawak as it underscores the need for seamless coordination between project design and implementation, involving stakeholders like government agencies, local communities, and project managers. Adherence to the project schedule and efficient resource management are paramount for the RTP to achieve its goals within budget and timeframe, while collaborative efforts between project owners and consultants ensure alignment with development objectives. Clear communication channels and plan adherence are essential for overcoming challenges and maintaining momentum during execution.

2.3.4 Theory of Monitoring and Controlling

Monitoring and controlling in project management involve checks and regulatory measures applied from the planning stage through project implementation to completion. In construction projects, monitoring includes comparing the project plan with the ongoing work, supervising, and directing project performance through regular meetings and reports (Tom & Paul, 2013). Tereso et al. (2019) identifies commonly used tools for monitoring and controlling, with progress meetings ranking third, Gantt charts fourth, and progress reports sixth out of seventy-nine assessed groupings. Project managers frequently hold meetings with stakeholders to discuss project updates, use Gantt charts to evaluate work progress, and assess performance against the project plan (Williamson & Scholefield, 2020). Baseline

plans (schedule, cost, and scope) rank fifth, indicating that project managers often examine deviations from the project plan. Customer satisfaction surveys, ranking fourteenth, suggest that project managers may not regularly seek client/owner feedback (Tereso et al., 2019).

The lack of adequate policies for proper monitoring and control in project management may result in dissatisfaction for clients/owners (Tom & Paul, 2013). Sofberi and Zainal (2020) highlight that in construction projects, success or failure is determined during the planning phase, emphasizing the need for project managers to ensure a solid beginning that can be effectively monitored and controlled. Monitoring the approved plan with ongoing work allows project managers to bring the entire project under control, and adjustments to the original project plan may be made based on project reports (Tereso et al., 2019; Tom & Paul, 2013).

The planning phase determines success or failure in construction projects, it is imperative for SIMU to establish a solid foundation that can be effectively monitored and controlled. By monitoring the approved plan against ongoing work and making adjustments based on project reports, SIMU can maintain control over the entire project and ensure alignment with stakeholders' needs and expectations. Overall, effective monitoring and controlling practices are crucial for optimizing project outcomes, mitigating risks, and ensuring the successful implementation of the RTP in Sarawak.

2.3.5 Theory of Closure

Project closure is the final stage that summarizes all project events and contracts, signifying accomplishment (Sarfraz, 2009). Matu et al. (2020) emphasizes the relationship between project closure and initiation, suggesting that involving the right stakeholders in the early project phases minimizes chaos and stress during closure. Challenges, such as

disagreements, budget issues, and resource inadequacies, often arise during project closure (Zohrehvandi et al., 2017). Mutual closure is vital for a smooth transition and fostering a positive post-contract relationship. Learning from experiences and mistakes guides future projects, ensuring improvement. Approval from all involved parties validates project acceptance. Sarfraz (2009) notes that obtaining client/owner signatures at closure is crucial, indicating agreement and preventing future issues. Delays and lack of documentation can hinder closure, impacting final cost calculations (Ziddah, 2017). Comprehensive project reports highlight recommendations for future projects, emphasizing transition support for the next project managers. Releasing resources, returning equipment and materials, archiving project documents for reference, and officially closing the project are essential steps (Zohrehvandi et al., 2017). Closure, whether due to completion or cancellation, involves a formal process known as "close project" (Sanghera, 2019).

Effective project management is paramount for the success of any organization or project, including the RTP in Sarawak. The Project Management Body of Knowledge (PMBOK) Guide provides specific rules and guidelines that serve as a roadmap for task execution. In the context of RTP projects in Sarawak, clear guidelines are indispensable for coordinating various tasks, ensuring efficient resource allocation, and achieving project objectives. Each phase outlined in the PMBOK is crucial for the RTP's success: (1) Initiating involves setting achievable goals, (2) planning ensures the development of a comprehensive project blueprint, (3) execution is about implementing plans as stipulated in agreements or contracts; (4) controlling monitors the progress of physical development on the ground, and (5) closing effectively concludes the project.

Adapting these project management practices to the specific needs of the RTP can significantly enhance planning, execution, monitoring, and closing processes. This adaptation is particularly crucial for mitigating the risk of project delays or abandonment in the future, contributing to positive project outcomes.

Figure 2.2: The Underlying Theories and Assumptions of Project Management

<table>
<tr><td>Theory of Project</td><td colspan="2">Conceptualization: Project is a transformation of inputs to outputs

Principles:

1) The complete overhaul of a project can be broken down into manageable and understandable sub-transformations, tasks.
2) A project can be efficiently executed by completing each task optimally and in the optimal sequence. Corollary: Enhancing the tasks can lead to improved project performance

Assumptions:

1) Tasks are independent, except for sequential dependencies.
2) Tasks are clearly defined and have a specific scope.
3) There is very little uncertainty regarding requirements and tasks.
4) The complete transformation is divided into smaller components using top-down decomposition, enabling the inclusion of all tasks required.
5) The requirements are initially available and can be decomposed alongside the tasks.</td></tr>
<tr><td rowspan="2">Theory of Management</td><td>Theory of planning</td><td>Conceptualization: The project consists of two components: the managerial part and the effector part. The managerial part is primarily responsible for planning, while the effector part's main role is to execute the plan.

Principles:

1) Knowing the current state of the world, the desired goal state, and the allowable transformations of state that can be achieved by actions, a series of actions, the plan, can be deduced.
2) The plan is translated into reality by the effector part of the organization.

Assumptions:

1) Translating a plan into action is a simple process, by following directions.
2) The internal planning of a task is a matter of the person to whom the task has been assigned</td></tr>
<tr><td>Theory of execution</td><td>Conceptualization: Managerially, execution is about dispatching tasks to workstations.

Principle: When, according to the plan, the time has arrived to begin task execution, it is authorized to start, in speech or in writing.</td></tr>
</table>

		Assumptions: 1) The inputs required for the task and the resources necessary for its execution are prepared and available at the time of authorization. 2) The task is comprehensively understood, initiated, and executed in accordance with the authorized plan.
	Theory of control	**Conceptualization:** The process requires control, with a unit for measuring performance and a standard for performance, along with a controlling unit (thermostat control). **Principle:** The possible variance between the standard and the measured value is used for correcting the process so that the standard can be reached Assumptions: 1) The process is of continuous flow type, the performance of which is measured at aggregate terms. 2) The process can easily be corrected by the control available

Source: Koskela & Howell (2002)

2.4 The Theory of Risk Management

The theory of risk management provides a systematic framework for identifying, assessing, mitigating, and monitoring risks. It is essential in various fields, including finance, healthcare, and construction, to manage uncertainties and minimize negative outcomes. Applying risk management theory as an underpinning theory in this study will provides a structured approach to understanding and addressing the complexities of public construction delays. The study can offer valuable insights and practical solutions tailored to the unique challenges of public construction projects.

2.4.1 Introduction to The Theory

Risk management aims to ensure that risks are systematically handled. By identifying, assessing, and mitigating risks, organizations seek to protect their resources and objectives from unexpected events. This philosophy supports strategic decision-making and

fosters resilience in projects and operations. The philosophy of risk management is founded upon three fundamental principles:

i. Utility

The concept of utility method was initially introduced by Daniel Bernoulli in 1738. It involves a method of decision-making where individuals prioritise the magnitude of the consequences of various outcomes as highlighted by Bulmer (2003) in his study.

ii. Regression

Regression analysis was first employed in the late 19th century. Subsequently, it was demonstrated that the principle of regression functions applies to a wide range of scenarios, encompassing the computation of risk probabilities as well as the forecasting of disturbances in the business cycle.

iii. Diversity.

Markowitz (1952) provided a mathematical rationale for the investment portfolio diversification technique by demonstrated smart deployment of financial resources to minimise the risk associated with the anticipated rate of return. Risk is an enduring factor for every company, particularly in the realm of construction, where challenges are abundant. Yearly risks in construction projects tend to escalate and evolve alongside the company's activities. Companies operating in construction demand excellence across all domains and transparency (Richards & Duxbury, 2015). Within the context of a construction project, it becomes imperative to establish a systematic decision-making entity to safeguard the project's continuity under specified conditions.

According to Rodrigues-da-Silva & Crispi (2014), decision-makers should employ organizational structures and management approaches to efficiently tackle risks and optimize project outcomes. Therefore, they must systematically identify, analyze, and assess risks throughout all phases of the project's lifecycle. When it comes to organisations and risk management, Roberto (2009) that states that the decline and collapse of an organisation do not happen immediately. Over time, they undergo change. They begin with a minor issue, and the string of errors can frequently proceed for a period of time ranging from months to years. Over the course of time, seemingly insignificant issues escalate into significant challenges. During time, the bug becomes more serious. The following mistake is triggered by the previous mistake that was made. According to Calandro (2015), the leader has a vital responsibility in supervising risk management. Through the implementation of effective risk management strategies, managers can identify and monitor uncertain threats, and this can be done by utilising both internal data and external sources of information, such as external intelligence, to notice and track weak signals. There is no guarantee that this characteristic will discover the weak clue to the next crisis, as there will always be another one. However, it is very possible that without this characteristic, the signal will be ignored. Risk management and security work together to minimize risks through the implementation of risk assessments, the enhancement of decision-making based on risk, and the refinement of planning processes (F. Khan et al.,2015).

2.4.2 Definition of Risk and Risk Management

Risk, as defined by the Project Management Institute (2013), refers to an unpredictable occurrence or circumstance that, if it materialises, can have either a positive or negative effect on one or more project objectives, which include scope, cost, schedule, and quality. Uncertainty inherent in every project gives rise to risks. Known risks refer to

dangers that have been identified and assessed, allowing for the development of a response strategy. If the risks cannot be effectively addressed in advance or their nature is uncertain, it is imperative to foresee and allocate a contingency fund for potential risks. Project Management Institute (2013) outlines a five-step process for effectively managing project risks:

i. Identifying

The project managers or owners must identify potential risks that could affect the project's progress, scope, schedule, or outcome. Risks can be both positive (opportunities) and negative (threats). This is an ongoing process where project managers and his team members use tools like brainstorming, checklists, interviews, and expert judgment to uncover risks.

ii. Analysing

Once risks are identified, the next step is to analyse them to understand their potential impact and likelihood. This can be done qualitatively such as assessing the severity of risks based on experience and judgment or quantitatively like using data and statistical methods to assign probabilities and potential cost/impact.

iii. Planning

In the planning step, the team develops strategies and action plans for addressing risks. This includes determining responses to mitigate threats or take advantage of opportunities. The aim is to minimize the impact of risks or to avoid them altogether.

iv. Responding

In this step, the team must implement the risk responses that were planned. It is the execution phase where action is taken to address the identified risks according to the mitigation strategies devised in the planning phase. This ensures that risks are actively managed as the project progresses.

v. Monitoring and Controlling

Throughout the project life cycle, monitoring and controlling ensure that risks are continuously assessed, and that the effectiveness of the risk responses is tracked. This step ensures that new risks are identified and managed, and that the project adapts to the changing risk environment.

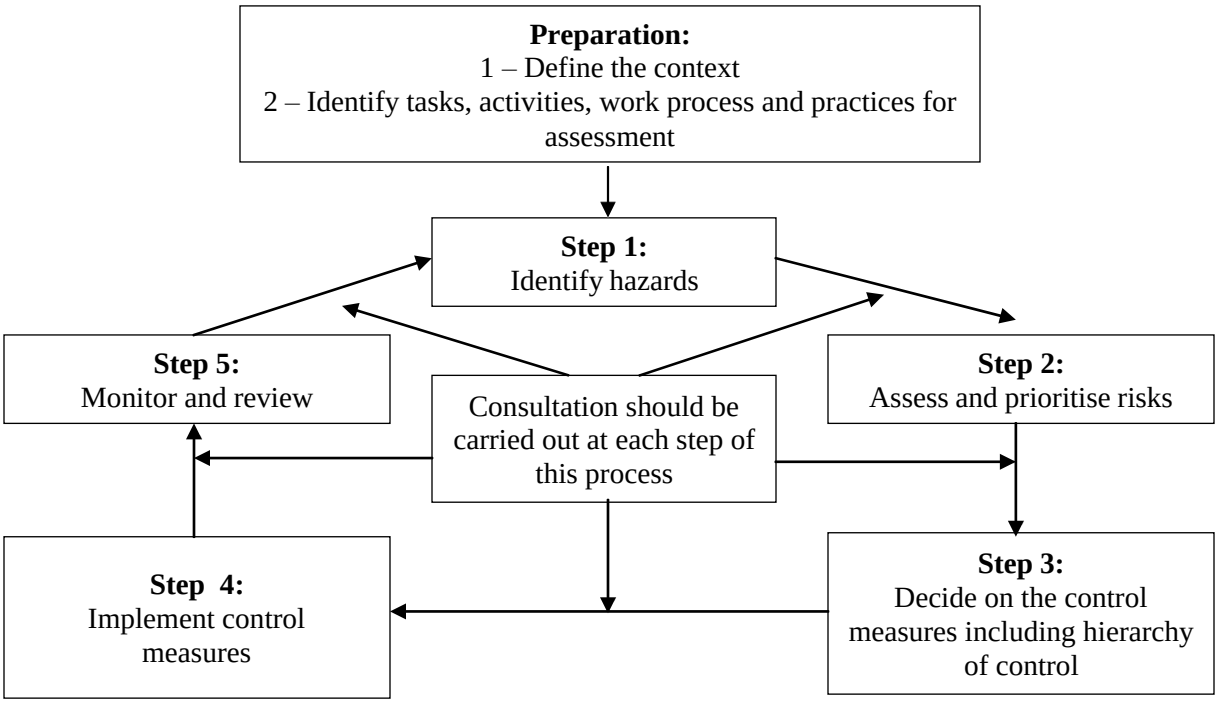


Figure 2.3: The Five-Step Risk Management Process

Source: Nijole, B. (2010)

This five-step process emphasizes a structured and proactive approach to managing risks throughout the project life cycle. By identifying, analyzing, planning, responding to, and monitoring risks, project managers ensure that risks are managed in a way that minimizes negative impacts while capitalizing on opportunities.

Establishing the context is the initial step in the risk management procedure. This involves defining the project and/or organization's objectives, acknowledging both internal and external variables that require attention, and delineating the boundaries of the other procedures and management standards. The risk management process emphasises the significance of interaction with stakeholders throughout every stage of the construction project (Adams, 2008). Risk assessment is the process of multiplying the probability of profits or losses for an individual or an organisation by the severity degree of each event. Risk is rated on a scale from 100% to 0%, where 0% indicates a low probability of occurrence and 100% indicates a high probability. Various kinds of information can be used for risk assessment, according to Bon-Gang et al. (2014), Zavadskas et al. (2010b), and Ustinovicius et al. (2010).

2.4.3 Risk in Construction Industry

Risks are inherent in the construction industry, encompassing all activities involving construction projects. According to Zavadskas et al. (2010a), risk can have both positive and negative impacts, whether in a micro or macro environment. Therefore, risk management is crucial for assessing and identifying risks that may affect a project or business and subsequently implementing risk management (Markmann et al., 2013). The level of risk faced will affect the success or failure of the implementation of a construction project (Paslawski, 2013). The presence of several stakeholders in construction projects, including

owners, designers, contractors, subcontractors, suppliers, and others, can lead to a multitude of risks within the construction industry (PMI, 2004). Sostak and Makuteniene (2013) stated that risk management and analysis are crucial elements to enable decision-making in the construction industry. Uncertain environmental conditions impose high levels of risk on the construction industry and its stakeholders. The construction industry often suffers from a poor reputation due to failures to complete projects on time and within budget, resulting from ineffective risk management (Shevchenko et al. 2008). These failures consequently affect contractors, clients, users (the public), and other stakeholders (Zavadskas et al. 2012, 2010b). Therefore, risk management and its analysis remain significant challenges for industry practitioners in addressing construction risks that impact every stakeholder (Kaplinski 2009a).

The significance of risk, current risk management techniques, the status of extant risk management systems within the organisation, and the barriers to effective risk management from the perspective of key stakeholders should all be considered. According to analysis, the most significant risks are financial and economic causes, with quality being the subsequent most significant (Choudhry & Iqbal 2013). In general, the industry endeavours to mitigate or transfer these risks. Prerequisites for risk analysis and management include attitudes towards and barriers to risk management, as well as perceived benefits, due to the significance of risk perception in risk management. Risk management according to PMBOK is one of nine recommended focuses in project management because it is a systematic system for identifying, analyzing, and responding to project risks. It can optimize the likelihood of positive outcomes and minimize the likelihood of negative outcomes that could impact the success or failure of a project in achieving its objectives (Abbasianjahromi and Rajaie, 2012). Several methods can be used to analyze risks:

i. TOPSIS bid/no-bid model (Ravanshadnia, Rajaie 2013);

The TOPSIS (Technique for Order Performance by Similarity to Ideal Solution) bid/no-bid model is a decision-making tool that helps companies decide whether to bid on a project or not. It works by comparing the possible options (to bid or not to bid) against an "ideal" option (best case) and a "negative-ideal" option (worst case) using several important criteria. For example, suppose a construction firm is deciding whether to bid on a project. The decision criteria may include profit margin, risk level, resource availability, client reputation, and project timeline. Each criterion is weighted according to its significance. By using the TOPSIS approach, the firm evaluates both the "bid", and "no-bid" options, compares them to the ideal project (e.g., high profit, low risk, plenty of resources), and makes an informed decision based on the one closest to this ideal.

ii. TOPSIS-F method (Tamosaitienn et al. 2013);

The TOPSIS-F method is an extension of the TOPSIS model that incorporates fuzzy logic to handle uncertainty and vagueness in decision-making. In real-world scenarios, it can be difficult to precisely quantify some criteria, such as risk or satisfaction. The fuzzy logic component in TOPSIS-F helps deal with this by allowing more flexible and approximate reasoning. There are 5 steps in TOPSIS-F:

Step 1: Define Criteria and Weights:

The managers or owners of the project should list the decision causes like cost, risk, resources and then, assign importance to each one.

Step 2: Fuzzify Scores:

Convert the exact scores into fuzzy values to account for uncertainty. For example, instead of a fixed score, the managers or project owners might say profitability is "mostly high" but also "somewhat medium."

Step 3: Compare to Best and Worst Scenarios:

In the step 3, the managers of project owners must compare each option to the best possible and worst possible outcomes using fuzzy numbers.

Step 4: Rank Options:

In this step, the managers of project owners must convert the fuzzy results back to regular numbers, then rank the options based on which one is closest to the best outcome.

Step 5: Make the Decision:

Finally, the team must choose the option that comes closest to the ideal scenario.

iii. Intelligent Agents (Smeureanu et al. 2012);

The concept of Intelligent Agents, as described by Smeureanu et al. (2012), involves autonomous software entities that can perceive their environment, make decisions, and act to achieve specific goals, often without human intervention. These agents are capable of problem-solving, learning, and adapting based on their interactions with the environment or other agents. Padgham and Winikoff (2005) define an intelligent agent operates within a specific environment and reacts promptly to changes within it. Intelligent agents work independently, handling tasks without constant human help. They observe their environment

using sensors or data, gather information, and make decisions based on what they learn. They adapt and improve over time by learning from their experiences. These agents are designed to achieve specific goals and can communicate and work with other agents or users, often collaborating to solve problems.

iv. RAMCAP (Risk Analysis and Management for Critical Asset Protection) (Yazdani et al. 2011)

The RAMCAP framework offers a systematic approach to identify and assess the significance of potential incidents related to critical infrastructure. The RAMCAP procedure consists of seven phases, as described by ASME-ITI (2006) and Brashear et al. (2007): (1) Asset identification and screening, (2) Threat identification, (3) Impact analysis, (4) Vulnerability analysis, (5) Assessment of asset and threat attractiveness, (6) Risk assessment, and (7) Effective risk management. The advantages of comprehensive traditional RAMCAP, as mentioned by Brashear & Jones (2010), include: (i) Enhanced management of capital and human resources, (ii) The ability to identify the most critical and valuable assets for improvement, (iii) Optimal resource allocation to maximize safety and resilience improvements within a limited budget.

v. Fuzzy Synthetic Model (Abdul-Rahman et al. 2013).

Abdul-Rahman et al. (2013) in their study titled “Design and Pilot Run of Fuzzy Synthetic Model (FSM) For Risk Evaluation in Civil Engineering” formed a development team consisting of construction engineers, IT professionals, and mathematicians. This team has developed a holistic risk assessment model to estimate construction risks, particularly in situations with incomplete data and ambiguous environments. Through a qualitative scale

defined by triangular fuzzy numbers used in pairwise comparisons to capture uncertainty in linguistic variables, a risk assessment model using the Analytic Hierarchy Process (AHP) has been developed. The Pilot Test revealed that the developed Fuzzy Synthetic Model (FSM) can expedite the decision-making process and provide an optimal distribution of project resources to mitigate risks that could jeopardize project success in terms of time, cost, and quality.

Several important issues need to be considered in risk management:

i. The origin of risk context

The origin of risk context refers to the foundational elements that shape the environment in which risks are identified, analysed, and managed. It includes the background, conditions, and causes that influence the nature of risks within a specific situation or project. It includes internal causes such as company culture, resources, and goals, as well as external causes like economic conditions, regulations, and technological changes. It is the needs of stakeholders, such as clients and regulators, that play a role in defining the risk context. Understanding the risk context is critical because it provides a framework for identifying relevant risks and determining appropriate risk management strategies within the given environment.

ii. Identifying and allocating processes (Li et al. 2013; Jaskowski & Sobotka 2012; Hanna et al. 2013)

Identifying and allocating processes, as described by Li et al. (2013), Jaskowski & Sobotka (2012), and Hanna et al. (2013), involve systematic methods in project management, especially in construction, to recognize tasks, resources, and responsibilities and distribute them efficiently. Identifying

processes focuses on recognizing all essential activities, tasks, and resources needed for the project, including understanding the project scope, risk causes, and task dependencies. Allocating processes then involve distributing resources such as manpower, materials, and finances to the identified tasks, ensuring efficient use of resources to meet project objectives while minimizing delays and waste. These processes collectively help optimize project execution and contribute to achieving success in terms of time, cost, and quality.

iii. Analysing information (Zavadskas et al. 2010a, 2010b)

Analysing analysis, as defined by Zavadskas et al. (2010a, 2010b), is the methodical examination of data and insights to facilitate decision-making processes. In general, this analysis aims to assess several elements of a project or problem in order to guide strategic decisions and enhance results. Zavadskas et al. (2010) presents a new Additive Ratio Assessment (ARAS) approach, which is used to a physical case study including the evaluation of microclimate in office rooms. The objective of the case study is to assess the internal atmosphere of the premises where individuals are employed and to establish strategies to enhance their working conditions. The analysis proposes the following parameters for evaluating the condition of the indoor environment: air turnover, air humidity, air temperature, lighting intensity, air flow rate, and dew point. Therefore, several key steps utilise to support decision-making. First, data collection gathers relevant information from various sources to understand the situation fully. Next, data evaluation checks the quality and relevance of this information to ensure it is accurate and useful. Analysis techniques are then applied to interpret the data, using methods like statistical analysis or modelling. Finally, decision support

uses the insights gained from this analysis to guide decisions and improve strategies. The aim is to provide a clear basis for making informed choices, which helps in managing projects and solving problems more effectively.

iv. Analyzing decision flexibility (Jaskowski & Sobotka 2012; Ustinovicius et al. 2010; Kaplinski 2008)

Analyzing decision flexibility, as discussed by Jaskowski & Sobotka (2012), Ustinovicius et al. (2010), and Kaplinski (2008), involves evaluating how adaptable and responsive decision-making processes are to changes and uncertainties. The paradigm introduced by Jaskowski & Sobotka (2012) facilitates the process of "reducing" the linkages between activities, therefore enabling the concurrent execution of activities or the reversal of their order. To illustrate the inherent connections between activities, the model incorporates two different types of soft logic: REVERSED and CANCELLED. These subtypes require additional resource-intensive actions or expenditures. The problem is formulated mathematically as a mixed linear integer programming model, with the objective of minimising the project's duration while adhering to the stipulated budget. The findings validate that including soft logic connections among construction operations improves adaptability in reducing project duration, ensuring timely completion of tasks, and optimise resource allocation.

v. Risk assessment and evaluation (El-Sayegh 2007; Ke et al. 2012; Markmann et al. 2013; Skinner et al. 2014)

Risk assessment and evaluation, as discussed by El-Sayegh (2007), Ke et al. (2012), Markmann et al. (2013), and Skinner et al. (2014), involve identifying, analysing, and prioritizing risks to manage them effectively. The

selection of a contractor significantly impacts the project and determines its level of success. Therefore, choosing the right contractor is crucial and necessary. El-Sayegh (2007) provides criteria for selecting a suitable Construction Management at Risk (CM@R) company, based on a thorough review of existing literature. Consequently, project owners can use these criteria to evaluate different CM@R proposals effectively. Risk assessment and evaluation help organisations anticipate potential issues, allocate resources effectively, and implement strategies to reduce the likelihood and impact of risks

vi. Function or process of risk (Zavadskas et al. 2010a; Kaplinski 2009b)

The function or process of risk, as discussed by Zavadskas et al. (2010a) and Kaplinski (2009b), involves understanding and managing the role risks play in projects or decision-making. The risk process involves spotting potential risks, assessing their likelihood and impact, prioritizing which ones to address first, creating strategies to manage them, and continuously monitoring the risks and their management to ensure effectiveness and adaptability.

vii. Monitoring and communicating risks associated with any activity (Xianbo et al. 2014).

Xianbo et al. (2014) investigates the resource allocation, effectiveness, impact and understanding of construction Project Risk Management (PRM) in Singapore. Monitoring and communicating risks associated with any activity, as discussed by Xianbo et al. (2014), involves regularly reviewing risk indicators and assessing any changes that might impact the activity and sharing information about identified risks with relevant stakeholders. Effective communication ensures that all parties are aware of potential risks, understand their implications,

and are informed about actions being taken to manage them. Together, these processes help in managing risks proactively and keeping everyone involved informed and prepared.

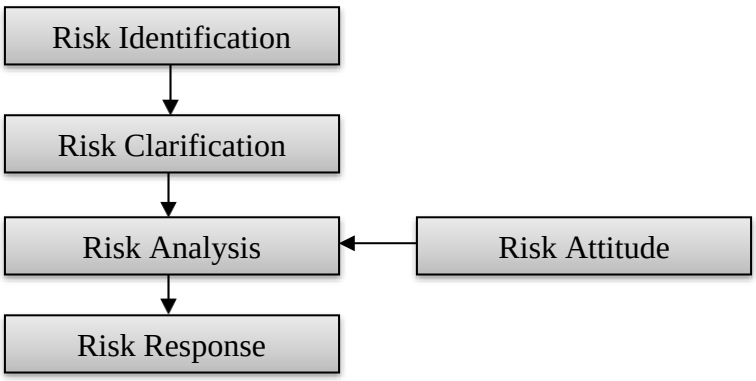


Figure 2.4: Risk Management in Construction Projects
Source: Flanagan & Norman (1997).

All the above activities aim to minimize losses and maximize opportunities. Exchange rate and interest rate risks should be borne by the owner (Jaskowski, Sobotka 2012; Hanna et al. 2013). **Figure 2.4** shows the risk management framework process to be adopted in the construction industry. Risk management is a pre-planning instrument that provides data pertaining to the characteristics and timeline of occurrences that have the potential to negatively impact the deliverables of the project. The implementation of risk management practices will lead to improved project planning that is characterised by innovation and efficiency, ultimately benefiting the organisations engaged in the process (JKR, 2009).

The study's scope does not involve reviewing or debating the adoption of project management and risk management theories. Instead, it focuses on identifying the determinants, causes, and impacts of public construction delays in Sarawak. The findings

may align with project management theories proposed by Koskela & Howell (2002) and risk management theory articulated by Flanagan & Norman (1997). These findings will be discussed in Chapter 4 as part of the theoretical contribution.

2.5 Types of Construction Project Delay

After reviewed previous studies, it was found that the classification of project delays differs from one study to another, but most researchers agree that project delays are measured by their impact on a project. In their study, Ahmed et al. (2003) classified the numerous causes contributing to construction delays into two main categories: internal and external causes. Parties to the contract, including the consultant, client, and contractor, all contribute to internal causes. On the other hand, external causes result from circumstances outside of these parties' direct control. Acts of God, decisions made by the government, and problems with material suppliers are a few examples of external causes. Project delays are categorized by Bolton (1990) as follows:

i. Excusable but Non-Compensable Delays refers to construction project disruptions that are deemed valid reasons for an extension of period, but the affected party do not entitle to compensate for additional costs incurred during the delay period. These delays are typically events or circumstances outlined in the contract that are beyond the control of the contractor or subcontractor. They are considered inherent risks that the parties have agreed to manage within the terms of the contract.

ii. Compensable Delays is referred to delays in a construction project that are directly attributable to the actions or decisions of the project owner or customer. In such cases, the owner is legally responsible for the delay, and the contractor

is typically entitled to compensation for additional costs incurred due to the extended project duration.

iii. Inexcusable Delays is referred to as contractor-caused delays, occur when delays in a construction project are attributed to the actions or shortcomings of the contractor. In contrast to compensable delays, which are the responsibility of the owner, inexcusable delays are under the direct control of the contractor. Common causes contributing to inexcusable delays include a lack of skills, experience, or efficiency in construction operations.

Alaghbari et al. (2007) delineated three categories of project delays to enhance comprehension: concurrent delays, non-excusable delays, and excusable delays. Excusable delays, as explained, stem from unforeseen circumstances beyond the control of the contractor or subcontractor. Okereke, Zakariyau, and C. Eze (2021) categorized project delays by their impacts on the project's schedule, responsibility, and event, differentiating between concurrent and non-concurrent delays.

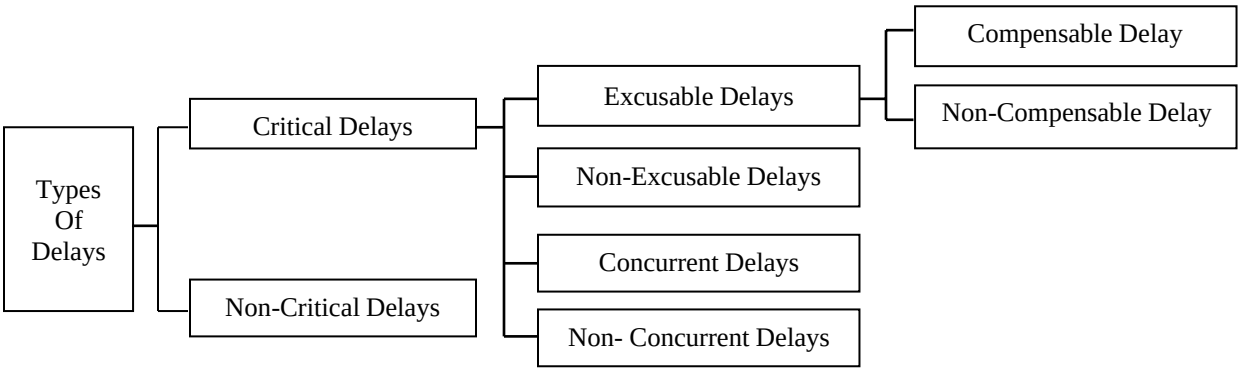


Figure 2.5: Types of Delays

Source: (Okereke, Zakariyau, & C. Eze, 2021)

2.5.1 Critical and Non-Critical Delays:

A critical delay is one that results in the extension of the construction completion date or contract beyond the initially established timeframe. In contrast, a non-critical delay is a delay that does not impact the original construction period or contract. It's important to note that delays associated with critical activities have the potential to lead to critical delays, emphasizing their significance in influencing the overall project timeline.

2.5.2 Excusable Compensable Delays*:*

This type of delay is attributed to the responsibility of the owner or the owner's agent. Such delays lead to an extension of the construction period, and the contractor is entitled to charge additional fees to the owner. Contractors may impose extra charges related to office overhead in the field due to these delays, as highlighted by Al-Tami et al. (2015). Delays arising from specific causes outlined in the contract, such as conflicting on condition of site, requirements for change of work or difficulties in site access, are instances where compensation may be applicable, as discussed by Trauner et al. (2015).

2.5.3 Excusable Non-Compensable Delays:

According to Alaghbari et al. (2007) and T. Saleh et al. (2009), excusable non-compensable delays refer to "acts of Allah," and individual or entity is do not held accountable or liable for them. These delays typically arise from circumstances beyond the control of the owner or contractor, such as unpredictable weather conditions or disasters (acts of Allah), including floods, earthquakes, fires, health crises, wars, and national emergencies. Contractors are usually granted additional time to complete the project, but no

additional compensation, such as an increase in the budget, is provided (Mubarak et al., 2015).

In contrast, Okereke et al. (2021) argue that project non-compensable delays result from causes such as poor time management, inefficient machinery, construction errors, conflicts among parties involved in construction, and deficiencies in project execution. These delays are deemed non-compensable, meaning that while they may extend the project timeline, contractors are not entitled to receive additional financial compensation for the associated time extension.

2.5.4 Non-Excusable Delays:

This type of delay is under the capability of the contactor to control and predict, as outlined by Meena et al. (2015), and involves causes such as construction material availability, delivery schedules from suppliers, and actions by subcontractors. According to Ibironke et al. (2013), the contractor is not eligible for assistance in this situation and must make up for the lost time by speeding up the project's construction or paying the project owner compensation. Consequently, in such situations, the contractor will not receive compensation for either the extended time required to complete the project or additional funds to cover the costs incurred during the delay.

2.5.5 Concurrent Delays:

When a construction project is delayed due to a single factor, it is relatively straightforward to assess the associated time and cost implications. However, issues arise when several causes or a combination of causes delay the project at once. Alaghbari (2005) termed such situations concurrent delays, where two or more causes concurrently contribute

to project delays. Hamzah et al. (2011) and Levy (2006) identified concurrent delays as the most frequent type of delay in the construction sector. According to Subedi & Joshi (2020), resolving the impact of delays in a legal context often involves a court determining the parties responsible. Based on this analysis, the party that has been impacted can subsequently determine whether they wish to pursue compensation or request an extension of the construction time. There are different kinds of simultaneous delays, and if the client is the one responsible, the contractor usually has the right to receive payment. Subedi and Joshi (2020) have presented equations, as shown in **Figure 2.6** below, to illustrate this statement and explain the complexities associated with concurrent delay:

Equation 1: Excusable + Non-Excusable = Time Extension

Equation 2: Concurrent (Compensatory + Non-Compensatory) = Time Extension

Equation 3: All compensatory delay solely by owner = Compensation + Time Extension

Figure 2.6: Concurrent Delay's Equations

However, often the client and contractor are involved in conflict in determining the occurrence of concurrent delays in a project. Each of them constantly tries to blame the other, in order to be able to claim compensation (Okereke et al., 2021). Therefore, third parties should evaluate, document and report any concurrent delays to the relevant parties.

2.6 Causes Contributing to Construction Project Delays

Various causes contributing to construction project delays have been extensively explored by previous researchers, leading to comprehensive categorizations. Sambasivan and Soon (2007) identified and categorized 28 commonly accepted causes contributing to construction project delays. These causes are grouped into eight main categories: clients, contractors, consultants, materials, labor and equipment, financial aspects, contract-related

causes, and external causes. Muhwezi (2014) proposed a classification of delay causes into four primary categories: consultant-related, client/owner-related, external-related, and contractor-related causes. This categorization aligns with the findings of Amoatey et al. (2015) and Zidane and Andersen (2018), who provided an in-depth explanation of causes contributing to delays, encompassing clients, contractors, consultants, materials, equipment, labor, contracts, and external causes.

Thurnell and Durdyev (2017) took a simplified approach, classifying delay causes into two categories: internal causes (related to the client, contractor, and consultant) and external causes that are beyond the control of the parties involved in the construction process. This categorization acknowledges the distinction between causes that are within the direct control of the project stakeholders and those influenced by external circumstances. The consistent identification of these causes across multiple studies underscores their significance in causing delays in construction projects. It emphasizes the need for a comprehensive understanding and consideration of these causes when evaluating and addressing delays in the construction industry. Thorough analysis and management of both internal and external causes are essential for effective delay mitigation and project success. Sambasivan and Soon (2007) have developed 28 well-recognised construction delay causes in construction and categorised them into eight major groups. These are client-related causes, contractor-related causes, consultant-related causes, material-related causes, labour- and equipment-related causes, financial-related causes, contract-related factor, and external causes.

2.6.1 Client-Related Causes

Multiple studies, including those conducted by Asiedu & Alfen (2016) and Pall et al. (2016), have consistently identified Client-Related Causes as primary causes of schedule

delays in construction projects. Research findings suggest that payment progress within construction projects is often subject to delays, as indicated by Adwani et al. (2018), Khair et al. (2016), and Idrus (2019). Such delays can stem from various causes, including bureaucratic processes, disputes over work completed, or financial constraints within the client organization. These delays not only impact the cash flow of contractors and subcontractors but can also lead to strained relationships between project stakeholders and hinder the overall progress of the project.

Furthermore, issues with the client's annual budget, as highlighted by Khair et al. (2016), Idrus (2019) and Ye & Rahman (2010), can significantly affect project planning and execution. Insufficient funding may result in project scope reductions, delayed payments to contractors, or the postponement of critical project activities, ultimately prolonging project timelines and increasing costs. Modification requests or alterations to project scope during the construction phase, documented by Ye & Rahman (2010, Hisham & Yahaya (2016), Al-Adwani et al. (2018), Azhar (2019), and Idrus (2019), can introduce disruptions and challenges. These changes may necessitate redesigns, additional procurement, or resequencing of work, leading to delays, cost overruns, and contractual disputes.

Similarly, slow decision-making and approval processes post-submission, identified in studies by Rashid (2020), Varghese et al. (2015), Doloi et al. (2012), Tafazzoli et al. (2017), Al-Adwani et al. (2018), Azhar (2019), and Idrus (2019), can disrupt project schedules and increase project risks. The practice of awarding contracts to low-bidding contractors, as observed in research by Nawi et al. (2016), Al-Adwani et al. (2018), Azhar (2019), and Alsuliman (2019), may result in subpar workmanship, project delays, or disputes over contract terms and conditions. Additionally, significant rates of employee turnover

within departments, reported by Amoatey et al. (2015) and Al-Adwani et al. (2018), can disrupt project continuity, hinder knowledge transfer, and affect team morale and productivity. Late delivery of sites to contractors by clients, highlighted in studies by Al-Adwani et al. (2018) and Alsuliman (2019), can create logistical challenges where, contractors faced difficulties mobilizing resources, coordinating subcontractors, and commencing work as planned.

Moreover, unreasonably lengthy contract durations given the project's complexity, noted by Al-Adwani et al. (2018), Alsuliman (2019), and Doloi et al. (2012), increase project risks and uncertainties. Client coordination and communication problems, as identified in research by Azhar (2019), Van et al. (2016), Amoatey et al. (2015), Khair et al. (2016), Chen et al., (2019) and Niazi & Painting, (2017), can hinder effective project management and decision-making. Poor communication channels, conflicting priorities, or inadequate stakeholder engagement led to misunderstandings and delays in resolving issues.

The lack of construction experience on the client's part, highlighted in studies by Alsuliman (2019), Razkenari et al. (2015), and Khair et al. (2016), can pose significant challenges throughout the project lifecycle. Clients with limited construction knowledge struggled to effectively articulate project requirements, such as inconsistencies in orders that disruptions (Sambasivan et al., 2017). Delays can also result from conscious decisions made by clients or owners and misguided incentives provided to contractors to complete projects ahead of schedule (McCord et al., 2015).

The involvement of clients in the project construction process has been noted to significantly impact project success or failure (Al-Kharashi & Skitmore, 2009; Alsolaiman, 2014). Kwakyi (1998) emphasized the importance of various parties in construction projects,

including clients, contractors, suppliers, consultants, and developers, with the client being the most critical player. Chigangacha et al. (2017) discovered that clients from the private sector were more actively engaged in the process of constructing the project. Studies by Babatunde et al. (2010) and Jha (2011) highlighted that clients primarily focus on key elements such as completing the project on time, within budget, and with high quality. Alsolaiman (2014) highlighted the importance of sufficient and efficient customer engagement in projects to ensure successful project completion, as clients play a crucial role in determining project duration preferences (Odeh and Battaineh, 2002).

Referring to study conducted in Malaysia, Mohd Nawi et al. (2018) identified client-related causes that lead to public project delays, with inadequate planning by the client at the early stage of construction being the most frequent cause. These findings underscore the importance of addressing challenges on the client or owner side to enhance the effectiveness of construction projects and mitigate delays.

2.6.2 Consultant-Related Causes

Consultants, recognized as professional entities guiding clients in project planning and oversight, play a crucial role in construction projects by providing documents, specifications, and project details, including financial planning (Long, 2004). Delays attributed to consultants typically occur before construction commencement, involving project design, building plan approval, and planning proposal endorsement. In construction projects, a multitude of obstacles have been identified by various researchers, each contributing to project delays and inefficiencies. Soomro et al. (2019) highlighted that delays can result from late issuance of instructions by owners or contractors, incomplete design drawings, and inadequate supervision by multiple parties involved in the project, a sentiment echoed by

Lessing, Thurnell, and Durdyev (2017) and (Nawi et al., 2016) highlighted that ineffective on-site standing supervision at the construction site, leading to potential issues such as quality control lapses, safety concerns, and schedule delays.

According to Odeh and Battaineh (2002), incompetent staff due to lacking knowledge had slow down the project approval process as the documentation provided may not meet the required standards, poor communication with authorities and clients, weak project coordination, and a lack of qualifications contribute to delays on the consultant's side (Ogunlana et al., 1996 and Smith et al., 2017). Sambasivan et al., (2017), mentioned that misunderstood client requirements happened when there is a discrepancy between what the client expects and what the project team delivers, it can result in rework and late approval of revisions within the scope of work (Smith et al., 2017), dissatisfaction, defects in design (Azhar, 2019), delays in the preparation and finalization of design documents (Azhar, 2019), poor communication channels and breakdowns in communication between contractors and consultants (Van et al., 2016) can lead to misunderstandings, conflicts, and delays in project execution.

Sambasivan and Yau (2007) identified four consultant-related causes contributing to delays in the Malaysian construction sector, with the preparation and approval of drawings emerging as the most influential factor. Another reasons, insufficient project oversight (Van et al., 2016), poor coordination and communication among project stakeholders, such as consultants and clients (Amoatey et al., 2015), failure to obtain necessary permits and approvals from local authorities and delayed final assessments (Al-Adwani et al., 2018), delayed progress payment assessments (Hisham & Yahaya, 2016) and overly cautious payment assessments (Tafazzoli et al., 2017) can lead to disputes, delays in payments, and

strained relationships between project stakeholders. This underscores the critical role of consultant-related causes, particularly contributing to project construction delays.

2.6.3 Contractor-Related Causes

Contractors play a pivotal role in project construction, whether they undertake the work directly or with the involvement of subcontractors. Regardless of the specific tasks assigned to the main contractor or subcontractor, their responsibility is paramount (Shi and Arditi, 2001). The success or failure of a project is contingent on compliance with agreed contracts, specifications, completion timeframes, and budgets. Successful completion may result in compliments or bonuses for the contractor, while failure necessitates the contractor to take responsibility by mitigating any additional construction time or financial implications. Sambsivan et al. (2017) emphasize that the successful implementation of construction projects heavily relies on thorough planning, considering causes such as equipment availability, sufficient labor resources, and timely material delivery.

Several studies, including those conducted by Aziz et al. (2017), Senouci et al. (2016), and Sohu et al. (2016), have delved into specific causes and assessed their individual impacts on delays in construction scheduling. This observation emphasises the complex nature of challenges in the public construction project and underscores the necessity of addressing these causes to attain successful project management and timely completion.

One major challenge is the lack of sufficient expertise within the construction industry, as highlighted by Al-Adwani et al. (2018) and Sambasivan et al. (2017). This can manifest in various ways, including inadequate knowledge of construction techniques, building codes, and safety regulations, which can lead to errors, rework, and delays in project completion. Casmi et al. (2019), in a study regarding the ranking of similarity for project delay causes in

the construction industry, had discovered that incompetent subcontractors were identified as one of the top three causes contributing to project delays. Arditi et al. (2017), significant causes contributing to delays caused by contractors include financial difficulties, challenges in predicting and preparing for projects, equipment breakdowns, maintenance issues, shortages of materials and equipment, a lack of available staff, and slow mobilization.

Additionally, inappropriate financial management and insufficient capital, as discussed by Gomarn and Pongpeng (2018) and Van et al. (2016), pose significant hurdles for contractors. Financial constraints can limit the ability to procure necessary materials, hire skilled labor, and adhere to project timelines, ultimately resulting in delays and disruptions. While consultants and clients perceive poor planning by contractors as the main reason for construction delays, contractors believe that ineffective site management is the primary cause (Sambasivan & Yau, 2007).

Errors in construction and substandard workmanship, identified by Idrus (2019), Sambasivan et al. (2017), and Aziz and AbdelHakam (2016), can lead to costly rework, project setbacks, and compromised quality. Non-compliance with local authority regulations, as noted by Al-Adwani et al. (2018), further exacerbates delays by necessitating revisions and approvals from regulatory bodies. Inadequacy in resource management during construction, as observed by Durdyev et al. (2017) and Aziz and Abdel-Hakam (2016), can result in inefficiencies, material shortages, and logistical challenges that hinder progress. Impractical project scheduling and planning, cited by Durdyev et al. (2017), Al-Adwani et al. (2018), Shah (2016), and Razkenari et al. (2015), can lead to unrealistic timelines, poor coordination, and conflicts among project stakeholders.

Moreover, the lack of a sufficient labor force, as highlighted by Shah (2016) and Khair et al. (2016), can slow down construction activities and prolong project durations. Issues with the quality and availability of construction equipment, as discussed by Amoatey et al. (2015), Sambasivan et al. (2017), and Khair et al. (2016), can further exacerbate delays by limiting productivity and efficiency on-site. Incapable subcontractors, weak collaboration between the contractor and the client, and ineffective site management techniques also contribute to project delays, as noted by various researchers. Adham (2023), after reviewing studies published between 2020 and 2022 and analyzing PESTLE causes related to project delays, identified poor site management, inadequate project planning and scheduling, and financial complications as the top causes causing project delays related to contractors. Ali et al. (2010), in their study on Commercial Projects in Klang Valley, Malaysia, identified seven significant variables caused by contractors that led to project delays.

2.6.4 Financial-Related Causes

The misappropriation of funds emerges as a significant factor contributing to project delays, as highlighted by Gebrehiwet & Luo (2017) and Bowen et al. (2015). Poor budget management and inadequate utilization of allocated funds for proposed projects significantly impede their progress. Construction projects often face challenges in realization due to budget overruns or falling short, leading to the mismanagement of allocated funds and unsatisfactory project outcomes (Flyvbjerg, 2014). Gebrehiwet & Luo (2017) identified various causes contributing to project delays, including financial dishonesty, volatility in material costs, inadequate supply of quality materials, delayed design documentations, late release of budgeted funds, and improper planning and scheduling. Additionally, Brunet (2019) argues that the projected budget plays a fundamental role in all operations of a

company's project, emphasizing the crucial role of effective financial administration in ensuring the seamless progress and timely completion of construction projects.

Financial causes are recognized as a significant contributor to delays in the construction sector (Alaghbari et al., 2007). Sweis et al. (2007) provide evidence supporting the assertion that financial challenges faced by contractors contribute to delays in construction projects in Jordan, particularly due to numerous modifications made by project clients during the construction process. This leads to increased construction expenses as contractors need to source materials and equipment from beyond their usual scope. A similar pattern is observed in the construction sector of Malaysia. According to research by Ahmed et al. (2003) and Wa'el Alaghbari (2005), financial causes, including client financial issues like delayed payments, financial difficulties, and economic problems, have the potential to cause delays in construction projects in Malaysia. Contractors may also encounter financial and cash flow problems. External causes such as unfavorable economic conditions, including currency fluctuations and inflation rates, can further contribute to project delays. According to Abdul-Rahman et al. (2009), ineffective management of cash flow, delayed payments, insufficient financial resources, and instability in the financial market are primary reasons for financial-related delays. These causes can be attributed to the contractor's unstable financial history, the client's inadequate financial and business management, challenges in securing loans from financiers, and the impact of inflation.

2.6.5 Materials-Related Causes

Materials play a crucial role as they provide the fundamental framework for project implementation, with a significant portion of client costs allocated to building materials. Construction materials used in construction projects vary in terms of cost, delivery time, and

interchangeability (Haddad, 2006). Therefore, contractors are quite careful in managing the building materials on the site. The great responsibility of contractors is to acquire goods and find ways to ensure that they arrive at their location according to schedule (Abdul-Rahman et al., 2006) because delayed delivery of materials at the construction site in compared to the project schedule will be led to project delays (Nawi et al., 2016 and Varghese et al.,2015)

The possibility of delays increases with poor material control and when the contractor neglects to plan early for the acquisition. Delays might occur as a result of clients' buying choices being impeded by rising material costs, according to Koushki et al. (2005) where, volatility in the cost of materials (Nawi et al., 2016, Varghese et al., 2015), Amoatey et al., 2015), Van et al., 2016) such as price hikes may cause clients to decide to put off projects requiring a lot of materials in favour of waiting for costs to decline. There may be a delay because of the potential loss of the time lost waiting for prices to drop. Because huge building projects demand a vast quantity of supplies, this may happen rather often. Postponing the procurement of supplies until costs become more favourable can lead to delays in specific tasks, some of which may be crucial for project completion, ultimately causing a general delay, as discussed by Wiguna and Scott (2005). Two important variables that impact how long it takes to provide these new materials are client acceptance and pricing negotiations (Baloyi and Bekker, 2011). Sometimes, this situation will be led to low-grade building materials (Nawi, M. N. M., et al., 2016 and Amoatey, C. T., et al., 2015)

In the context of RTP in Sarawak, where construction sites may be located in remote areas with limited access roads, the management of construction materials becomes even more critical. Given the challenges of transporting materials to remote sites, contractors involved in RTP projects must carefully plan and manage the procurement and delivery of

building materials. Delays in material delivery can significantly impact project schedules and completion timelines, ultimately affecting the communities awaiting the benefits of these projects.

2.6.6 Labour and Equipment-Related Causes

Equipment that is used repeatedly during the construction phase is known as a carrier or operator. Transporters include equipment used for various tasks on site, such as skipping, in addition to transport vehicles such as trucks (Odeh and Bataineh, 2002). Cranes, graders and other machinery will remain on the construction site throughout the construction phase. Thus, the main factor to consider is the frequency of use of the equipment, when deciding whether to lease or purchase this equipment for the project (Kikwasi, 2012). Therefore, one of the tasks of the contractor is to procure this important tool, supervise its maintenance, and keep it safe from damage and theft. Equipment-related delays can be divided into the following categories: Low mobilization, obsolete equipment, equipment failure, inadequate equipment, and lack of spare parts.

The workforce is a critical factor in construction projects, comprising teams of site supervisors, site engineers, technicians, and laborers, each playing an essential role in the project's success. Worker productivity, often defined as "output per labor hour" (Hendrickson, 1998), is categorized into three skill levels: skilled, intermediate, and unskilled. To ensure a skilled and quality workforce, contractors must provide a comprehensive work plan outlining roles, responsibilities, and interlinkages among the construction project's workforces. Tasks and responsibilities may be carried out either in groups or individually. Drewin (1982) emphasized that the selection of the quantity and category of the workforce significantly impacts a project's success or failure, influencing its

quality, cost, and development. Failure to choose the right workforce can disrupt the smooth progression of the project (Odeh and Bataineh, 2002).

In the context of RTP in Sarawak, the availability and retention of skilled workers pose significant challenges for contractors. These projects often take place in remote areas with limited access to skilled labor pools, making it difficult for contractors to recruit and retain qualified personnel. Therefore, labor force causes are one significant factor can lead to project delays.

2.6.7 Contract Related Causes

Change orders requested by the owner during construction in public projects can lead to significant delays (Odeh & Battaineh, 2002; and Sambasivan & Soon, 2007). The delays are due to several causes such as design changes necessitated by these orders disrupt ongoing work, requiring adjustments to plans and materials. Other than that, the approval process for change orders involves multiple stakeholders and can be time-consuming, further delaying implementation. According to Odeh and Battaineh (2002) and Sambasivan & Soon (2007), mistakes and discrepancies in contract documents can significantly delay public construction projects by causing misunderstandings, disputes, and rework. Errors or ambiguities in the documents may lead to disagreements over project requirements and responsibilities, resulting in time-consuming negotiations and legal interventions. Rectifying mistakes often requires processing change orders, which prolongs the approval process and disrupts ongoing work. Additionally, errors discovered after construction begins may necessitate costly rework to align completed work with corrected specifications.

2.6.8 External Related Causes

In construction projects, Unforeseen circumstances encountered at the project site, including soil composition, water levels, and geological conditions, can also contribute to construction delays. As noted by Van et al. (2016), Amoatey et al. (2015), Alsuliman (2019), and Sambasivan et al. (2017), unexpected challenges such as unstable soil conditions, high water tables, or rock formations can necessitate additional site preparation, foundation modifications, or structural reinforcements. Addressing these unforeseen circumstances often requires time-consuming and costly remedial measures, leading to project delays and increased construction costs. Al-Adwani et al. (2018), Amoatey et al. (2015), Razkenari et al. (2015), and Sambasivan et al. (2017) have highlighted the adverse impacts of weather causes on construction activities. Extreme weather events such as heavy rain, storms, or extreme heat can disrupt work schedules, impede site access, and affect the productivity of laborers and equipment.

Another factor that can lead to project delays is the unreliability of suppliers or vendors. Singh and Bala (2018) and Doloi et al. (2012) have highlighted the impact of unreliable suppliers on construction projects. Delays in material deliveries, poor quality materials, or sudden interruptions in supply can disrupt construction schedules, cause work stoppages, and lead to project delays. Contractors may need to invest additional time and resources in finding alternative suppliers or resolving supply chain issues, further prolonging project timelines and increasing project costs. The causes of delays vary across countries, locations, and projects. **Table 2.1** displays common causes contributing to delays across countries globally.

Table 2.1: Causes Contributing to Project Delays

Causes	Related to Contractor	Related to Consultant	Related to Client	Other
Indicators	**Lack of sufficient expertise in the field of construction** Al-Adwani, M., et al. (2018), Sambasivan, M., et al.(2017)	**Ineffective on-site standing supervision** Nawi M. N. M., et al. (2016), Khair, K., et al. (2016), Idrus, N. A. (2019), Alsuliman, J. A. (2019), Razkenari, M., et al. (2015)	**Payment's progress is being delayed** Adwani, M., et al. (2018),,Khair, K., et al. (2016), Idrus, N. A. (2019)	**Unfavorable weather causes at the location** Al-Adwani, M., et al. (2018), Amoatey, C. T., et al. (2015), Razkenari, M., et al. (2015), Sambasivan, M., et al.(2017)
	Inappropriate financial management and insufficient capital Gomarn, P., Pongpeng, J. (2018), Van, L. T., et al. (2016)	**Misunderstood client's requirements** Sambasivan, M., et al.(2017), Aziz, R. F., and Abdel- Hakam, A. A. (2016), Haq, S., et al. (2017), Khair, K., et al. (2016), Tafazzoli, M., et al. (2017)	**Issue concerning the client's annual budget** Khair, K., et al. (2016), Idrus, N. A. (2019)	**Volatility in the cost of materials** Nawi, M. N. M., et al. (2016), Varghese, A. R., et al. (2015), Amoatey, C. T., et al. (2015), Van, L. T., et al.. (2016)]
	Lack of labor force Shah R. K. (2016), Khair, K., et al. (2016)	**Defect or imperfection in the design** Azhar, S. (2019), Aziz, R. F., & AbdelHakam, A. A. (2016), Haq, S., et al. (2017), Khair, K., et al. (2016)	**Modification request or alteration of project scope during the construction phase** Hisham, S. N. A., Yahaya, K. (2016), AlAdwani, M., et al. (2018), Azhar, S. (2019), Idrus, N. A. (2019)	**Delayed delivery of materials at the construction site in compared to the project schedule** Nawi, M. N. M., et al. (2016), Varghese, A. R., et al. (2015

	Ineffective site management techniques Rashid, Y. (2020), Khair, Gomarn, P., Pongpeng, J. (2018), Hisham, S. N. A., Yahaya, K. (2016)	**Insufficient project oversight from the design team** Van, L. T., et al.. (2016), Amoatey, C. T., et al. (2015), Alsuliman, J. A. (2019)	**Slow decision-making and approval process after submission** Rashid, Y. (2020), Varghese, A. R., et al. (2015), Doloi, H., et al. (2012), Tafazzoli, M., et al. (2017), Al-Adwani, M., et al. (2018), Azhar, S. (2019), Idrus, N. A. (2019)	**Low-grade building materials** Nawi, M. N. M., et al. (2016), Amoatey, C. T., et al. (2015
	Weak collaboration among the contractor and the client Singh, S., Bala, A. (2018), Gomarn, P., Pongpeng, J. (2018)	**Weak collaboration among the consultant and the client** Amoatey, C. T., et al. (2015), Tafazzoli, M., et al. (2017)	**Lowbidder contractor awarded with contract** Nawi, M. N. M., et al (2016), Al-Adwani, M., et al. (2018), Azhar, S. (2019), Alsuliman, J. A. (2019)	**Unforeseen circumstances encountered at the location, such as soil composition, water levels, and other causes.** Van, L. T., et al.. (2016), Amoatey, C. T., et al. (2015), Alsuliman, J. A. (2019), Sambasivan, M., et al.(2017
	Incapable subcontractors Singh, S., Bala, A. (2018), Hisham, S. N. A., Yahaya, K. (2016), Durdyev, S., et al. (2017)	**Absence of local authorities' approval prior to tendering** Al-Adwani, M., et al. (2018), Aziz, R. F., & Abdel- Hakam, A. A. (2016), Haq, S., et al. (2017), Varghese, A. R., et al. (2015)	**The department experiences a significant rate of employee turnover.** Amoatey, C. T., et al. (2015), Al-Adwani, M., et al. (2018)	**Not reliable supplier or vendor** Singh, S., Bala, A. (2018), Doloi, H., et al. (2012)
	The quality and availability of construction equipment Amoatey, C. T., et al. (2015), Sambasivan, M., et al.(2017), Khair, K., et al. (2016)	**Design and change preparation is experiencing a delay** Azhar, S. (2019), Idrus, N. A. (2019), Amoatey, C. T., et al. (2015), Al-Adwani, M., et al. (2018), Alsuliman, J. A. (2019)	**Late delivery of the site to the contractor by the client** Al-Adwani, M., et al. (2018), Alsuliman, J. A. (2019)	

	Impractical project scheduling and planning Durdyev, S., et al. (2017), Al-Adwani, M., et al. (2018), Shah, R. K. (2016), Razkenari, M., et al. (2015)	**A delay of conducting the final assessment** Al-Adwani, M., et al. (2018), Haq, S., et al. (2017)	**Unreasonably lengthy of contract duration given the project's complexity** Al-Adwani, M., et al. (2018), Alsuliman, J. A. (2019), Doloi, H., et al. (2012)	
	Inadequacy in resource management during construction Durdyev, S., et al. (2017), Aziz, R. F., & Abdel-Hakam, A. A. (2016)	**Ineffective communication between the contractor and consultant** Van, L. T., et al.. (2016), Khair, K., et al. (2016)	**The problem the client has with coordination and communication** Azhar, S. (2019), Van, L. T., et al.. (2016), Amoatey, C. T., et al. (2015), Khair, K., et al. (2016)	
	Errors in construction and substandard work Idrus, N. A. (2019), Sambasivan, M., et al.(2017), Aziz, R. F., & AbdelHakam, A. A. (2016)	**Delayed assessment of progress payment** Hisham, S. N. A., Yahaya, K. (2016), Azhar, S. (2019)	**Lack of construction experience on the client's part** Alsuliman, J. A. (2019), Razkenari, M., et al. (2015), Khair, K., et al. (2016	
	Not adhering to local authority regulations Al-Adwani, M., et al. (2018)	**Overly cautious or conservative approach is taken in assessing payment-related aspects.** Tafazzoli, M., et al. (2017), Azhar, S. (2019)		

2.6.9 Public Construction Project in Rural Areas and Delay Causes

Public projects, funded, owned, or operated by the government, are crucial for the development of basic infrastructure, contributing to economic growth and improving the quality of life. Government agencies play a key role as implementation agencies and project monitors in ensuring the successful execution of public construction projects. Proper management and regulation from project procurement to completion are essential, requiring a clear understanding of roles by all involved parties, including the implementation agency and construction workers. The success of a construction project is typically measured by causes such as completion time, adherence to budget, compliance with specifications, and stakeholder satisfaction. Other considerations include the contractor's profit, the absence of compensation claims, and the avoidance of legal proceedings. Empirical studies across different countries have investigated causes contributing to delays in public construction projects, revealing diverse challenges.

In Uganda, delay assessment in scope changes, financial indiscipline by contractors, insufficient contractor experience, design errors, and inadequate site investigations were identified as significant causes affecting construction delays. In Nigeria, cash flow problems, clients' financial difficulties, and poor procurement practices were the primary causes of delays. In Malaysia, the poor performance of contractor's workers, equipment breakdown, adverse weather conditions, challenges in site accessibility for material delivery, and the application of unsuitable construction methods were reported as top causes contributing to delays. In Pakistan, financial difficulties faced by constructors, inadequate planning and scheduling, financial challenges encountered by clients, and delays in client payments were significant contributors to time overruns.

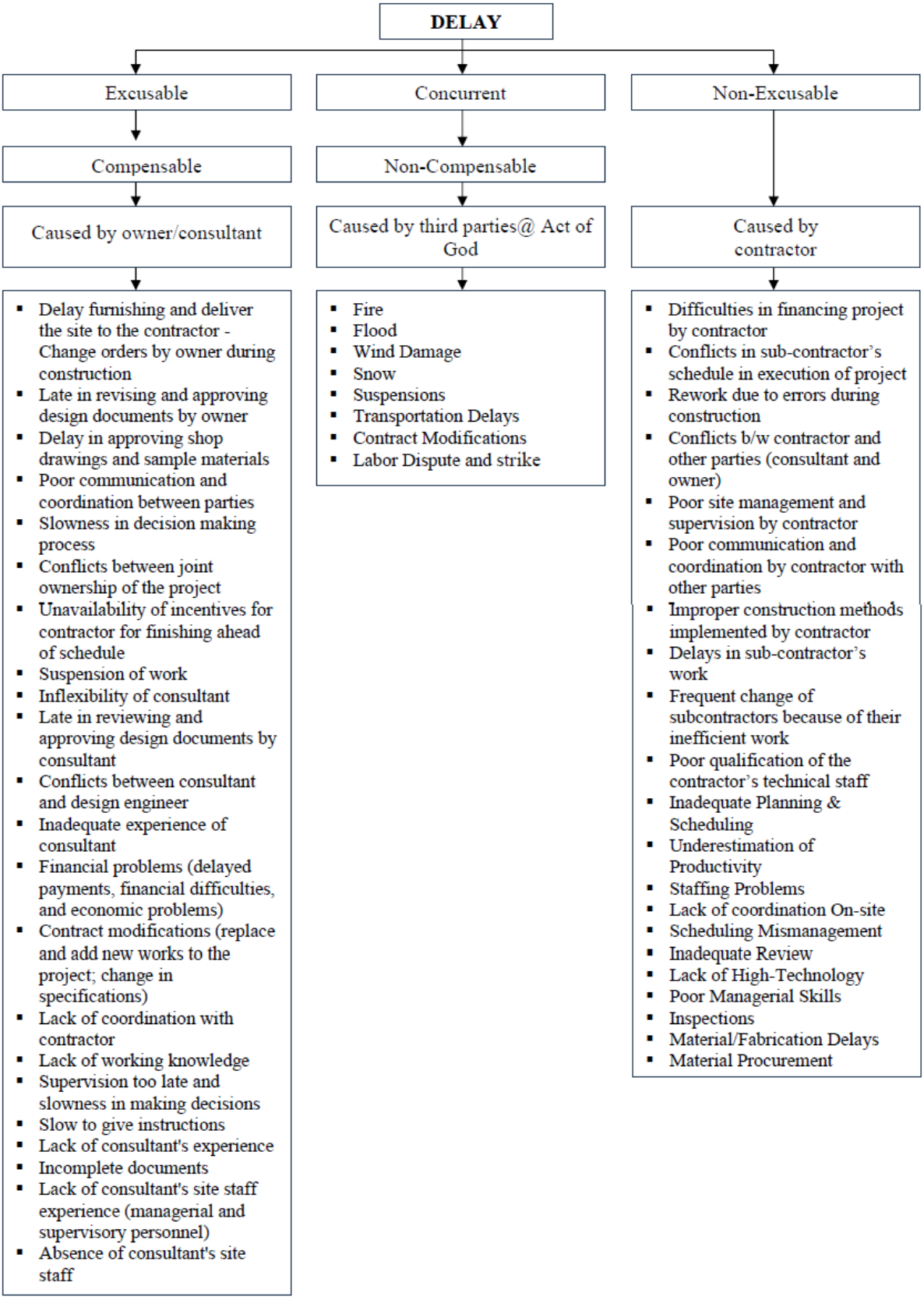


Figure 2.7: Theoretical Framework of Construction Delay
Source: Hamzah et. al (2011)

In Ethiopia, issues such as project financing difficulties, poor project management systems, delayed issuance of designs, shortages of construction materials, design errors, and delays in progress payments were key contributors to project delays. In India, poor site management, delayed review and approval of design documents, subsurface condition impacts, low labour productivity, and shortages of construction materials were major causes of project delays. In Nigeria, causes such as shortages of skilled subcontractors and labourers, financial difficulties of contractors, delayed material deliveries, and the impact of the COVID-19 pandemic were identified as significant causes of project delays.

These studies collectively provide comprehensive insights into the varied causes influencing project delays in rural areas across different nations, contributing valuable knowledge to the field of construction project management. The causes contributing to project delays in rural areas are diverse and vary between countries. According to earlier research, the causes listed in **Table 2.2** below contribute to project delays in remote areas:

Table 2.2: Causes Contributing to Construction Delays in Rural Area

No.	Causes	Findings	Country of Study	Sources
1.	Accessibility	The project owner is responsible for providing access to the construction site and failure to do so will cause the construction work to be disrupted. The contractor may demand additional payments due to delays in site access.	United State of America	Ahmed et al. (2002)
		Limitation access is one of the contributing causes to the delay of rural projects. The projects are typically located far within, the trip takes a long time, and a suitable vehicle is required.	United State of America & Canada	Tran et al. (2014)
		Due to the difficult terrain road infrastructure in Nepal could not be reached sufficiently to the various settlements in the hilly area.	Nepal	Acharya, Yong and Dai (2004)

2.	Site Condition	Construction site conditions and preliminary work affect the smooth progress of project.	United State of America	Collins et al. (2016)
		Early preparation by doing detailed research on the suitability of the site is important because the natural condition of the site is unpredictable.	Hong Kong	Lo et al. (2006)
		Unevenness, slop, and the presence of interfering or obstructing objects on the construction site will give the contractor problems.	Ghana	Winden et. al (1986)
3.	Space Constraint	One of the primary causes contributing to productivity loss on construction sites is thought to be workspace congestion or space constraints.	United Kingdom	Chavada et al. (2012)
		The construction site is constrained by restricted space, which poses challenges throughout the ongoing building process. These challenges arise from several causes, such as the requirement to provide space for equipment, facilitate the movement of personnel between different areas, transport materials, and provide storage for the materials.	n.a	Wu and Chiu (2010)
4.	Underground Utilities	To preserve the historic or picturesque qualities of the route, all utilities should be moved or installed in the proper locations. Therefore, it is advised that utilities be moved underground for reasons of safety and aesthetics.	United State of America	Departme nt of Public Work (2008)
5.	Fluctuation/S uitability Material	Variations in material prices are one of the causes that might cause building costs to exceed budget. It is necessary and costly to mobilise local resources such as steel, cement, gravel, and sand for the building of rural sites. In order to prevent local material prices from fluctuating and to prevent building project delays, they typically employ resources that are extracted straight from the earth.	Morroco	Khaloufi (1956)

6.	Material Delivery	Material delivery is one of the main actors that cause the delay of the large construction project.	Saudi Arabia	Assaf & Al-Hejji (2006)
		Building materials have a significant impact on the productivity of construction projects in rural area. The delay in construction projects is caused by late delivery of building materials. The purchase and delivery of building materials to rural areas is more difficult than in urban areas and contractors have different approaches to making procurement and even delivery to project construction sites, resulting in additional costs.	Australia	Mcanulty & Baroudi, (2010)
7.	Availability of Labour	The majority of the "ruralness" site project region struggles with employee recruitment and retention.	United State of America	Tran, Hallowell, & Molenaar (2014)
		Consequently, there aren't enough qualified personnel working on the project to oversee quality control, scheduling, project management, and safety. According to a survey, the worker's family life suffers as a result of living in a rural area close to the construction site.	Australia	Mcanulty & Baroudi, (2010)
8.	Productivity of Labour	To prevent project cost overruns and delays in the construction project's completion timeline, it is necessary to be aware of and take into account a variety of causes that impact the productivity of construction workforce.	India	Dheenadhayalan & Alean (2015)
		Due to a lack of workers and the pressure of project deadlines, working overtime has become one of the causes that might lower labour productivity in rural area, ultimately leading to project delays.	Combodia	Durdyev, Omarov and Syuhaida (2017)

9.	Number of Skilled Labours	Lack of knowledgeable or experienced workers is one of the causes that might cause a construction project to be delayed and is beyond the control of the contractor.	Nepal	Acharya, Yong and Dai (2004)
		Compared to town areas, skilled people are much more required in rural areas for project building in order to boost labour productivity. However, it is difficult to find qualified labour because of the project site's restricted access and "ruralness."	United State of America	Tran, Hallowell, & Molenaar (2014)
10.	Qualification of Contractor	Because they submitted the lowest bid, an inexperienced and inadequately skilled contractor was given the opportunity to work on a huge and complicated project.	Brunei	Salleh (2009)
		Due to the lower rates of skilled labour in rural areas, contractors are less inclined to bid in the competition than they are in town areas.	United State of America	Tran, Hallowell, & Molenaar (2014)
11.	Performances of Contractor	The ability of the contractor to successfully finish the construction project on schedule is a measure of their performance; inexperienced or incompetent contractors will cause the project to be delayed.	Brunei	Salleh (2009)
		One of the difficulties a contractor faces in a rural project is communication barriers, and typically, they don't use scheduling software to lower the probability of a project delay.	United State of America	Tran, Hallowell, & Molenaar (2014)
12.	Site Management	One factor influencing how long a construction project takes to complete is poor site management. It is related to difficulties in delivering materials to the project site and managing trash or disposal from it.	Saudi Arabia	Sidawi (2012)

13.	Decision Making	Slow decision-making effect the progress of the project. Delays in decision-making have occurred in rural area because of the large physical distance between individuals participating in the project.	Hong Kong	Deng et al. (2001)
		Research found that the project site supervisors mostly utilised digital cameras and cell phones to keep an eye on the project's development in rural area. They also exchanged emails with each other, which prolonged the decision-making process.	Saudi Arabia	Sidawi (2012)
14.	Feasibility Studies	Lack of understanding and project feasibility assessments is one of the things that delayed the construction project.	Hong Kong	Lo et al. (2006)
		Limited availability of historical data and information about the project area, cause project delay.	United State of America	Tran, Hallowell, & Molenaar (2014)
15.	Weather Condition	The productivity may be affected by climatic causes. The climate in urban areas is wetter than in rural, it may cause project delay.	Turkey	Bulut et al. (2008)

2.7 Effect of Construction Project Delays

Construction project delays have major consequences for contractors, often resulting in an extension of the project's duration. This, in turn, typically results in cost overruns. Previous research has consistently highlighted time and cost overruns as the primary impacts of delays on project completion. However, Sambasivan and Yau Wen (2007) provided insights from the perspectives of clients, consultants, and contractors, identifying six main impacts of project delay: (1) time overrun, (2) cost overrun, (3) disputes, (4) arbitration, (5) litigation, and (6) total abandonment. Construction project delays can escalate costs, disrupt

schedules, and even lead to project abandonment and legal actions (Rashid, 2020). Delays commonly manifest in two significant ways: they increase the financial requirements for project completion and extend the overall project timeline. The diverse impacts of project delays across different construction types and countries, including Malaysia, are shown in **Figure 2.8**, and summarized in **Table 2.3.**

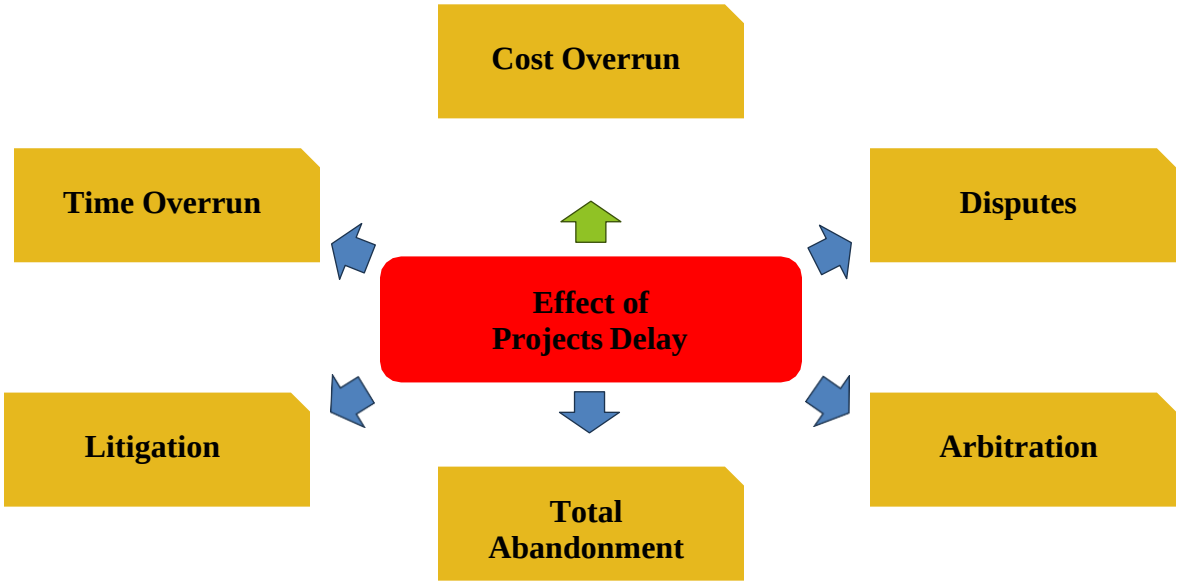


Figure 2.8: Effect of Construction Projects Delay

Source: Sambasivan and Yau Wen (2007)

In the context of linear construction projects in Australia, Orangi et al., (2011) point out that time and cost overruns often occur when there are delays in project completion, particularly in cases of delayed approvals. Conversely, Senouci, Ismail, and Eldin (2016) emphasize that delays have a significant impact on project duration but not necessarily on project cost. Hisham and Yahya (2016) conducted correlation analysis to evaluate the linear impact of delays on time and cost overruns. Their findings revealed that subcontractor-related delays were the most frequent cause, exerting a tangible influence on both time and cost overruns.

Table 2.3: Effect of Project Delays

Sources and Impacts	Time Overrun	Cost Overrun	Dispute	Arbitration	Total Abandonment	Litigation
Aminorlah et al. (2022) Malaysia	/	/	/	/	/	/
Rashid (2020) Pakistan	/	/			/	/
Gebrehiwet & Luo (2017) Ethiopia	/	/		/	/	
Hisham & Yahaya (2016) Malaysia	/	/	/	/	/	/
Nawi et al. (2016) Malaysia	/	/				
Khair et al. (2016), Sudan	/	/				
Riazi & Lamari (2013) Malaysia	/	/	/	/	/	
Aibinu & Jagboro (2002) Nigeria	/	/	/	/	/	/

2.7.1 Time Overrun

When a contractor is unable to complete a construction project within the specified timeframe outlined in the contract, it is termed as a time overrun (Asiedu, 2015). This issue encompasses two distinct types of delays: excusable and non-excusable. Amoatey et al. (2015) define excusable delays as causes that cannot be avoided and are not within the contractor's control. These delays often stem from events such as delayed delivery of instructions, delayed approval of designs, issuance of building materials after the fact, and delayed access of workers to the construction site for their tasks. On the other hand, as highlighted by Marzouk and El-Rasas (2014), non-excusable delays are expected and result from the contractor's poor management and planning.

When a construction project falls behind schedule, necessitating an extension of the project's due date (Arditi et al., 2017), the distinction between excusable and non-excusable

delays becomes crucial in understanding the causes contributing to schedule overruns. This differentiation guides decisions regarding project management strategies and timelines.

Murali et al. (2007) points out that time overruns can be caused by client- and contractor-related causes, such as owner interference and insufficient contractor experience. Aibinu and Jagboro (2002) examined the impact of delays on project completion in the Nigerian construction sector, identifying time overrun as one of the main consequences. Memon et al. (2014) explored causes leading to construction time overruns in Malaysia, revealing that cash flow and financial difficulties faced by contractors, inadequate site management and supervision, incompetent subcontractors, a labor shortage, and owner financial difficulties are major causes of time overruns.

Larsen et al. (2015) criticize the restriction that contractors are not allowed to request a time extension when they are responsible for a project delay. This constraint, they argue, hinders project implementation by depleting resources and finances without commensurate benefits from the construction activity. This critique underscores the importance of an equitable and impartial system that considers the causes causing delays, ensuring that contractors are fairly compensated or granted extensions under circumstances beyond their control.

2.7.2 Cost Overrun

The variance between the initial project cost estimate and the actual construction expenses upon completion of the project (Choudhury & Phatak, 2004). The success of a project is measured by its completion within the agreed-upon time and quality. However, numerous construction projects face significant delays and overruns in terms of both time and budget (Amhel et al., 2010). Wiguna and Scott (2005) identified key causes contributing

to cost overruns, including weather, client-related design modifications, high inflation/increased material prices, poor design, delayed contract payment, and subpar construction work. Koushki et al. (2005) outlined three primary causes: contractor-related issues, material-related issues, and financial limitations of owners. Abdul Rahman et al. (2013) pointed out variations in material prices, problems with cash flow and contractors' financial difficulties, and insufficient site management and supervision as significant contributors. M Ashaari et al. (2019) emphasized poor planning, inadequate contractor site management, material and equipment issues, miscommunications with other parties, and labor-related problems, with poor planning by contractors being the top-ranked factor. Thorough planning is crucial for the success of a construction project, as noted by Shah (2016), who found that inadequate planning by contractors can affect estimated targets within the agreed budget, potentially leading to delays and overruns. Patil (2017) identified causes contributing to contractors' poor planning, including inexperience, having too much work, lack of knowledge about the right techniques, hiring incompetent laborers, and failing to update the work program on time.

2.7.3 Disputes

According to Mahamid (2016), dispute is disagreement as it arose and became unmanageable between the parties. "The assertion of a claim by one party and repudiation thereof by another" is one definition of "dispute" (Khekale & Futane, 2015). Disputes among project participants, including clients, contractors, consultants, and other parties, can lead to delays in construction projects. Inadequate project planning, often stemming from the absence of comprehensive contractual agreements, is a major factor contributing to construction project delays (Dixit & Sharma, 2019). Lu et al. (2015) observed that project

disputes are frequently a result of insufficient communication between contractors and project owners. The repercussions of inadequate planning extend beyond the initial stages, impacting the smooth implementation of the building project and underscoring the critical importance of precise and thorough project planning.

Criticism has been directed at the inflexibility of parties involved in construction projects, emphasizing their reluctance to consider mediator recommendations during conflict resolution. This inflexible approach contributes to project delays and hampers project implementation, as the lack of collaborative decision-making impedes conflict resolution. Issues related to land acquisition, where landowners hinder construction activities, are identified as a prominent factor causing project delays. Effective dispute resolution methods, including mediation, are recommended to address disputes and minimize delays in such cases (Chaphalkar, Iyer & Patil, 2015). The challenges in resolving disputes underscore the importance of fostering a cooperative and receptive attitude among involved parties to ensure efficient conflict resolution and timely project completion.

Therefore, one of the crucial soft skills for project managers working with various stakeholders in construction projects is excellent communication. Murali et al. (2007) notes that poor communication among parties, issues with neighbours, unforeseen site conditions, delayed payments for completed work, improper construction methods, subcontractor-caused delays, and discrepancies in contract documents can contribute to disputes. Additionally, an increase in construction costs may also be a factor leading to disputes, with the project's 15% rise in cost beyond the initial contract value identified as a common cause (Ghenbasha et al., 2018).

2.7.4 Arbitration

Arbitration is a way to settle contract disagreements outside of court. Parties present their cases to a neutral arbitrator, who makes a final decision. This process is like a trial but without a jury. Because it helps ease court schedules, the arbitrator's decision is always final (Tazelaar & Snijders, 2010) and becomes a necessary avenue to resolve disputes arising from delays caused by contractor- and client-related issues, such as order modifications, contract errors, and breakdowns in communication between parties (Murali et al., 2007). In such cases, having a competent third party to efficiently settle disputes out of court is crucial. The arbitrator, acting as a neutral institution formally designated to resolve conflicts, faces challenges when parties refuse to comply with or accept the arbitrator's ruling. Opposition hinders the negotiation process in construction projects, leading to delays due to unresolved and disputed matters (Equbal et al., 2017).

Selecting an arbitrator actively involved in their work and with expertise in construction projects is crucial. An arbitrator with experience in building projects can focus on formulating strategies and rendering decisions efficiently to settle conflicts unique to such projects. This underscores the critical role of an arbitrator in resolving conflicts and advancing the timely completion of building projects. Arbitrators handling an excessive number of cases might prioritize quick decisions, potentially impeding effective bargaining and causing delays in project completion (Equbal et al., 2017; Hughes et al., 2015). Hasty decision-making negatively impacts projects, hindering the ability to make collaborative and productive decisions crucial for construction progress.

Arbitrators possessing practical legal and professional competence are more adept at formulating well-reasoned and legally valid conclusions, thereby reducing construction

delays (Komurlu and Arditi, 2017). Conversely, a lack of practical legal expertise can result in questionable legal judgments that negatively affect project schedules, as legal intricacies hinder the implementation of building projects. Arbitrators with advanced practical expertise positively impact reducing project delays by employing effective decision-making and innovative techniques to swiftly address disputes (Komurlu and Arditi, 2017). San Cristóbal (2015) emphasizes that arbitrators must demonstrate cost-effectiveness and excellent managerial abilities to create a collaborative atmosphere, enabling parties to collectively reach decisions and settle conflicts, thereby facilitating the efficient functioning of construction projects.

2.7.5 Litigation

In the context of construction projects, resistance from various parties to accept collaborative decision-making by arbitrators often occurs, leading to delays in the project as disagreements impede the construction process (Chaphalkar et al., 2015). As a result, litigation becomes a recourse for resolving disputes. Litigation, as defined by Amoatey et al. (2015), is a legal process overseen by the court to resolve conflicts between opposing parties asserting their individual rights. If either side does not accept the court's ruling during the litigation process, they have the option to appeal by presenting new facts and evidence. However, if either party agrees to the court's verdict, the party found guilty is required to compensate the other party as specified.

Tarhini, Fakih, Arzoky, and Tarhini (2015) argue that the litigation procedure is time-consuming, leading to construction projects failing to meet their completion schedules. Participants in a project often abstain from working during legal proceedings to comply with the specified time period, resulting in delays in completing the construction project. Disputes

arising from labor-related, client-related, contract-related, external-related, and contract relationship-related issues, such as unpaid invoices, problems with site conditions, and labor shortages, may necessitate legal action for resolution (Murali et al., 2007). Litigation is typically used as a last resort by parties involved in construction projects to settle disputes.

2.7.6 Total Abandonment

Construction projects may face delays due to project abandonment, a situation where a project is abruptly terminated, often due to the client's financial incapacity or other underlying issues. Abandonment can be attributed to various causes related to clients, consultants, contractors, and external sources. Shehu et al. (2014) note that financial constraints or conflicts with contractors are common reasons for project abandonment. Additionally, causes such as insolvency, inadequate marketing and sales strategies, and contractor misconduct can contribute to abandonment.

Ikediashi, Ogunlana, and Alotaibi (2014) emphasize that project abandonment has far-reaching consequences, affecting not only the contractor but also suppliers, consultants, and other stakeholders involved in the construction process. Project abandonment is considered one of the most severe negative outcomes of construction project delays and can occur either temporarily or, in more severe cases, permanently. Aibinu and Jagboro (2002) investigated the impact of construction delays on project delivery in the construction industry, highlighting complete abandonment as a significant consequence of delays. The act of abandoning a project has detrimental impacts on clients, leading to potential financial losses due to the incomplete nature of the project.

2.8 Research Gap

Many studies worldwide, including those conducted in Malaysia, have focused into the causes and consequences of public construction delays, a noticeable gap exists in the literature regarding detailed examinations of the unique challenges contributing to public construction delays within the context of RTP in Sarawak. Despite general acknowledgment of delays in rural construction projects, the specific intricacies and contextual causes influencing public construction delays in the Sarawak region, particularly under the RTP initiatives, remain underexplored. The current literature lacks a thorough comprehension of the specific challenges, stakeholder dynamics, and context that contribute to delays in this specific project. Therefore, there is a critical need for focused research that explore deeply into the causes and impacts of public construction delays within the framework of RTP in Sarawak, ultimately contributing to more effective project management and successful rural development initiatives**. Figure 1.6** and **Figure 1.7** as shown above illustrate the flowchart for the application and implementation process of RTP.

2.9 Conceptual Framework

The literature review provided insights into various causes and consequences related to public construction delays. This research endeavours to establish a correlation between the causes and impacts of delays in public construction projects, with a specific emphasis on the viewpoints of contractors, implementing agencies, end users, and clients. Building on the insights garnered from previous studies, this research will concentrate on eight (8) key elements to represent the independent variables and seven (7) key elements for represent the dependent variables. The variables and sub-variables are as shown in **Table 2.4** and **Table 2.5**:

Table 2.4: Independent Variables Of The Study

No.	Independent Variables	Descriptions	Sources
1.	Client Related Causes	i. Payment's progress is being delayed	Adwani, M., et al. (2018), Khair, K., et al. (2016), and Idrus, N. A. (2019)
		ii. Unreasonably lengthy of contract duration given the project's complexity	Al-Adwani, M., et al. (2018), Alsuliman, J. A. (2019), and Doloi, H., et al. (2012)
2.	Consultant Related Causes	i. Ineffective on-site standing supervision	Nawi M. N. M., et al. (2016), Khair, K., et al. (2016), Idrus, N. A. (2019), Alsuliman, J. A. (2019), and Razkenari, M., et al. (2015)
		ii. Ineffective communication between the contractor and consultant	Van, L. T., et al. (2016), Khair, K., et al. (2016)
3.	Contractor Related Causes	i. Lack of sufficient expertise in the field of construction	Al-Adwani, M., et al. (2018) and Sambasivan, M., et al (2017)
		ii. The quality and availability of construction equipment	Amoatey, C. T., et al. (2015), Sambasivan, M., et al. (2017), and Khair, K., et al. (2016)
4.	Financial Related Factor	i. Difficulties in obtaining loans and short of funding	(Arditi et al, 1985)
		ii. Late payment. Failure of client or paymaster to pay according to the agreement	Harris & McCaffer, (2003)
5.	Materials Related Causes	i. Volatility in the cost of materials	Nawi, M. N. M., et al. (2016), Varghese, A. R., et al. (2015), Amoatey, C. T., et al. (2015), and Van, L. T., et al. (2016)
		ii. Delayed delivery of materials to the construction site in compared to the project schedule	Nawi, M. N. M., et al. (2016), Varghese, A. R., et al. (2015

6.	Labour and Equipment Related Causes	i. Failure to choose the right workforce	Drewin (1982) and Odeh & Bataineh (2002).
		ii. Struggles with employee recruitment and retention.	Tran, Hallowell, & Molenaar (2014)
		iii. Insufficient amount of equipment and inadequate modern equipment	Ibironke et. al (2013), Amoatey, C. T., et al. (2015), Sambasivan, M., et al (2017), and Khair, K., et al. (2016)
7.	Contract Related Causes	i. Mistakes and dispensaries in contract documents	Odeh and Battaineh (2002) and Sambasivan & Soon (2007)
		ii. Change of orders	Odeh and Battaineh (2002) and Sambasivan & Soon (2007)
8.	External Causes	i. Impacts of weather causes on construction activities	Al-Adwani et al. (2018), Amoatey et al. (2015), Razkenari et al. (2015), and Sambasivan et al. (2017)
		ii. Limitation on access to the project site. Required longer time and special vehicles	Tran et al. (2014)

Table 2.5: Dependent Variables of the Study

No.	Independent Variables	Definition	Sources
1.	Time Overrun	i. The contractor fails to finish the project within the predetermined timeframe stated in the contract and the project falls behind the schedule	Asiedu (2015) and Arditi et al. (2017)
2.	Cost Overrun	ii. The variance between the initial project cost estimate and the actual construction expenses upon completion of the project	Choudhury & Phatak (2004)

3.	Disputes	iii. Dispute as an unresolved argument between parties i.e clients and contractors	Mahamid (2016) and Khekale & Futane (2015)
4.	Total Abandonment	iv. The project comes to an immediate halt when either the client or the contractor experiences financial difficulties. Client cannot provide the required amount of fund needed for completion of the project.	Aibinu and Jagboro, (2002) and Shehu et al. (2014)
5.	Arbitration	v. Arbitration is a way to settle contract disagreements outside of court.	(Tazelaar & Snijders, 2010)
6.	Litigation	vi. A legal process overseen by the court to resolve conflicts between opposing parties asserting their individual rights.	Amoatey et al. (2015)
7.	Bad Reputation	vii. A negative reputation among stakeholders	Salhi, R., Messaoudi, K. (2021)

As mentioned in Chapter One above, project construction delays are categorised into two categories: the first category refers to projects that are behind schedule; these projects are late by between 10% to 19% of the original schedule, while the second category refers to projects that exceed 20% of the original schedule and are considered critically delayed. Therefore, for this study, project construction delays act as a third variable (moderator variable), influencing the relationship between the independent variable (X) and the dependent variable (Y). The percentage of project construction delays serves as the moderating variable, shaping the strength and weakness of the relationship between the independent variable (X) and the dependent variable (Y). As a result, any delay in the

implementation of the RTP construction will change the extent to which the independent variable affects the dependent variable; in other words, it will affect the strength of the relationship between X and Y. Therefore, project construction delays modify the cause-and-effect relationship by adjusting the "effect" aspect.

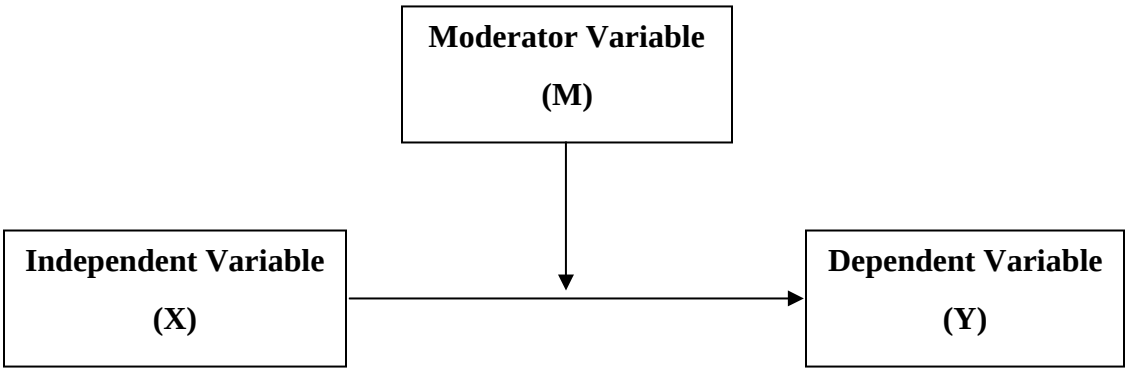


Figure 2.9: Conceptual Framework

Source: Memon et al., 2019

The proposed conceptual framework for this study shows in **Figure 2.10** below:

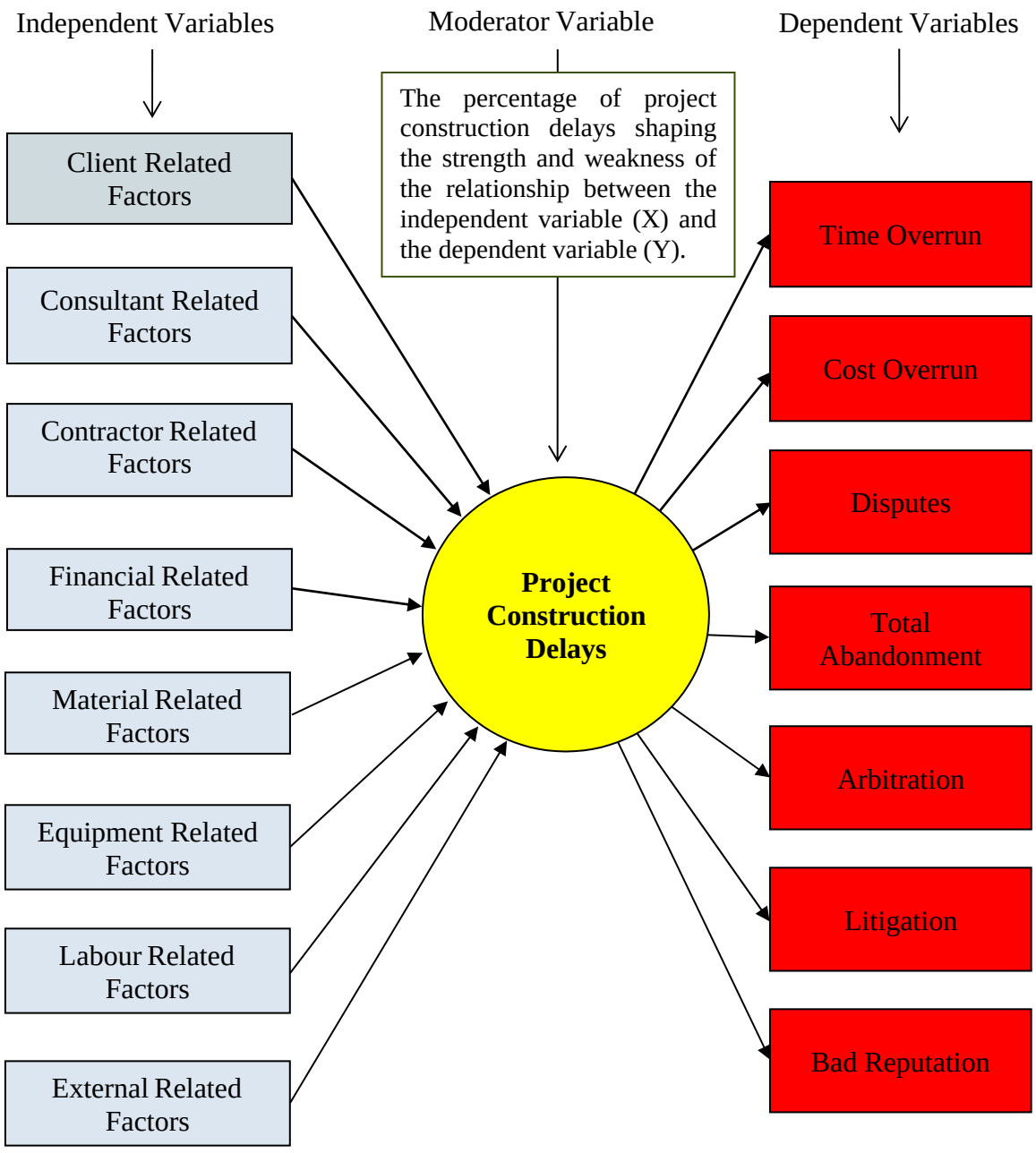


Figure 2.10: Conceptual Framework for the Study

Source: Adapted from Sambasivan and Soon (2007), Rashid, Y. (2020) and Aminorlah et al. (2022)

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This study employs a methodology that builds upon the previous explanation of research objectives, research questions, and problem statement in Chapters 1–2. It specifically focuses on identifying crucial causes and impacts associated with delays in the construction of the RTP in the rural areas of Sarawak. Afterwards, the process entails identifying and prioritizing local causes and then assessing the relative significance of each key factor that contributes to public construction delays. The research approach, outlined in **Chapters 1–5**, begins with an initial investigation based on a review of existing literature and secondary research. It then advances to gathering primary research data using qualitative research methods by conducting face-to-face interviews and analyzing relevant documents, such as yearly reports. This study employs a three-step process that includes gathering data, analyzing it, and interpreting it. This approach aims to achieve a thorough comprehension of the causes and impacts found.

As stated in Chapters 1 and 2 above, although many researchers have looked into the common causes and causes of delays in their studies, they have mostly overlooked aspects that are specific to certain areas. Therefore, the objectives of this research are to identify the causes leading to public construction delays as perceived by RTP's contractors, identify the potential risks and consequences faced by them, and then propose suggestions aimed at enhancing the management and monitoring of public construction projects in Sarawak.

The study first developed a research plan by defining research objectives in line with the research questions. The study proceeded in stages, starting with a literature review, then moving on to case studies through semi-structured interviews and concluding with data collection and analysis. The final section of this chapter discusses the process of confirming the study findings using defined criteria such as credibility, dependability, transformability, and conformability formats. This thorough validation method guarantees the strength and dependability of the research findings. **Table 3.1** below shows the aim, objectives, and research method for the study.

Table 3.1: Aim, Objectives and Research Method

Aim	Objectives	Research method and analytical techniques
Identifying causes and impacts of delays in public construction project: A case study of RTP in Sarawak and minimizing the delays by offering fresh perspectives and workable solutions through the development of a plan of action	To identify and analyze the causes perceived by contractors as contributing to delays in public construction projects, focusing specifically on the implementation of the Rural Transformation Project (RTP) in Sarawak.	1- Literature review 2- Case Studies a) Primary data (Semi structured interviews) 3- Nvivo
	To assess the potential risks and consequences faced by contractors engaged in the Rural Transformation Project (RTP) in Sarawak due to construction delays.	1- Literature review 2- Case Studies a) Primary data (Semi structured interviews) 3- Nvivo
	To explore the importance of effective project management and monitoring practices in mitigating the risks and consequences associated with project delays in public construction projects, with a particular emphasis on the context of Sarawak's Rural Transformation Project.	1- Literature review 2- Case Studies a) Primary data (Semi structured interviews) 3- Nvivo

Leedy (2015) states that the study design should be guided by the crucial research topic, research questions, and research objectives. Certain objectives require solely quantitative research, while others require solely qualitative research, and yet others are most effectively handled through mixed methods designs that use both types of research. Kwofie (2015:142) indicates that design serves as a pivotal framework that guides and facilitates the selection of the most pertinent and appropriate method for collecting and analyzing data, ultimately addressing the study objectives. Jovancic (2020) identified five distinct research designs: descriptive, correlational, experimental, diagnostic, and explanatory. The primary objective of exploratory research is to acquire a more comprehensive understanding of a specific subject matter. It facilitates the process of diagnosing a given situation, exploring alternative concepts, and uncovering novel ones. Interviewing is the most widely used exploratory research technique. This study employed an exploratory qualitative approach due to the objectives of the study to explore causes and impacts of public construction delays in rural area of Sarawak.

Saunders, Lewis, and Thornhill (2016) state that an exploratory research design is a great way to discover "what is happening," since it allows one to seek new insights, ask questions, and evaluate occurrences in a different way. This tool is really helpful for academics who are trying to better understand a problem, especially if they aren't sure what the problem actually is. Its flexibility and ability to adjust to change is a huge benefit. When doing exploratory research, the researcher needs to be prepared to adjust course in response to newly discovered information and novel ideas (Lelissa, 2018). This research design is specifically well-suited for investigating unexplored facets of a subject and filling in knowledge gaps. It allows this study to conduct semi-structured face-to-face interviews with selected contractors, enabling a more detailed understanding of the highlighted problem.

To enhance the reliability of the research findings, a comprehensive validation process will be implemented, which includes conducting a sample-group consistency check and ensuring conformability. Data analysis in qualitative research involves the systematic arrangement, classification, and explanation of the data (Creswell, 2007). This study employed a comprehensive three-stage process that can be breakdown into the following stages:

i. Data collection
ii. Data analysis
iii. Interpretation and displaying data to draw conclusions.

Chapter 3.4 states a more comprehensive understanding of the data analysis and validation procedure employed in this study.

3.2 Research Development

3.2.1 Research Design

Most of the studies mentioned in Chapter 2 focused on identifying the causes and impacts of delays, with surveys being the primary method utilized. The prevalence of quantitative (survey) research in the field of construction management may explain this phenomenon (Knight and Ruddock, 2008). By relying solely on surveys in this scenario, only the preexisting elements mentioned in the literature are examined. Consequently, no novel insights or validation of the problem are achieved. Given the exploratory nature of the topic for this study, a qualitative research methodology has been selected as the research strategy. Qualitative approaches are suitable for studying phenomena that are complicated, have a social aspect, and cannot be easily measured or quantified, as stated by Blois (2004).

The approach employed by qualitative researchers demonstrates a prevalent conviction that they are capable of offering a more profound comprehension of social phenomena compared to what can be derived solely from quantitative data (Parkin, 2000). A comprehensive and profound grasp of research is essential in order to attain contextual comprehension.

The causes and impacts of construction delays on the RTP are complex and influenced by specific circumstances, showing variation between different projects and locations. The variety of these parameters highlights their subjective nature, which is shaped by a combination of project-specific dynamics, environmental conditions, stakeholder interactions, and institutional frameworks. Therefore, this study involves direct interpersonal interaction with contractors involved in the RTP's environment, as well as the collection of verbal data and observations. It was used to describe and gain insight about observable regulations, patterns, commonalities, and themes in contractors' actions, statements, and reported experiences in the RTP environment. The qualitative method had allowed for an in-depth exploration of the causes contributing to delays in public construction projects, potential risks, and consequences, as well as recommendations for improvement. There are numerous types of qualitative research traditions in the field of social sciences. Creswell (1998) has classified them based on their forms, terminologies, and purpose as follows:

i. Biographical study
ii. Phenomenological study
iii. Grounded Theory study
iv. Ethnography
v. Case study

3.2.2 Case Study

Fitzgerald (2014) mentioned, case study serves as a valuable research instrument for performing exploratory research. A case study is an empirical investigation that looks at a phenomenon in its actual context, according to Yin (2009). Several data gathering techniques are employed in case study research because it entails a thorough examination of a phenomenon. It should be emphasised that, as Yin (2009) pointed out, a case study is a research approach or design to examine a social unit rather than a technique for gathering data. A case study can provide many types of data, which can be enhanced by conducting in-depth interviews with specialists. In this study, a specific case study is selected among the projects implemented under the RTP for thorough investigation and analysis. The Rural Transformation Project (RTP) faces a range of difficulties commonly seen in major construction projects, including financial constraints, logistical problems, legal requirements, and socio-economic inequalities. Examining the RTP as a case study enables this study to investigate the complex dynamics of real-world situations, enabling the investigation of methods to address these issues in the context of public construction projects. This process entails a comprehensive and detailed examination of both finished and unfinished projects, as described by Yin (2003). This study applied an exploratory case study method that aims to gain a deeper understanding of a particular phenomenon that happened in the RTP. The study involves collecting and analysing qualitative data through methods such as semi-structured interviews. The findings from an exploratory case study can contribute to the existing knowledge in the context of RTP and provide a foundation for further research on public construction delays in rural areas. There are a few data collection methods commonly used in case studies, as described by Stake (1995) and Yin (1994):

i. Interviews: an important data collection tool, interviews are classified into two types: closed or semi structured interviews and open-ended interviews.

ii. Observations: where the researcher observes events and behaviours, or participant observation, where the researcher actively participates in the events being investigated.

iii. Physical artefacts: artefacts that are gathered from a particular environment, such as tools or instruments, which may have been created by students or other individuals.

3.2.2.1 Interviews

The study conducted a semi-structured interview with contractors involved in the RTP in Sarawak. These interviews allow for a nuanced understanding of the perspectives, experiences, and insights of contractors regarding construction delays. This study delved deeply into the experiences and perceptions of contractors engaged in RTP projects in Sarawak. Through semi-structured questioning and probing, this study uncovered a wide range of causes and impacts contributing to delays. The respondents, consisting of experienced contractors, provided rich, nuanced insights into how these causes interact and compound to create delays, as well as identify any systemic issues or recurring patterns contributing to project setbacks. Several construction projects under the RTP in Sarawak were selected to ensure diversity in terms of project size, location, type, and contractor involved. There are no strict guidelines for the number of participants required for research, some researchers suggest that a range of ten (10) to fifty (50) participants is generally enough. The specific number needed may vary depending on the nature of the research and the research issue at hand (Creswell & Creswell, 2018). However, according to Creswell

(2009), a sample size of eight (8) respondents is deemed adequate for conducting interviews, ensuring a depth of exploration while allowing for the saturation of themes pertinent to the research questions. Interview questions in **Appendix A1 (in English)** derived from the studies conducted in the literature review **(Chapter 2)**, which are directly relevant to the study problem discussed in **Chapter 1.** While **Appendix A2**, the same interview questions but in Malay language.

3.2.3 Literature Review

For this research, secondary research was conducted through a comprehensive literature review (as set out in **Chapter 2** above), resulting in four main results, which are outlined as follows:

The identification of the causes and impacts of the delay in the construction of public projects as studied by previous researchers was investigated and the literature review matrix as shown in **Table 2.4** and **Table 2.5** above were used to identify the pattern of literature discussion. Hence, these causes and impacts had served as the foundation for this study, as outlined in **Appendix A1 (Interview Questions)**.

i. The major causes and impacts of the public construction delay as indicated by previous researchers. A literature review matrix will be employed to identify recurring trends in discussions within the literature.
ii. Rationale for the chosen study topic: As previously mentioned in **Chapter 2**, it is crucial for the well-being of all parties involved to minimize delays or their consequences. Even little improvements in the recovery of a delayed schedule are expected to greatly affect the financial returns of those concerned. Given the financial implications for all stakeholders in public construction projects, it is

imperative to promptly identify and address any delays and their underlying causes. As stated in **Chapter 2**, public construction delays frequently result in transforming profitable projects into unprofitable ones.

iii. Identify the existing research and identify the gap in previous studies. Undoubtedly, researchers worldwide have extensively examined delay issues in public construction projects. However, it is important to note that these delay causes, and their impacts may vary across different regions. Therefore, further study is required to examine the specific delay causes and their impacts in the local region. Therefore, this study was specifically focused on delay causes and their impacts on the implementation of RTP in Sarawak.

iv. Compare the findings of secondary and primary investigations. The primary elements causing delay and their impacts as discovered by previous researchers will be compared to the causes and impacts collected from case study and documents analysis results.

3.3 Data Collection

3.3.1 Interviews

In order determine the common causes contributing to delays and their impacts in this area, this study will conduct primary research through the execution of semi-structured interviews. Creswell (2009) deems a sample size of eight respondents adequate for conducting interviews, ensuring a depth of exploration and allowing for the saturation of themes pertinent to the research questions. However, for this study, the interviews involved twelve contractors engaged in RTP projects in Sarawak to gather insights into their perceptions of causes contributing to delays. The participants were selected using a method

called 'purposive sampling' to select participants who are most relevant to research question. For this study, contractors from Grades C, D, E and F are the most relevant because of their experiences, knowledge and expertise in implementation of RTP. They are the ones directly involved in RTP. Purposive sampling can achieve a wide range of variation, observation of differences and the recognition of shared trends (Creswell, 2007). In the context of investigating delays and its consequences in RTP projects in Sarawak, the contractors who have firsthand experience with delays to ensure a comprehensive understanding of the issue, challenges, and complexities of the projects were selected. However, to ensure diversity in the perspectives of the participants, this study includes contractors involved in the RTP from different geographic locations within Sarawak, varying project sizes and different levels of experience in the construction industry. Their selection was based on specific characteristics or criteria relevant to the research questions and objectives. Therefore, one respondent was selected from each division in Sarawak as stated in **Table 3.2** below.

According to Kvale and Brinkmann (2009), when conducting interviews as part of a qualitative research strategy, three fundamental techniques are commonly considered: structured interviews, semi-structured interviews, and unstructured approaches. Structured interviews involve posing a set of specific questions with predetermined, fixed responses, akin to a multiple-choice survey. Semi-structured interviews, on the other hand, utilize a set of key questions as a guide for general topics to be covered.

This approach allows interviewees the flexibility to discuss their experiences openly regarding the identified problem. Lastly, unstructured interviews lack a script or order, requiring the researcher to have a checklist of topics to be covered during the interview. According to Kvale and Brinkmann (2009), when conducting interviews as part of a

qualitative research strategy, three fundamental techniques are commonly considered: structured interviews, semi-structured interviews, and unstructured approaches. Structured interviews involve posing a set of specific questions with predetermined, fixed responses, akin to a multiple-choice survey.

Table 3.2: Location, No. of Registered Contractor, and No. of Respondent

Division	District	No. of Registered Contractor	No. of Selected Respondent	District Selected
Kuching	Kuching, Bau and Lundu	2,038	1	Bau
Sri Aman	Sri Aman, Lubok Antu, Pantu & Lingga	474	1	Pantu
Sibu	Sibu, Selangau and Kanowit	807	1	Kanowit
Miri	Miri, Marudi, Subis, Beluru & Telang Usan	1,041	1	Subis
Limbang	Limbang and Lawas	533	1	Lawas
Sarikei	Sarikei, Meradong, Julau & Pakan	453	1	Pakan
Kapit	Kapit, Song, Belaga and Bukit Mabong	334	1	Belaga
Samarahan	Samarahan, Asajaya, Gedong, Simunjan & Sebuyau	853	1	Sebuyau
Bintulu	Bintulu, Tatau and Sebauh	525	1	Sebauh
Betong	Betong, Saratok, Pusa & Kabong	658	1	Kabong
Mukah	Mukah, Dalat, Matu, Daro &Tanjung Manis	600	1	Matu
Serian	Serian, Tebedu & Siburan	388	1	Tebedu
Total		**8,704**	**12**	

Source: Construction Industry Development Board (2024)

Semi-structured interviews, on the other hand, utilize a set of key questions as a guide for general topics to be covered. This approach allows interviewees the flexibility to discuss their experiences openly regarding the identified problem. Lastly, unstructured interviews lack a script or order, requiring the researcher to have a checklist of topics to be covered during the interview. For the purposes of this research, a semi-structured interview approach has been chosen. Due to time constraints, cost, and distance causes, three interview sessions were conducted through face-to-face interviews, while another nine were conducted through phone call interviews. The three face-to-face interview sessions involved three respondents from the Districts of Bau, Gedong, and Serian (See **Table 3.3**). Due to time constraints, location, and cost considerations, the researcher conducted phone interviews with the remaining respondents, who were located far from Kuching city. The interview sessions for all respondents were conducted March 2024. This design allows for a balance between the guidance provided by key questions and the openness for participants to express their experiences and perspectives freely in relation to the research problem. Creswell (2009) emphasizes that interviews are essential for achieving success in qualitative research. The study utilized semi-structured interviews to determine the primary causes and consequences of public construction delays related to the RTP throughout the rural areas of Sarawak. The transcripts of the interview with selected contractors are shown in Appendix A1 until Appendix A11 and these transcripts were re-confirmed by the respondents.

3.3.2 Respondent Profiles

As mentioned by Creswell & Creswell (2018), there are no strict guidelines for the number of participants required for research, some researchers suggest that a range of ten (10) to fifty (50) participants is generally enough. The specific number needed may vary

depending on the nature of the research and the research issue at hand. However, according to Creswell (2009), a sample size of eight (8) respondents is deemed adequate for conducting interviews, ensuring a depth of exploration while allowing for the saturation of themes pertinent to the research questions. **Table 3.3** below summarizes the respondents' profiles by position, experience in RTP, company's grade, category, and project location (district).

Table 3.3: Summarizes the Respondents' Profiles

Respondent	Position	Experience in RTP (Year)	Grade	Category	Project Location (District)	Interview Method	Date of Interview
Interviewee 1	Owner	2	F	Building Construction, Civil and Mechanical Engineering	Bau	Face to Face	09/03/04
Interviewee 2	Owner	6	F	Building Construction, Civil, Mechanical and Electrical Engineering	Sri Aman	Phone call interview	09/03/04
Interviewee 3	Owner	10	E	Building Construction and Civil Engineering	Selangau	Phone call interview	09/03/04
Interviewee 4	Owner	10	F	Building Construction, Civil, Mechanical and Electrical Engineering	Marudi	Phone call interview	16/03/04
Interviewee 5	Owner	7	E	Building Construction, Civil, Mechanical and Electrical Engineering	Lawas	Phone call interview	16/03/04

Interviewee 6	Owner	7	E	Building Construction, Civil, Mechanical and Electrical Engineering	Meradong	Phone call interview	16/03/04
Interviewee 7	Owner	3	F	Building Construction, Civil, Mechanical and Electrical Engineering	Belaga	Phone call interview	23/03/04
Interviewee 8	Owner	3	D	Building Construction, Civil, Mechanical and Electrical Engineering	Gedong	Face to face	23/03/04
Interviewee 9	Owner	5	F	Building Construction, Civil, Mechanical and Electrical Engineering	Sebauh	Phone call interview	23/03/04
Interviewee 10	Owner	10	F	Building Construction, Civil, Mechanical and Electrical Engineering	Mukah	Phone call interview	30/03/04
Interviewee 11	Owner	7	F	Building Construction, Civil, Mechanical and Electrical Engineering	Betong	Phone call interview	30/03/04
Interviewee 12	Owner	6	F	Building Construction and Civil Engineering	Serian	Face to face	30/03/04

For this study, the participants were contractors involved in the RTP and selected using a method called 'purposive sampling' based on their different geographic locations within Sarawak, varying project sizes and different levels of experience. For this research, to obtain perspectives from contractors, a total of 12 contractors who have been involved in the construction of the RTP in Sarawak have been selected, each with a minimum of two years of experience in RTP. They represent different districts in Sarawak (as mentioned in **Table 3.2** above), thereby preventing bias in the study.

3.3.3 Arrangement of Contractors Interviews

Interviews were held with the twelve owners of construction companies who were chosen to represent twelve divisions in Sarawak, depending on their respective districts. According to Saunders, Lewis, and Thornhill (2016), during in-person interviews, individuals may share differing perspectives related to their diverse geographic upbringings, which could yield some insightful information. When conducting interviews, whether semi-structured or unstructured, Ryan, Coughlan, and Cronin (2009) outlined a few important considerations to consider. They state that the interview must be done in a very professional manner, with agreement, and, if needed, taped verbatim. They also emphasised that the interview should be conducted in a friendly manner with room for flexibility and not be overly formal. Additionally, it is best to keep interview lengths to a minimum because longer ones could make respondents uncomfortable. The whole research study was explained to the respondents to allow them to know why they were called upon and why the background of the study would be significant to them. The interviewer would also be obligated to explain the sampling reasoning and the method to the best of the respondents' knowledge. In

addition, it would be desirable for the interviewer to admit their bias tendencies and try to address them (Charmaz & Belgrave 2012; Hunter 2012).

3.3.4 Interview Transcription and Interview Translation

As the respondents are Bumiputera from Malay and Dayak ethnicities, the entire interviews procedure was conducted in Malay language, in order to facilitate the targeted sampling and ensure that the subjects felt comfortable. Using an audio recorder, the entirety of the interview would be captured for the purpose of transcription. The English translation would be an exact word-for-word transcription from the Malay native tongue, taking into consideration the contextual information provided in the responses (Corbin & Strauss 2008; Charmaz 2006). Verbatim transcription is the process of converting verbal data recordings into written text descriptions word-for-word (McLellan, MacQueen, & Neidig 2003). This would be highly relevant, as the researcher could potentially trace back some of the concerns raised during the literature evaluations with the provision of the verbatim transcription (Davidson 2009). The utilization of interview verbatim transcription and translation would yield significant advantages in facilitating thematic coding for the purpose of data analysis (Glaser & Strauss 1967; Charmaz 2006; Khan 2014; Rose, Spinks, & Canhoto 2015).

3.4 Data Analysis

In qualitative research, the analysis technique may be the most challenging and important undertaking, as it is not as easy as in quantitative research (Sahay 2016). A variety of methods were employed to examine the research under this method such as content analysis, discourse analysis, grounded theory analysis, hermeneutic analysis, and cross-cultural analysis. The study would employ the case study analysis approach. This would entail identifying the themes and concepts that emerged from the data gathered and

attempting to connect those ideas into a theoretical framework (Glaser & Strauss 1967). Creswell (2007) explained that qualitative data analysis entails the interpretation of a significant amount of gathered data. Qualitative research used a thorough three-step methodology that consists of the following steps Creswell (2007):

i. Data Coding: Locating and eliminating important data segments. Giving these sections names will help them to be more organized and understandable.
ii. Sorting Codes to Create Themes: Putting codes together to create broad themes that capture trends and similarities in the data.
iii. Data Interpretation and Display: Making inferences from the data that has been coded and categorized. Presenting the data that have been interpreted in a way that makes the research context easier to understand.

Creswell (2007), also mentioned the data obtained from this analysis can be classified into one of three categories:

i. Information that, prior to the study, the researcher anticipated learning.
ii. Information discovered during the study that the researcher had not anticipated.
iii. Information that the researcher, participants, or audiences find conceptually intriguing or unusual.

Glesne and Peshkin (1992) emphasized the significance of researchers openly recognizing their own biases and subjectivity, which improves the reliability of their interpretations. The objective of qualitative researchers is to uncover concepts that may have been previously overlooked by conducting a thorough examination and analysis of complex data. David (2006) states that qualitative research aims to understand how all elements work together to form a comprehensive understanding. Interpretation involves more than just

reading; it is a process of transformation that produces significant insights from textual data (Creswell, 2009). Moreover, incorporating triangulation with diverse data sources enhances the reliability of the study. This methodology ensures the establishment of uniformity and assurance in presenting data and evaluating discoveries, thereby reducing prejudice and improving dependability. Triangulation is a technique used in qualitative research, specifically in thematic analysis and content analysis.

3.4.1 Data Analysis and Interpretation

Figure 3.1 illustrates the six steps of data analysis applied by this study. These steps help to systematically analyse the data to support the study's analysis and conclusions.

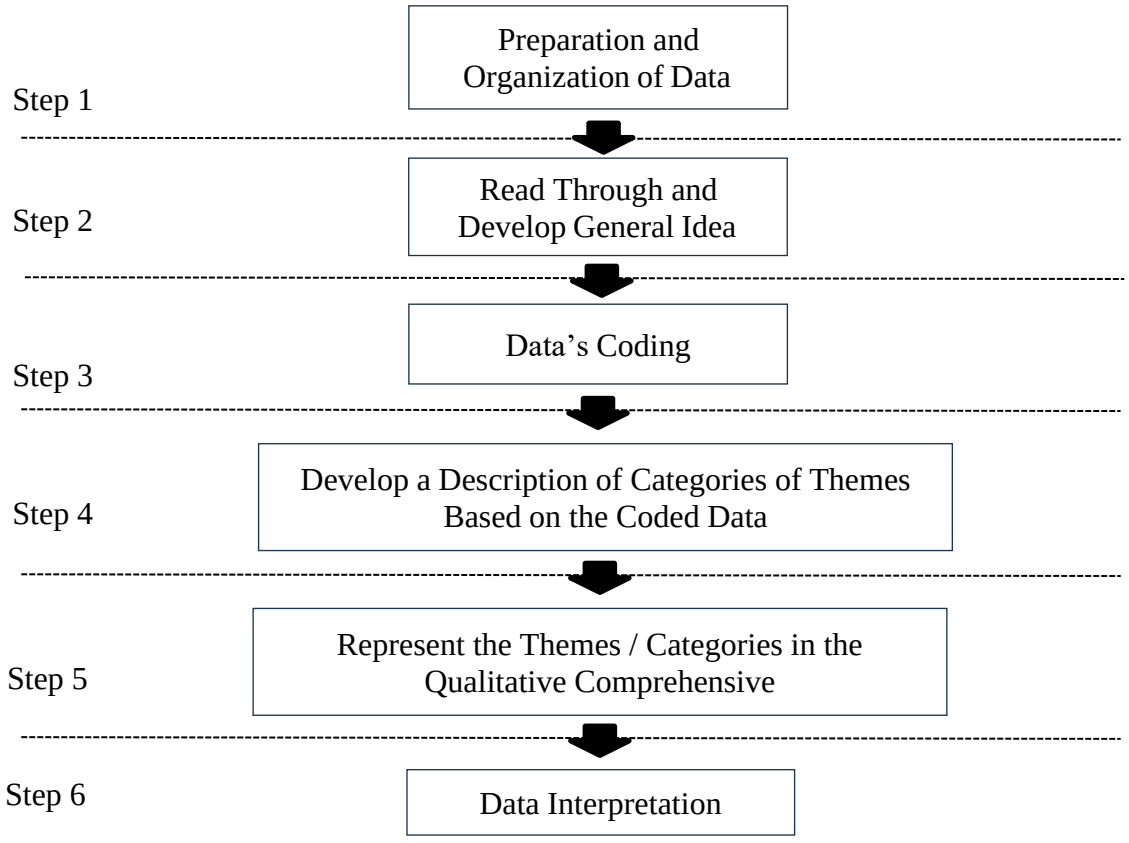


Figure 3.1: The Six Steps of Data Analysis

Source: Adapted from Creswell (2009)

The qualitative data analysis utilized in this thesis employs a nonmathematical analytical methodology, which involves examining the meanings conveyed by words and the fundamental philosophies of government departments (Maykut & Morehouse, 1994). Due to the large amount of qualitative data gathered, the researcher conducted a meticulous and detailed analysis, with a specific emphasis on interpreting the most relevant data to obtain a comprehensive understanding of the research topic (Cavana et al., 2001), the analytical process adhered to the six steps outlined by Creswell (2009).

3.4.2 Method of Data Analysis

For qualitative research, the most common software system used would be NVivo (Mohd Tobi 2019; and Hutchison, Johnston, & Breckon 2010). Hutchison, Johnston, and Breckon (2010) exemplified the usage of NVivo for their qualitative data analysis in the coding and arrangement of thematic concepts emerging from the data collected. NVivo specializes in qualitative data analysis to facilitate the analysis of datasets of varying sizes and the exploration of specific topics is greatly supported by this approach (Fereday & Muir Cochrane, 2006 and Bernard & Ryan, 2010).

This study employed three main analytical techniques, specifically 'thematic analysis', 'content analysis' and “cluster analysis”. Thematic analysis is essential for investigating subjects and offers a systematic method for developing thematic codes. The study had followed the six-step process outlined by Braun and Clarke (2006):

i. comprehending the data;
ii. creating initial codes;
iii. recognizing themes;
iv. evaluating themes;

v. defining and labelling themes;

vi. producing the report.

Following the generation of pivotal themes and the identification of causes and impacts of public construction delays, this study proceeded to conduct content analysis. A large amount of qualitative data obtained from twelve respondents will be systematically organized and managed. It helps categorize and code the data into themes, making it easier to identify patterns and relationships. Content analysis seeks to measure qualitative data by determining the frequencies of words and significant events linked to the data (Crowther & Lancaster, 2009). Content analysis, also referred to as 'the constant comparative method' in qualitative analysis (Glaser, 1965), suggests that researchers should transform qualitative data into a quantifiable format to generate evidence supporting a specific proposition. The content analysis or the constant comparative method was employed to enrich the themes by conceptualizing the subject matter (Boeije, 2012) to address the research questions. This process will enhance the researcher's comprehension of each theme or factor. This method allows for a better exploration of qualitative data, enabling a deeper understanding of the causes and impacts associated with public project delays.

Cluster analysis is a valuable and powerful technique, but it should be used with caution and a deep understanding of the original data. The quality of interpretation is directly dependent on the preceding techniques, and attempting to apply a framework to an unfamiliar data set will have limited significance, even for highly experienced researchers. When used correctly and based on reliable data, cluster analysis can effectively contribute to the development of a meaningful framework for qualitative data analysis and thematic interpretation (Bazeley & Jackson, 2013). This study will use the Pearson Correlation

Coefficient, Jaccard's Coefficient, and Sorensen's Coefficient Similarity for cluster analysis. Whereas Pearson correlation coefficient similarity analysis helps group similar items together based on how closely their variations are related to each other, By clustering the causes and impacts of public construction delays using the Pearson correlation coefficient, the study will gain a better understanding of which causes are dependent on each other and which impacts are likely to be associated with particular causes. Then, Jaccard's coefficient similarity analysis helps to distinguish between unique and shared causes in public construction delays. Therefore, Jaccard's coefficient similarity analysis will improve understanding of project-wide and case-specific causes. While the Pearson-Sørensen Coefficient similarity will help in grouping causes and impacts of public construction delays based on their presence, it emphasizes the presence of common issues, making it a valuable tool for identifying and analyzing patterns and similarities in causes contributing to and affecting public construction delays. Cluster analysis paints a full picture of the structure of the data, which gives researchers a sense of distance that helps them better understand the themes that come from looking closely at study sources (Bazeley & Jackson, 2013). Cluster analysis will assist the study in identifying critical issues that require attention to minimize delays in public construction projects.

3.5 Reliability of the Research

The analysis of data for this study was guided by the principles of transparency, consistency, and rigor to ensure the validity and reliability of the study. Golafshani (2003) suggests that reliability and validity are commonly associated with quantitative research, as they are rooted in a positivist perspective but have recently garnered attention within the qualitative research paradigm. He further explains that reliability implies the ability to

reproduce results or observations under identical constraints and constructs. Consistency is the primary adjective linked with reliability; a concept not significantly different from its application in quantitative research (Noble & Smith, 2015). Expanding on reliability procedures, Gibbs (2007) outlines three key steps. Initially, it involves scrutinizing transcripts to ensure accuracy during verbatim transcription. Secondly, it requires confirming that coding is executed properly and effectively, adhering closely to the coding definitions without deviation. Finally, maintaining consistency involves systematically comparing the collected data with the coding by accurately documenting memos regarding coding and its definitions.

Hutchison, Johnston, and Breckon (2010) have observed that including NVivo software into the study process can improve the dependability of data collecting, coding, and analysis. The analysis will follow standards of transparency, consistency, and rigor to ensure the study's validity and reliability.

3.6 Validity of the Research

Validity refers to the ability to accurately assess the true worth of research findings and to establish an unbiased and accurate understanding of respondents, without being influenced by the researcher's personal experiences and observations. It also acknowledges the presence of different realities and biases (Noble & Smith, 2015). Validity refers to the degree to which instruments accurately produce the expected and essential measures (Whittemore, Chase, & Mandle 2001). Process validity enhances the quality of research and provides guidance throughout the study process (Jr, Abib & Hoppen 2019). Qualitative validity refers to the accuracy or truthfulness of measurement or the trustworthiness of the research findings (Trochim, 2006). Validation of qualitative findings ensures a suitable level

of quality in the research has been achieved. Meeting four primary criteria can establish qualitative validity (Trochim, 2006). Credibility, transferability, dependability, and conformity are a few of these. To ensure the integrity of the collected data and comply with the aforementioned criteria, this study implemented a member verification procedure in which the interviewees themselves verified the interview results.

To enhance the dependability, credibility, and process validity of the study, personal interviews should be conducted with relevant stakeholders (Krueger 2002). Hence, as part of the research methodology, this study engaged in personal interviews with contractors who possess direct involvement in the construction of RTP. These interviews were conducted to gather valuable insights, perspectives, and first-hand experiences from individuals with practical knowledge and expertise in this field. By directly involving these contractors, the study aims to access a wealth of information regarding various aspects of RTP construction, including technical challenges, best practices, project management strategies, and potential areas for improvement. Through in-depth interviews, the study seeks to enrich its understanding of the complexities and intricacies involved in the construction process, thereby contributing to the robustness and comprehensiveness of the research findings.

3.7 Expert and Content Validation

Expert validation was done to add value to the data and improve its validity and reliability. It ensured that research themes or results confirmed by RTP stakeholders, such RTP's contractors, were accurate. These stakeholders approved of all results that the study found. Regarding content validity, it was used to provide findings (themes) with more detailed contextual explanations. This strategy entailed looking for proof from earlier

reliable publications to bolster the respondents' primary conclusions. This study's findings are more trustworthy, richer, and realistic.

3.8 Ethical Consideration

For this qualitative research, ethical issues were continuously considered before conducting primary research. Therefore, this research has built a strong rapport with respondents, recognizing the importance of a strong ethical foundation. Ethical issues have been considered at every stage of this qualitative research, especially during the interview stage of primary data collection. The research handled the elicited information, often personal or professionally sensitive, with a high level of confidentiality and respect. Considering the sensitive scope of this qualitative research, ethical considerations concentrate on gaining informed consent and guaranteeing confidentiality:

i. Information on the researcher
ii. Objectives of the research
iii. Data collection’s method
iv. Time required for the interview.

Before the interviews were conducted, every respondent was given an interview protocol (Appendix C1 in English and C2 in Bahasa Malaysia) that outlined the questions to be asked, further specified the purpose of the study, and included a privacy statement. The respondents were informed that they could get a copy of the research findings once the study was completed, and they were also advised of their right to withdraw consent at any time. In Chapter Four, this study will examine the interview findings, analyze them, and provide them in a tabular format.

The flowchart presented in **Figure 3.2** illustrates the methodology will be utilized in this study:

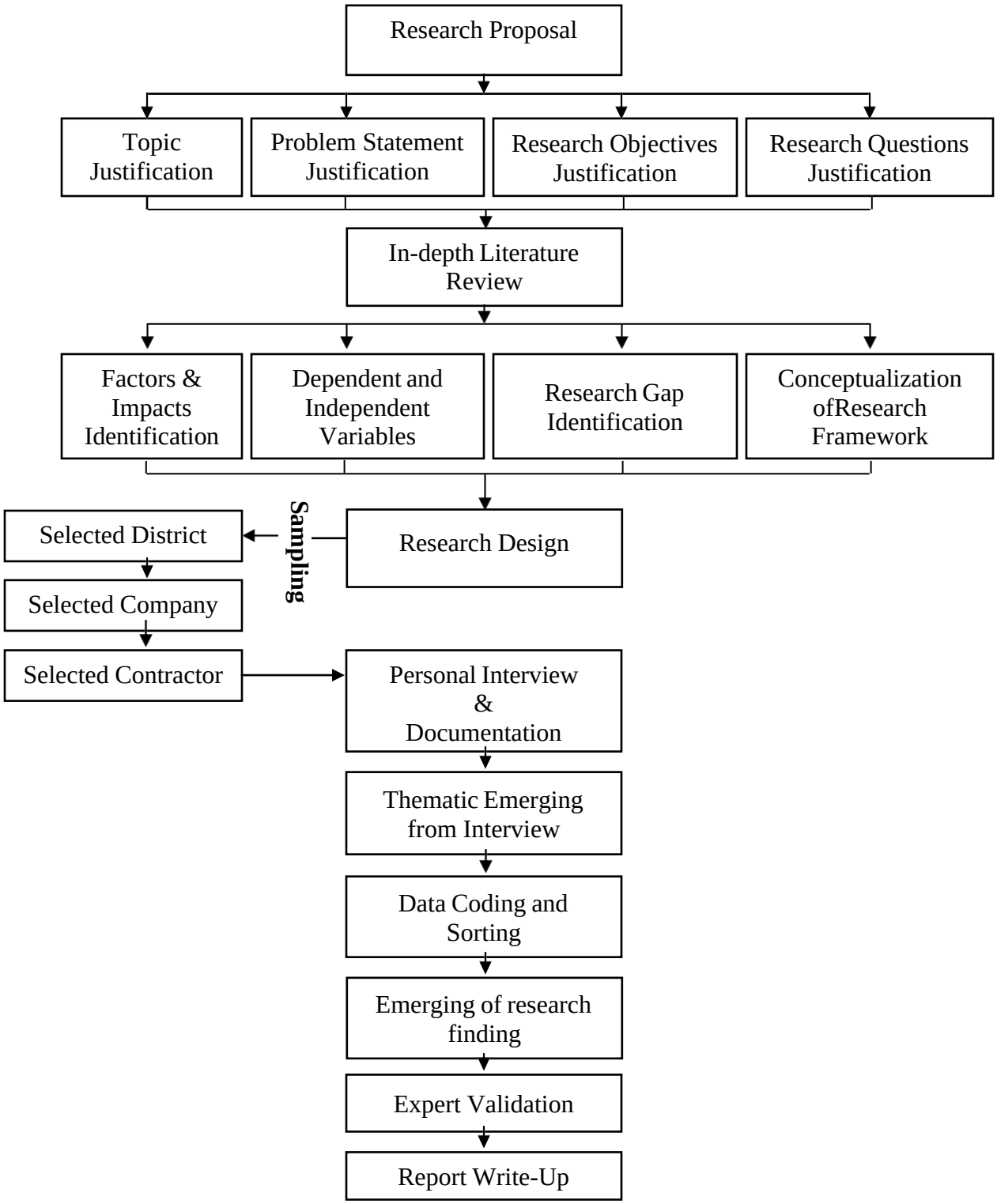


Figure 3.2: The Flowchart of the Research Process

CHAPTER 4

RESEARCH FINDINGS & DISCUSSION

4.1 Introduction

Chapter 4 will further explore the study's findings, providing details about the causes and impacts of construction delays in Sarawak's public projects. As stated in Chapter 1, the study focuses on identifying, from the perspective of contractors, the reasons behind construction delays in Sarawak's Rural Transformation Project (RTP) and the associated risks and consequences for stakeholders. Aside from that, the study investigates how efficient project and risk management approaches could mitigate these issues. Ultimately, the study aims to establish a framework that tackles the causes and consequences of construction delays, thereby enhancing the implementation of Sarawak's RTP.

As promised to all participants during the data collection phase, we replaced the identities of all twelve respondents with pseudonyms when presenting the study's results. The purpose of this was to preserve the respondent's personal information confidentially. An assessment of the safety concerns of both the researcher and the respondent is necessary to prevent potential exploitation by external parties, which could result in a negative reputation. In order to give significance to the data obtained in this study, the data was analyzed and deliberated over in this chapter to meet the research questions addressed in Chapter 1. Firstly, the study examined the demographic data to determine the characteristics of the participants. Subsequently, a theme analysis was performed to categorize the perspectives of the respondents.

4.2 Demographic Data

Table 4.1 below shows the demographic profile of all respondents gathered from all interview sessions. This information includes their positions, experience in the construction field, experience in RTP projects, the number of RTP projects completed, and the respondents' ethnicity and age.

Data was collected from a total sample (N = 12) of respondents out of 8,704 contractors' Class F, E, C, and D in Sarawak who are eligible to participate in the RTP project. All respondents are company owners, those who manage the company's business activities, and those who are directly involved in the RTP project's construction. A total of 66.67% (N = 8) hold a Class F contractor license, 25.00% (N = 3) hold a Class E contractor license, and 8.33% (N = 1) hold a Class D contractor license. Based on the data collected, 46.67% (N = 5) respondents have experience in the field of construction for more than ten years, 46.67% (N = 5) for six to ten years, and the remaining 11.66% (N = 2) have less than five years of experience. In terms of direct involvement in RTP construction, 66.67% (N = 8) have implemented RTP projects for more than five years, and the remaining 33.33% (N = 4) have implemented RTP between one and five years. In terms of the number of projects that have been completed, 50% (N = 6) have completed more than ten RTP projects, 33.33% (N = 4) have completed six to ten projects, and 26.67% (N = 2) have completed one to five projects. From the total (N = 12), 58.33% (N = 7) have experienced a late project, while the remaining 41.67% (N = 5) have not experienced it.

Table 4.1: Respondents's Demographic Profile (N = 12)

Variables		Frequency	Percentage (%)
Position	Owners	12	100.00%
License (Grade)	F	8	66.67%
	E	3	25.00%
	D	1	8.33%
Construction's Experience	1-5 years	2	11.66%
	6-10 years	5	46.67%
	More than 10 years	5	46.67%
RTP's Experience	1-5 years	4	33.33%
	6-10 years	8	66.67%
No. RTP project completed	1-5 projects	2	26.27%
	6-10 projects	4	33.33%
	More than 10 projects	6	50.00%
Experienced Project Delays	Yes	7	58.33%
	Not Yet	5	41.67%

4.3 Thematic Data Analysis

Thematic analysis, as defined by Braun and Clarke (2006), is a widely used method in qualitative research for identifying, examining, and presenting patterns within data. It is considered fundamental for enhancing the significance of data by providing a comprehensive and detailed description through systematic and analytical examination of various subjects (Boyatzis, 1998). This approach allows researchers to methodically explore connections between hypotheses and compare them with empirical evidence. Thematic analysis

facilitates linking diverse ideas and concepts while comparing respondents' opinions across different temporal and contextual settings, offering multiple opportunities for interpretation. Joffe and Yardley (2004) mentioned that the use of topics is essential for organizing data effectively in thematic analysis to ensure the comprehensive representation of the researcher's objectives. They argue that while individual remarks may hold significance, they alone may not capture the entirety of the narrative. Therefore, evaluating themes is crucial to ensure they accurately represent the full text. Miles and Huberman (1994) emphasize the importance of verifying themes during the initial stages of data analysis. A recommendation was made for the researcher to engage an external reviewer to assess and delineate the themes. This would enable the other individual to likewise recognise the shared and repetitive patterns that align with those previously encountered in the text. Afterwards, the researcher could utilise their evaluations to assess an impartial analyst. This would enable the researcher to make a comparison between the two sets of information. Charmaz and Belgrave (2012) concurred with this technique, stating that it would attain the efficiency of theme coding analysis.

This study employed a general inductive approach to examine qualitative assessment data, adhering to the methodology outlined by Hutchison, Johnston, and Breckon (2010). The entirety of the twelve interviews were digitally recorded, and precise transcripts were produced by direct translation. The transcripts were subsequently examined using NVivo 14 software. The data were encoded into the transcripts and methodically categorised into different groups or themes. The goal of defining these topical study subjects was to guarantee methodological accuracy. Braun and Clarke (2006) argue that a theme is a repeating experience and its different representations of meaning and identity, whereas a topic incorporates and recognises the essential features of the experience in a concrete way.

Themes were constructed by integrating concepts or occurrences that often lacked significance when examined individually (Aronson, 1995). These themes were not primarily focused on quantitative metrics but rather aimed to capture significant aspects related to the overarching study issue (Braun & Clarke, 2006). The main objective of this study was to identify and analyze the causes and causes contributing to public construction delays in RTP projects. **Table 4.2** presents the classification of each theme.

Table 4.2: Themes, Questions and Remarks

Themes	Questions	Remarks
Respondent Demographic Profile	What is your position and role in the company?	Q1
	How long have you been involved in the construction industry?	Q2
	How long have you been involved in RTP construction projects?	Q3
	How many RTP projects has your company completed?	Q4
	Have you ever experienced delays in completing any of your RTP projects during your involvement?	Q5
Causes Contributing to RTP Delays	Have you ever experienced delays in receiving payment for a project?	Q6
	In your experience, what are the causes that typically lead clients to delay their payments?	Q7
	Based on your experience, do you find that the allocated time frame for a construction project is adequate?	Q8
	In your opinion, why does ineffective on-site standing supervision by the implementing agency impact the overall progress of the construction project?	Q9

In your opinion, how does ineffective communication between the implementing agency and you, the contractor, result in construction delays?	Q10
Describe the experiences and practices you had in the construction field before you engaged in the RTP project.	Q11
Do you have enough and suitable construction equipment to carry out each project?	Q12
What challenges do you face in obtaining financial facilities, and how does this impact your ability to finance construction projects?	Q13
Does late payment or failure of clients to adhere to agreed payment schedules affect the development of the project?	Q14
What challenges do you face related to building materials?	Q15
Do fluctuations in construction costs affect your ability to complete projects?	Q16
How does the delay in the delivery of building materials compared to the schedule to the site affect the progress of the construction of the project?	Q17
Are you having difficulty recruiting and retaining skilled and appropriate employees?	Q18
Do you have adequate and suitable modern equipment for implementing your projects?	Q19
How do mistakes and discrepancies in contract documents affect the progress of the project?	Q20
Have you ever experienced situations involving changes in the work scope, and what were the impacts of these changes on the construction of the project?	Q21
Any other external causes do you believe contribute to delays in the construction of RTP projects?	Q22

Impacts of RTP Project Delays	How do you perceive the impact of project construction delays, particularly concerning the risks your company or another stakeholder may encounter?	Q23
Importance of Effective Management and Monitoring Practices Essential in Mitigating the Risks and Consequences of RTP Project Delays	Can you explain the strategies or plans applied in your company to reduce the risk of project delays?	Q24
	In your opinion, why are these strategies or plans important for minimizing the impact of project delays on your company?	Q25

4.4 Data Findings

A total of twelve interview transcripts were collected from the selected contractors from each division using the purposive sampling method. These transcripts were uploaded into the NVivo Qualitative Data Analysis software for further analysis. Then, an abstract of these transcripts was exported, and the information is presented in **Table 4.3** below.

Table 4.3: An Abstract of Transcripts from NVIVO

No.	Items Description	Codes	References	Modified on
1.	Interview Transcription for Interviewee 1	16	20	29/03/2024 10:06 PM
2.	Interview Transcription for Interviewee 2	18	21	29/03/2024 10:06 PM
3.	Interview Transcription for Interviewee 3	26	27	29/03/2024 10:06 PM
4.	Interview Transcription for Interviewee 4	30	34	29/03/2024 10:06 PM

5.	Interview Transcription for Interviewee 5	24	25	29/03/2024 10:06 PM
6.	Interview Transcription for Interviewee 6	20	20	29/03/2024 10:06 PM
7.	Interview Transcription for Interviewee 7	25	26	29/03/2024 10:06 PM
8.	Interview Transcription for Interviewee 8	16	16	29/03/2024 10:06 PM
9.	Interview Transcription for Interviewee 9	26	27	29/03/2024 10:06 PM
10.	Interview Transcription for Interviewee 10	34	36	29/03/2024 10:06 PM
11.	Interview Transcription for Interviewee 11	22	24	29/03/2024 10:06 PM
12.	Interview Transcription for Interviewee 12	27	29	29/03/2024 10:06 PM

The codes and references associated with Theme 1, which are causes that contribute to the RTP project delays, as exported from NVivo, are listed in **Table 4.4** below.

Table 4.4: Codes and References for Theme 1: Causes Contributing to RTP Project Delays

Name	Files	References	Created on
A. Respondent Demographic Profile			
1) Experience (in year)			
a) 1-5 years	2	2	30/03/2024 8:27 PM
b) 6-10 years	6	6	30/03/2024 8:26 PM
c) More than 10 years	5	5	30/03/2024 8:27 PM
2) Experience in RTP (in years)	0	0	30/03/2024 8:25 PM
a) 1-5 years	5	5	30/03/2024 8:31 PM
b) 6-10 years	7	7	30/03/2024 8:31 PM

3) Experienced Project Delay	0	0	30/03/2024 8:25 PM
a) No	5	5	30/03/2024 8:32 PM
b) Yes	7	7	30/03/2024 8:32 PM
4) No. RTP Completed	0	0	30/03/2024 8:25 PM
a) 1-5 projects	2	2	30/03/2024 8:32 PM
b) 6-10 projects	4	4	30/03/2024 8:32 PM
c) More than 10 projects	6	6	30/03/2024 8:33 PM
5) Position	0	0	30/03/2024 8:26 PM
a) Owner	12	12	30/03/2024 8:33 PM
B. RQ1 Causes Perceived by Contractors as Contributing to Delays in RTP Projects			
6) Agency Related Causes			30/03/2024 10:27 PM
a) Ineffective communication between agency and contractor	8	8	30/03/2024 8:36 PM
b) Ineffective communication between agency and recipient	2	2	30/03/2024 8:36 PM
c) Lack of field supervision by agency	6	6	30/03/2024 8:36 PM
d) The job's scope varies from the requested project	1	1	30/03/2024 8:35 PM
7) Contractors Related Causes			30/03/2024 10:29 PM
a) Incompetent contractor	2	2	30/03/2024 8:37 PM
b) Inexperienced contractors	2	2	30/03/2024 8:37 PM
c) Insufficient equipment or machinery	7	9	30/03/2024 8:37 PM
d) Lack of field supervision by contractor	1	1	30/03/2024 8:36 PM
8) External Related Causes			30/03/2024 10:30 PM
a) Difficulty to enter the site	4	4	30/03/2024 8:38 PM
b) Location of the project	10	15	30/03/2024 8:38 PM
c) No proper road access	10	12	30/03/2024 8:38 PM
d) Utilities to be reallocated	1	1	30/03/2024 8:37 PM
e) Weather Conditions	1	1	30/03/2024 8:37 PM

9) Financial Related Causes			30/03/2024 10:31 PM
a) Issue on working capital turnover facing contractors	3	3	30/03/2024 8:38 PM
b) Lack of financial facilities	6	6	30/03/2024 8:39 PM
c) Payment made upon completion of the project.	2	2	30/03/2024 8:39 PM
10) Labour Related Causes			30/03/2024 10:31 PM
a) Difficulty to retain manpower	7	7	30/03/2024 8:40 PM
b) Lack of skilled manpower	5	6	30/03/2024 8:39 PM
c) Shortage of manpower	7	7	30/03/2024 8:40 PM
11) Material Related Causes			30/03/2024 10:32 PM
a) Delay delivery of construction material	3	3	30/03/2024 8:40 PM
b) Difficulty in transporting construction material	2	3	30/03/2024 8:41 PM
c) High price of construction material	4	5	30/03/2024 8:41 PM
d) High transportation cost	2	2	30/03/2024 8:40 PM
e) Increase in price of construction material	11	14	30/03/2024 8:41 PM
f) Shortage of construction material	3	3	30/03/2024 8:41 PM
12) Recipient Related Causes			30/03/2024 10:33 PM
a) Incapacity of JKKK as a project contractor	2	2	30/03/2024 8:42 PM
b) Request for land compensation	2	2	30/03/2024 8:42 PM
c) Requests for changes in job scope	9	10	30/03/2024 8:42 PM
d) Site dispute	1	1	30/03/2024 8:42 PM

The codes and references associated with Theme 2, which are impacts of the RTP project delays, as exported from NVivo, are listed in **Table 4.5** below.

Table 4.5: Codes and References for Theme 2: Impacts of RTP Project Delays

Name	Files	References	Created on
C. RQ2 Risks and Consequences Faced by Contractors Engaged in the Rural Transformation Project (RTP) projects			
1) Bad Reputation	10	10	30/03/2024 12:23 AM
a) Agency	3	3	18/04/2024 8:57 PM
b) Government	4	4	18/04/2024 8:57 PM
c) Local YB	4	4	18/04/2024 8:57 PM
d) Negative reaction	1	1	18/04/2024 9:00 PM
e) Reputation will be tarnished	3	3	18/04/2024 8:56 PM
2) Blacklisted	8	8	30/03/2024 12:23 AM
a) Ineligible for balloting draw	3	3	18/04/2024 8:52 PM
b) Poor grading	1	1	18/04/2024 8:55 PM
3) Cost Overrun	2	2	30/03/2024 12:27 AM
a) Cost Increase	2	2	18/04/2024 8:45 PM
b) Profit Decrease	1	1	18/04/2024 8:46 PM
4) Termination of Contract	2	2	30/03/2024 12:28 AM
a) License suspended	1	1	18/04/2024 8:49 PM
b) Not allow to join balloting draw	1	1	18/04/2024 8:48 PM
5) Time Overrun	2	2	30/03/2024 12:35 AM
a) Extension of Time	2	2	18/04/2024 8:50 PM
b) Project Delays	1	1	18/04/2024 8:50 PM

The codes and references associated with Theme 3, which are importance of effective management and monitoring practices essential in mitigating the risks and consequences of RTP project delays, as exported from NVivo, are listed in **Table 4.6** below.

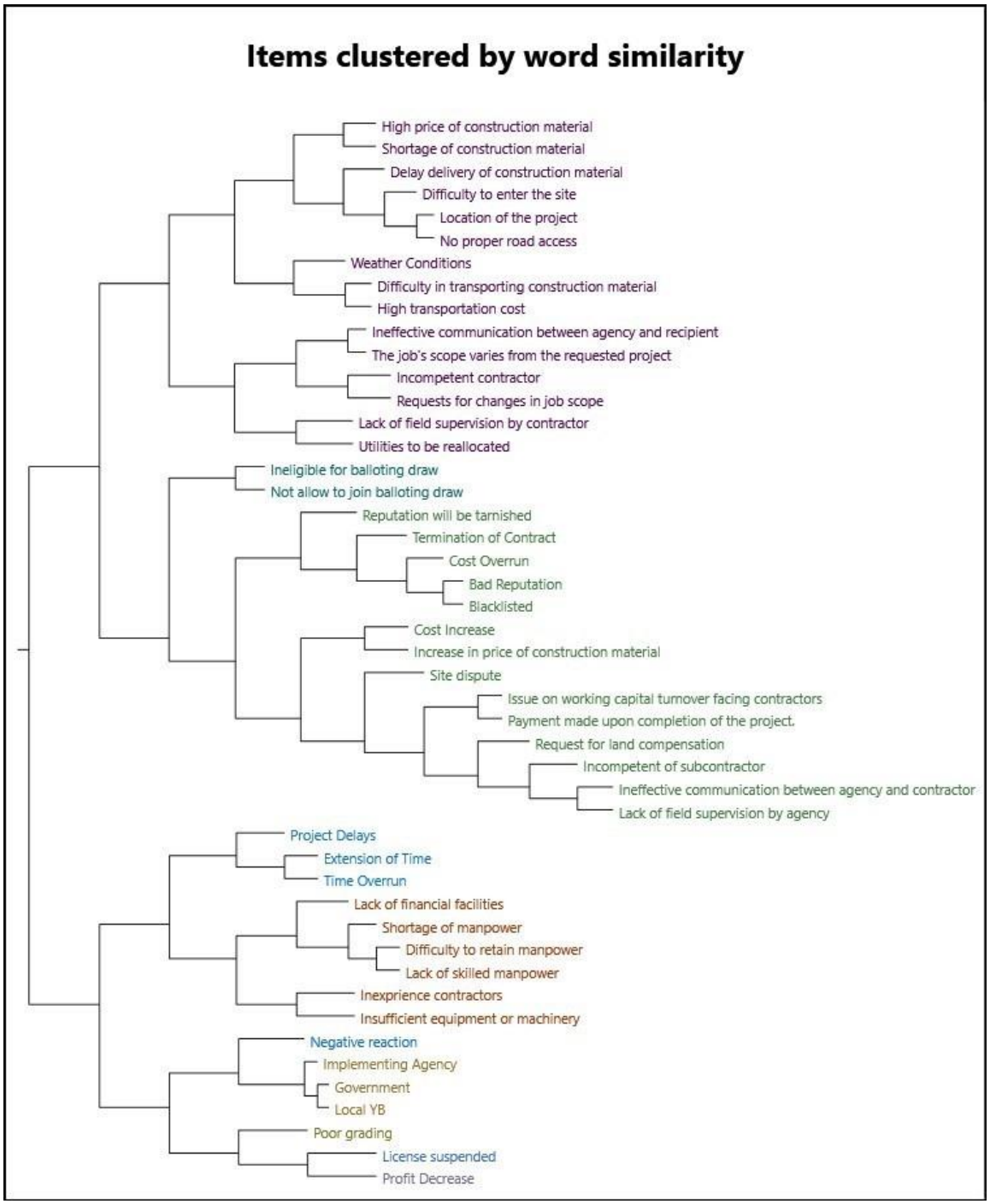
Table 4.6: Codes and References for Theme 3: Importance of Effective Management and Monitoring Practices Essential in Mitigating the Risks and Consequences of RTP Project Delays

Name	Files	References	Created on
D. RQ3 Importance of Effective Management and Monitoring Practices Essential in Mitigating the Risks and Consequences of RTP Project Delays			
1) Maintain Good Performance	1	1	30/03/2024 1:05 AM
a) Accurate cost estimation	1	2	18/04/2024 9:14 PM
b) Positive performance	1	1	18/04/2024 9:13 PM
2) Maintain good reputation	2	2	30/03/2024 12:59 AM
a) Agency's satisfaction	1	1	18/04/2024 9:16 PM
b) Specification Compliance	1	1	18/04/2024 9:15 PM
3) Managing sources effectively	8	8	30/03/2024 12:58 AM
a) Continuous Monitoring	1	2	18/04/2024 9:28 PM
b) Cost estimation	2	2	18/04/2024 9:29 PM
c) Meeting Financial Obligation	1	1	18/04/2024 9:29 PM
d) Proper planning	6	6	18/04/2024 9:27 PM
4) Minimizing Risk	7	7	30/03/2024 12:55 AM
a) Company self-evaluation	3	4	18/04/2024 9:22 PM
b) Effectively manage resources	2	2	18/04/2024 9:23 PM
c) Financial risk reduction	1	1	18/04/2024 9:25 PM
d) Proper planning	3	4	18/04/2024 9:21 PM
e) Risk identification	1	1	18/04/2024 9:24 PM
5) Maximizing Profit opportunities	2	2	30/03/2024 1:02 AM
a) Cost Minimization	1	2	18/04/2024 9:20 PM
b) Profit Maximization	1	1	18/04/2024 9:18 PM
c) Project cost estimation	1	1	18/04/2024 9:17 PM
d) Proper planning	1	1	18/04/2024 9:19 PM

The study's findings revealed multiple variables contributing to public construction delays, as indicated in **Figure 4.1** below, through the integration of various themes pertaining to Research Questions 1 and 2. The figure displayed the Cluster Analysis results

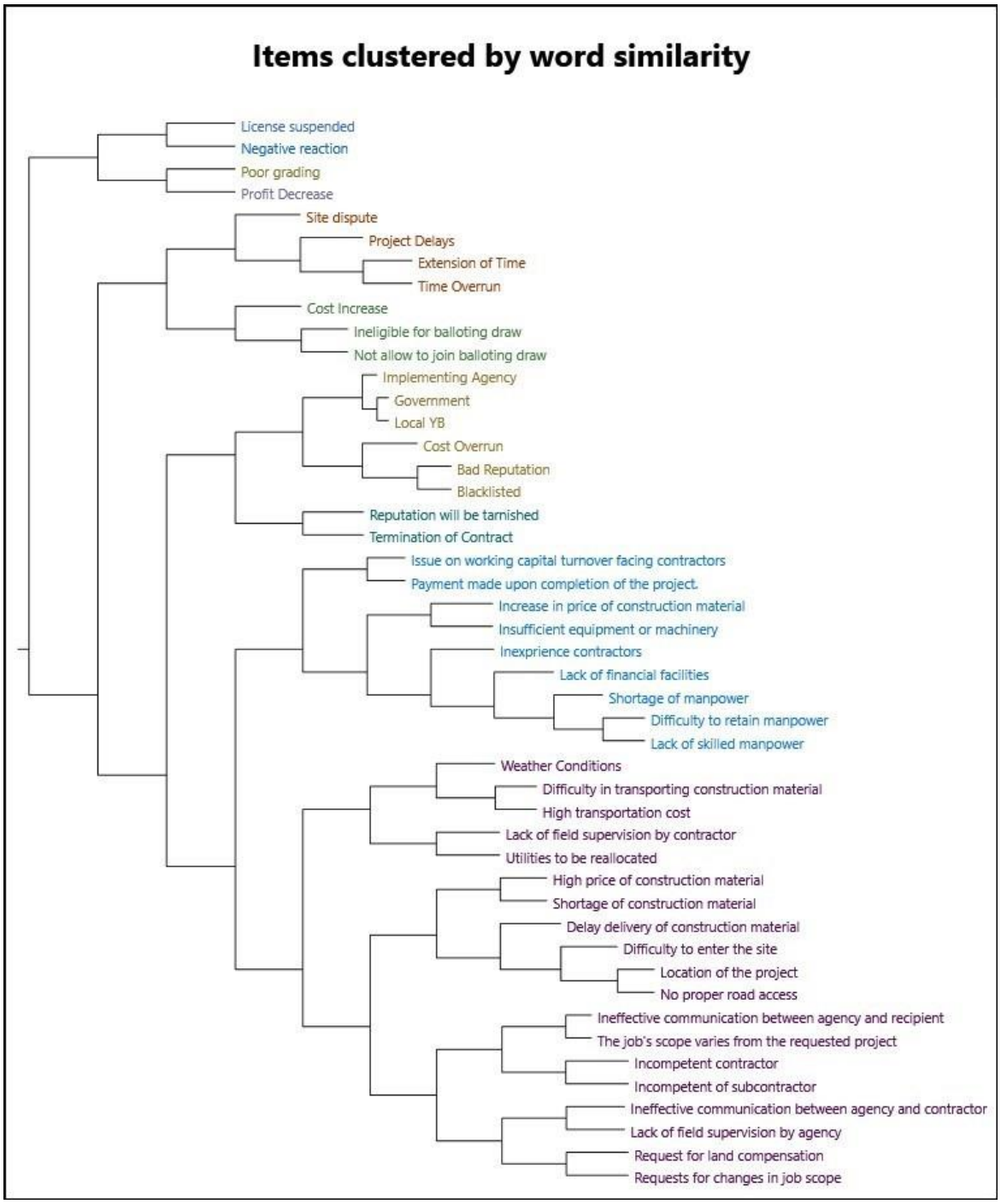
generated by NVivo using Similarity Analysis with Pearson Correlation Coefficient, wherein Themes 1 and 2 were found to be associated with comparable codes.

Figure 4.1: Utilising the Pearson Correlation Coefficient Similarity Analysis for Cluster Analysis



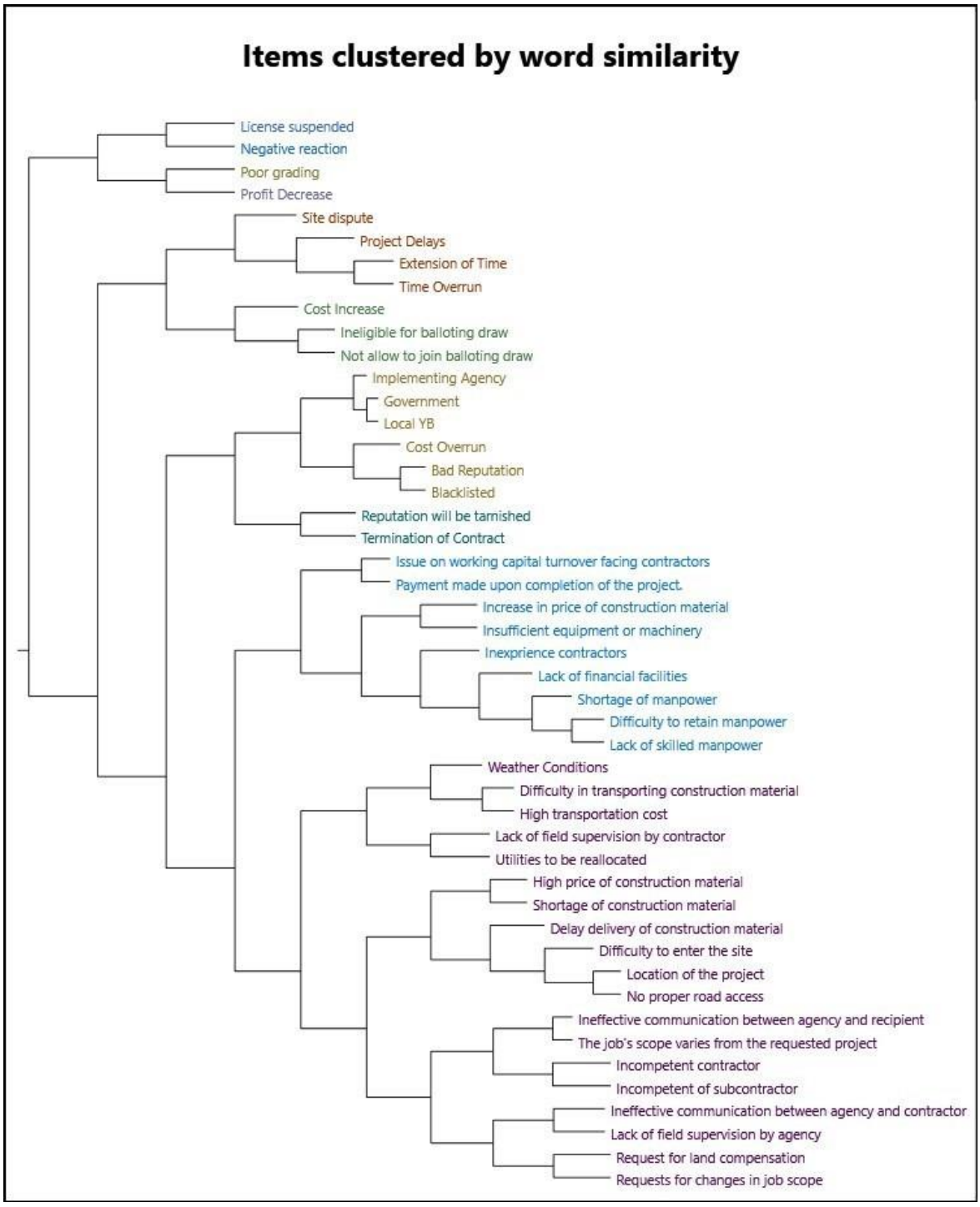
Theme 1 identified causes related to Research Question 1, while Theme 2 addressed the impacts corresponding to Research Question 2. The relationship between Themes 1 and 2 influenced the development of the framework for Research Question 3.

Figure 4.2: Utilising the Jaccard's Coefficient Similarity Analysis for Cluster Analysis



Figures 4.2 and **4.3** show Cluster Analysis outcomes obtained through Sorenson's and Jaccard's coefficient similarity analyses. The analyses show consistent results that enhance the study's validity and draw conclusions from the selected participants.

Figure 4.3: Utilising the Sorenson's Coefficient Similarity Analysis for Cluster Analysis



The data collected and analyzed in Sarawak's RTP provided evidence supporting the study's conclusions. The study's relationships aimed to explore the causes and impacts of public construction delays, identifying thirty-four sub-themes for the causes and five sub-themes for the impacts**. Table 4.4** and **Table 4.5**, respectively, present the sub-themes under the themes "Causes Contributing to RTP Project Delays" and "Impacts of RTP Project Delays", reflecting the associative relationship between these two themes and highlighting their mutual dependence.

4.5 Discussion of the Data Findings

The section will delve into the detailed discussion of the findings derived from the interview sessions conducted with respondents, highlighting the connections between these findings and the research questions and objectives. The study will use the literature review from Chapter 2 and quotes from respondents to bolster this discussion, particularly regarding the determination of the study's themes and sub-themes and their significance in the context of academic literature.

4.5.1 Research Questions 1: Discussion on the Causes Perceived by Contractors as Contributing to Delays in RTP Projects

The discussion will use qualitative data from interviews to bolster the findings. where, this section will delve deeper into the findings, examining each factor that contributes to the delay in public project construction from the perspective of the RTP in Sarawak, in line with the study's objectives and questions. Based on the findings of this study, there are seven main themes: namely, Agency Related Causes, Contractor Related Causes, External Causes, Financial Related Causes, Labor Related Causes, Material Related Causes and

Recipient Related Causes. Of these seven main themes, two of them are new themes, namely Agency Related Causes and Recipient Related Causes. Furthermore, the findings for Research Question 1 included thirty-four sub-themes.

4.5.1.1 Agency Related Causes

Agency in the context of RTP in Sarawak refers to agencies that are directly involved in the implementation and monitoring of RTP projects, as stated in Chapter 1.3 above.

a) Ineffective Communication Between Agency and Contractor

According to Van et al. (2016), poor communication channels and breakdowns in communication between contractors and consultants can lead to misunderstandings, conflicts, and delays in project execution. In the context of RTP, consultants are referring to technical agencies like JKR, DID, Local authorities, and BDA. These agencies are the ones dealing directly with the project on the ground. Statistically, a total of eight people, or 67.00% of respondents, said that ineffective communication between the implementing agency and the contractor caused problems for public project construction work and that the project would be delayed. **Interviewee 2** mentioned,

> *"Instructions didn't arrive correctly. If there is a need to ask something, the agency representative is not available or difficult to contact……"*

While **Interviewee 5** said,

> *"Instructions or policies are not clear. So, we will have problems in implementing the project."*

Their responses were supported by **Interviewee 3**,

> *"Problems will arise or the project will be delayed if the agency's implementing officer does not provide sufficient information or prompt decisions….."*

Interviewees 6 and **9** also supported their responses, citing representatives from the implementing agency as references during the construction stage. Meanwhile, **Interviewee 11** and **Interviewee 12** said they had a hard time getting an explanation related to the scope of work or the bill of quantity (BQ) of the project.

Poor communication channels, conflicting priorities, or inadequate stakeholder engagement led to misunderstandings and delays in resolving issues. Lu et al. (2015) observed that project disputes are frequently a result of insufficient communication between contractors and project owners. Excellent communication skills are essential for the implementing agencies or their representatives working on RTP construction projects in Sarawak. This can be done by fostering open dialogue, building relationships, and facilitating collaboration among diverse stakeholders. This can help overcome challenges, minimise risks, and achieve successful project outcomes.

b) Lack of Field Supervision by Agency

It refers to the oversight and management of construction activities at the project site by representatives or personnel of the agency responsible for overseeing the project. The supervision typically entails monitoring the progress of construction work, ensuring compliance with project specifications, quality standards, and safety regulations, as well as addressing any issues or challenges that may arise during the construction process and ensuring that the project progresses smoothly and according to plan. Lessing, Thurnell, and

Durdyev (2017) and (Nawi et al., 2016) highlighted that ineffective on-site standing supervision at the construction site, leading to potential issues such as quality control lapses, safety concerns, and schedule delays.

Interviewee 1 when asked about his opinion why ineffective on-site standing supervision by the implementing agency impact the overall progress of the construction project, said:

> *"Agency representatives will usually be present once in a while. So, it is difficult to get an explanation immediately if there is confusion, especially regarding the scope of work."*

While **Interviewee 3** mentioned;

> *".....I've noticed that project supervisors tend to come for inspections at the beginning of the project, but rarely during its progress. Then, they only come for inspection once the project is completed."*

According to **Interviewee 6**;

> *"The lack of supervision can cause project delays. Like myself, if I'm present, the workers will indeed work quickly. Similarly, if the agency doesn't supervise, some contractors won't go to the site, relying on the workers. If there are problems in the field, it's difficult for us to know."*

Their responses were supported by **Interviewee 5,** according to him **"***continuous monitoring is necessary. Without monitoring, the project's progress cannot be known, and there may be problems we are unaware of. Like myself, I will go to the site"* and **Interviewee 10**, on the

other hand, said that the lack of strict supervision can cause contractors to deviate from the schedule. Then, Interview 9 mentioned that *"sometimes I might be uncertain about the scope of work, so if I want to ask, it's a bit difficult because there's nowhere for us to refer to."*

Nwosu (2018) argues that effective supervision is essential for overseeing construction labor activities, highlighting the pivotal role of construction site supervisors in facilitating communication between laborers and employers in a broader context. From the perspective of RTP project in Sarawak, the project supervisor from the implementing agency plays a pivotal role in facilitating communication, collaboration, and coordination between the agency and the contractor in RTP projects. Their presence at the project site is crucial in ensuring the smooth and successful implementation of the RTP project.

c) Ineffective Communication Between Agency and Recipient

Ineffective communication between the agency and the recipient of the RTP project can indeed lead to project delays. This is often due to discrepancies between the project scope defined by the agency and the actual needs and expectations of the villagers, particularly those residing in rural areas and the recipients of the project. According to **Interviewee 4**,

> *"In the offer letter or scope of work, there are rarely any mistakes. It becomes a mistake when our scope of work does not match the requirements, especially those of the villagers. Disputes often arise between us, as contractors, and the villagers. I believe that the project approved is not the same as the one they requested. Budget constraints sometimes necessitate splitting the project into two phases, a concept that the villagers may not fully comprehend. Here, there was miscommunication between the agency and the applicants".*

Interviewee 12 suggested that the implementing agencies involved should discuss with the applicants or villagers before preparing a Bill of Quantity for an RTP project. This approach ensures that the BQ aligns with the needs and requests of the villagers or the recipients of the project. According to him,

> *"Sometimes the Bill of Quantities (BQ) does not follow the villagers' requests. When we do it, the villagers complain that it's wrong. I feel that the BQ must discuss with the villagers first before proceeding".*

Sambasivan & Soon (2007), in their study to identify causes and impacts of delays in the Malaysian construction industry, found that lack of communication between parties and mistakes during the construction stage are the most significant causes of project delay. In construction projects in Hargeisa, Fashina et al. (2020) identified poor communication among stakeholders and project managers as a major challenge in project execution. Therefore, Liu et al. (2020), in their study on how project management practices lead to infrastructure sustainable success, emphasise that effective communication and adherence to the plan are essential for smooth project execution. Effective communication between the implementing agencies and recipients of the RTP project is essential for its success. It ensures that everyone understands the project's goals, helps in using resources wisely, and enables quick problem-solving. Effective communication among them speeds up decision-making, involves everyone in the process, and allows for smooth adjustments to changes if required.

d) The Job's Scope Varies from the Requested Project

The RTP project may experience delays due to the discrepancies between the job's scope and the initial requests made by the villagers or project recipients. Discrepancies

between original requests and implementation often necessitate changes to align with expectations. These changes typically require approval, which can prolong the project timeline. The process of requesting changes, obtaining approvals, and implementing them adds administrative overhead, further contributing to project delays. According to **Interviewee 4**,

> *"……..It becomes a mistake when our scope of work does not match the requirements, especially the request by the villagers. Disputes often arise between us, as contractors, and the villagers. I believe that the project approved is not the same as the one they requested……."*

In the case where the approved work scope by the implementing agency deviates from the specification as requested by the villagers, issues arise during the construction phase. The implementing agency's errors in formulating the scope of work have led to project discontinuation or necessitated re-approval, resulting in project delays. Therefore, it is crucial for the implementing agencies to not overlook changes within a project. Regardless of the scale of the changes and the breadth of the project's scope, they have the potential to lead to RTP project failure.

4.5.1.2 Contractor Related Causes

In the context of this study, contractors pertain to those categorized as Grades F, E, C, and D who are directly involved in the construction of RTP projects valued at RM1,000,000.00 and below.

a) Inexperienced Contractors

Inexperienced contractors refer to a lack of the necessary skills, knowledge, and resources to effectively manage and execute projects, leading to inefficiencies, errors, and delays in construction. According to **Interviewee 3**, obtaining a Grade F contractor license is currently easy and straightforward. Even without experience, applicants can obtain the license provided they have completed basic courses.

> *"……..Back then, becoming a contractor was difficult because not many people had licenses. Now, it's easier; you just need money to apply. Even then, some only attend one or two courses, sometimes lacking experience. This damages the reputation of Grade F contractors because some of them are not skilled, yet they have licenses". (**Interviewee 3)***

Interviewee 7 supports this statement by stating that he lacked construction experience prior to becoming a contractor when asked about his experience and practices in construction before he engaged in the RTP project.

> *"…….as for experience, like me, I only observed others working before; it's only after becoming a contractor that I truly started doing things on my own……" **(Interviewee 7)***

Based on the interview result, **Interviewee 7** was admitted that he had experienced project construction delays when asked either he ever experienced or not project construction delays.

> *"Yes. But not too bad. If you are encounter unforeseen circumstances, you may request from Extension of Time." **(Interviewee 7)***

In his study to identify critical success causes of project management for Brunei construction projects, Salleh (2009) found that the awarding of projects to inexperienced and incompetent contractors contributed to project construction delays. Singh and Tiong (2006) examined how practitioners in the Singapore construction industry perceive the significance of 102 selection criteria for contractors. They concluded that a contractor's experience with similar projects plays a crucial role in achieving project success. Inexperienced contractors are one of the causes contributing to construction project delays in the RTP projects in Sarawak.

b) Incompetent Contractor

Alhazmi & McCaffer (2000), in their study in Saudi Arabia found that probability of a successful construction project is enhanced by the careful selection of a competent contractor and their finding supported by Ajayi & Ogunsanmi (2012). Similarly, research has confirmed that assigning contracts to incompetent contractors is a contributing factor to subpar performance and project delivery problems (Holt et al., 1995). The result of this study found that incompetent contractors led to mistakes, as mentioned by **Interviewee 3.**

> *"……My friend had experienced this, where he failed to comply with the type of material that was supposed to be used as stipulated in the job scope. Therefore, he had to redo the project, and redundancy occurred because he needed to do the same project twice. I was thinking that, as a contractor, my role extends beyond mere construction tasks. It necessitates a comprehensive understanding of project requirements as outlined in the bill of quantities (BQ)"* ***(Interviewee 3)***

Interviewee 6 mentioned that incompetent contractor will fail to comply to the specifications as stipulated in the job scope.

"So far, there have been no issues involving mistakes and discrepancies in contract documents. However, problems arise when contractors fail to execute projects according to the specifications outlined in the scope of work or bill of quantities."

Even its small scale but RTP initiatives often involve complex tasks such as infrastructure development, community facilities construction, and rural revitalization efforts. Hence, it is crucial for contractors to acknowledge their own capacity and capabilities when undertaking government projects (The Sun, 2023). Contractors must evaluate whether they possess the requisite expertise, resources, and manpower to execute these projects efficiently and effectively. This self-awareness ensures that contractors can commit to projects that align with their strengths and competencies, thereby mitigating the risk of delays that may led to cost overruns, or substandard outcomes.

c) Lack of Field Supervision by Contractor

Lessing, Thurnell, and Durdyev (2017) and (Nawi et al., 2016) highlighted that ineffective on-site standing supervision at the construction site, leading to potential issues such as quality control lapses, safety concerns, and schedule delays.

Interviewee 2 *mentioned that,*

"I'm not sure about the other contractors' experience. However, in my experience, workers will be slow to work without supervision. Sometimes they don't know how to do something at the project site and need guidance from me. Therefore, it is important for me to always supervise the project".

Effective supervision is essential for construction management (Nwosu, 2018), and site supervisors are crucial in supervising workers to ensure high productivity (Alumbugu et al., 2014). In a previous study, Thomas (1991) found that low levels of supervision had a negative impact on construction projects. Therefore, the requirement for RTP contractors to supervise their construction projects is universal; its significance lies in determining their projects' success. By providing guidance, oversight, and capacity-building support, their close supervision contributes to the successful implementation of the RTP projects.

d) Insufficient Equipment

Having enough equipment is crucial in construction because it makes work faster and more precise, boosts productivity, improves quality, enhances safety, and saves money in the long run by cutting down on the total cost of the project. (Lim, 2020), mentioned that Sarawak has some excellent and successful contractors, but smaller contractors working on RTP may encounter difficulties. These include insufficient working capital, a shortage of technical and supervisory staff, inadequate planning and management abilities, or a shortage of construction supplies or equipment. These difficulties can collectively lead to delays in completing RTP projects according to schedule.

Interviewee 12 during the interview session said:

> *"The equipment is not complete enough. Only essential tools for construction are available. However, heavy machines like excavators must be procured through rental arrangements when project demands necessitate their use. Nonetheless, the rental availability of the machine is limited due to demand from other contractors within the same area. If required to rent from a supplier in Kuching, logistical challenges will lead to high transportation costs".*

His opinion also shared by **Interviewee 1, 2, 3, 4, 8** and **11** mentioned that they possess only basic construction equipment and lack heavy machinery. Consequently, they opt to rent such equipment depending on the necessitate of the projects, which lead increases project costs. The project may be unable to execute according to the schedule as stated by **Interviewee 2**:

> *"I don't have heavy machines, such as excavators." If necessary, I must rent them. The rent depends on the location; the further the project site is from the machine rental place, the higher the transportation cost. If the machine is not available because another contractor is using it, then I have to wait for my turn, and sometimes this will cause me to not be able to execute the project according to plan."*

In their research, Kaming et al. (1997) discovered that a deficiency in equipment is one of the causes affecting the productivity of the construction industry in Indonesia. Laryea (2010) observed that contractors in Ghana often lack their own equipment, leading them to rely on renting. This practice, as indicated by Anbhule and Kumthekar (2012), may result in an increase in overall project costs ranging from 10% to 30%.

In the context of the RTP, even though the projects are small scale, their execution can be substantially impeded by the absence of heavy machinery. Essential tasks within RTP initiatives, such as the construction of drainage systems, road enhancements, or the erection of village halls, typically require the deployment of heavy machinery to ensure expeditious and effective construction. In the absence of such equipment, construction endeavours become considerably challenging, potentially resulting in project delays.

4.5.1.3 External Causes

a) Location of the Project

Align with its role to reduce the development gap between the rural and urban areas in Sarawak. The RTP projects focus on infrastructure development as well as the economic and social development of people in rural areas; most of the RTP project's sites are located far away from the main town. Some of the project sites lack proper road access, and only a four-wheel drive or a long boat can reach them via a logging road or through a river. Therefore, the RTP contractors have faced challenges in completing the construction of RTP projects due to the location of project sites that are far from urban areas and lack proper road access. According to **Interviewee 1**:

> *"Most RTP projects' construction sites are located in rural areas, and the delivery of building materials to the construction site is usually time-consuming. Furthermore, if the area is difficult to reach and can only be reached through a logging road or river, in this situation, the delivery of goods will be delayed, and it will also cause the construction of the project to be unable to follow the initial plan".*

Interviewee 5 mentioned:

> *"For certain locations of the RTP project I have implemented, delays in delivering building materials are common due to road conditions. If the project sites are located in remote areas that are inaccessible by proper tar-sealed roads, I have to transport the building materials either using a Hilux or through the river, relying on a long boat. It is challenging for me".*

Ten out of twelve respondents stated that delays in the delivery of construction materials contributed to their inability to implement RTP projects according to schedule. The lack of proper road access is the main cause of delays in delivering construction materials to the construction areas or project sites. However, Abdul-Rahman et al. (2006) stated that the great responsibility of contractors is to acquire goods and find ways to ensure that they arrive at their location according to schedule because delayed delivery of materials at the construction site in compared to the project schedule will be led to project delays (Nawi, 2016 and Varghese ,2015). Hence, RTP contractors should not rely on this excuse, as from the beginning, they are aware that the primary objective of RTP is to facilitate infrastructure and development in rural areas of Sarawak.

b) No Proper Road Access

As mentioned above, the RTP project locations are mainly located in rural areas due to the nature of the project, which aims to reduce the development gap between urban and rural areas. Therefore, access roads to the project sites are a common problem and are expected.

Interviewee 1 stated that:

> *"Sometimes, the site projects were located at remote areas. Without a proper access road, it can only be reached by red dirt roads or rivers".*

His statement also supported by **Interviewee 2**, "*some of the project sites are difficult to reach. Accessibility is difficult because there is no tar-sealed road".*

Other respondents also shared opinions, highlighting how the absence of a tar-sealed road or proper access has limited their mobility, particularly in delivering building materials

to the construction site. According to Tran et al. (2014), limitation of access is one of the contributing causes to the delay of rural projects. The projects are typically located far within, the trip takes a long time, and a suitable vehicle is required. While Ahmed et al. (2002), the situation was happened due to project owner failed to provide access to the project site and they suggested that the project owner is responsible for providing access to the construction site and failure to do so will cause the construction work to be disrupted. The contractor may demand additional payments due to delays in site access. However, in the RTP projects, the contractors were aware of this situation during the balloting draw at the district office. The district office provided them with detailed information about the project, including its location, scope, and cost, prior to the draw. It is their responsibility to complete the project as stipulated in the contract once they agree to join the draw and are offered the project.

c) Difficulty to Enter the Site

As a result of the two aforementioned causes; the road access and the remote location of the RTP projects, contractors encounter another challenge related to difficulty entering the construction site. This issue arises when vehicles carrying construction materials are unable to access the project site directly. Consequently, contractors must expend additional time and energy to transport the building materials manually to the construction site. As quoted by **Interviewee 12**:

> *"Another issue pertains to transportation, specifically accessing the project site. In Serian, occasionally, villagers reside on hills inaccessible by vehicles such as lorries or cars. Consequently, I must manually transport construction materials, which is time and energy consuming".*

Another respondent, **Interviewee 11** said:

> *"Delays often happen when delivering construction materials to difficult to reach project sites, especially those without road access, where boats are used instead. It's a long and tiring process, involving multiple transfers: first from the hardware shop to the lorry, then from the lorry to the boat, and finally from the boat to the project site. Consequently, delays in the arrival of construction materials at the project site are inevitable".*

According to Sambasivan and Soon (2007), unforeseen site conditions are one of the causes that contribute to project delays. Therefore, Abd El-Razek et al. (2008), in their study to identify the main causes of delay in construction projects in Egypt, suggested that contractors should emphasise proper site management. In the context of the RTP project, the construction site's condition can be identified by contractors prior to the project balloting draw process. Therefore, it's crucial for them to analyse the site's situation before participating in the process. This enables them to plan how to run the project implementation effectively and to mitigate the delays.

d) Utilities to be Reallocated

The presence of other utilities on the project site must be relocated to a new location, and the relocation must be done by the relevant agency because it involves safety issues and legal obligations. In the context of the RTP, especially if the project involves the upgrading of village roads, the presence of electricity poles, telecommunications poles, and pipelines on the construction site often occurs. In this situation, the contractor should inform the relevant agency to take action to reallocate the relevant utilities to a new place according to the RTP work scope.

Interviewee 8 noted that the presence of other utilities at the project site could disrupt the construction process and lead to delays if prompt action isn't taken.

> *"Causes to consider include weather conditions, distance from building material suppliers, road access, and collaboration with other agencies. If an electric pole is present on village roads, the relevant agency must relocate it. If the agency doesn't act promptly, it causes delays and impacts the project schedule, as we have to wait for their action". (Interviewee 8)*

According to Wijekoon and Attanayake (2010), the second most significant cause of delays in completing road construction in Sri Lanka was the need to relocate or change utilities. The study has recommended employing a development collaboration methodology to enhance cooperation with road and utility authorities. Collaboration among stakeholders is critical to the RTP project's implementation. To tackle this issue, contractors should be more proactive and frequently communicate with the relevant stakeholders or agencies if any problems arise on the ground.

e) Weather Conditions

This study found that the weather conditions affect the smoothness of the RTP project's construction activities, especially heavy rain, which will make the construction work impossible. RTP projects are uniquely located in rural areas; continuous rain can cause the RTP project site to lose contact with other areas, particularly those accessible via red dirt roads, logging roads, or rivers. Where the continuous rain will render the muddy road impassable for vehicles, especially for delivering building materials to the project construction site, then the dry season will cause the river to be shallow, and the delivery of

building materials using long boats will experience difficulties. Therefore, weather conditions affect the construction work on the RTP project. **Interviewee 4** mentioned that:

> *"……could only be reached by a logging road. Due to heavy rain, the roads were muddy and difficult to go through, especially for heavy vehicles. Therefore, the inability to deliver construction materials to the site resulted in the project delay.....Even rivers will be difficult to go through during the dry season".*

As mentioned by Bulut et. al., 2008, the productivity may be affected by climatic causes. Weather disruptions like raining season led to heavy rain that may cause project delay. Ramli et al. (2018), in their study on causes influencing construction delays at rural area in Malaysia indicated that heavy rain cause project delay due to continuous exposure to the environment. Amoatey et al. (2015), Razkenari et al. (2015), and Sambasivan et al. (2017) have highlighted the adverse impacts of weather causes on construction activities. Extreme weather events such as heavy rain, storms, or extreme heat can disrupt work schedules, impede site access, and affect the productivity of labourers and equipment.

These delays typically arise from circumstances beyond the control of the owner or contractor, such as unpredictable weather conditions or disasters (acts of Allah), including floods, earthquakes, fires, health crises, wars, and national emergencies. Contractors are usually granted additional time to complete the project, but no additional compensation, such as an increase in the budget, is provided (Mubarak et al., 2015).

4.5.1.4 Financial Related Causes

In the context of financial related causes as perceived by the RTP contractors, the selected respondents had come out with three sub-themes as follows:

a) Lack of Financial Facilities

Six of the twelve respondents said they used their own capital or credit terms to purchase building materials from hardware stores in order to finance the RTP project's construction. **Interviewee 2** mentioned that it was "difficult for a small-scale contractor like him to get a loan from a commercial bank." **Interviewees 3** and **6** echoed his statement, stating that their unfixed income makes loan applications challenging. While **Interviewees 9** and **11** mentioned that there are available loans from MARA, the application criteria are too strict. **Interviewee 3** mentioned that:

> *".....I use my own money to purchase construction materials like sand, stone, or cement. If I don't have enough, I'll borrow from local hardware stores. Getting a loan from the bank is difficult for us. It's not that we don't want it, but it's hard to obtain because our income isn't stable".*

While **Interviewee 6** said:

> *"Loans are something I've never pursued. Banks usually reject us because our company doesn't have steady projects. Unless we have assets to offer as collateral, it might be possible. For now, it's either self-funding or borrowing from hardware store".*

Interviewee 8 requested:

> *"If possible, the government help to provide financial facilities, such as soft loans with a lower interest rate than those from private institutions".*

Financial constraints can limit the ability to procure necessary materials, hire skilled labour, and adhere to project timelines, ultimately resulting in delays and disruptions. As discussed by Gomarn and Pongpeng (2018) and Van et al. (2016), inappropriate financial management and insufficient capital, pose significant hurdles for contractors.

b) Payment Made Upon Completion of the Project

Two out of twelve respondents mentioned that they had a problem with the method of payment as practiced currently, where they will receive the payment for the project once the project is completed. As stated by **Interviewee 7**, he worries that he won't have enough money to pay his workers' salaries. Therefore, **Interviewee 7** suggests implementing payment by stages of project completion, as contractors need funds to finance ongoing project activities. **Interviewee 8** stated that inadequate funding could cause the project to delay or fall behind schedule.

> *" Indeed, requiring contractors to provide additional capital can adversely affect projects. Small contractors, like us, receive payment only upon project completion. Insufficient capital can lead to interruptions in project construction, potentially resulting in delays or schedule extensions."* ***(Interviewee 8)***

In the construction sector, it is normal to make payments for the contract amount in instalments, with the exception of small contracts and sub-contracts (Murdoch and Hughes, 2000). According to Kenley (2003), one of the primary objectives of this is to minimise the

contractor's financial burden in funding the project's development. In the context of the RTP project, even though the total amount of the contract is small, it is critical for the paymaster agency to consider payment in stages or instalments to reduce the financial burden on the RTP contractors.

> *"If possible, small contractors like us could receive payments in stages based on the completed project phases."* ***(Interviewee 7)***

c) Issue on Working Capital Turnover Facing Contractors

Two of the twelve respondents stated that they have problems with working capital because they have insufficient funds to pay workers' monthly salaries and buy construction materials. **Interviewee 7** stated;

> *". As a newcomer to this project, capital is a significant concern for me. Buying goods and paying salaries require substantial capital. Sometimes, I worry about haven't enough funds to pay salaries. "*

While **Interviewee 8** said:

> *"For previous projects, I used my own capital. So far, I have never applied for a loan from the bank. The project is not that big, and the employee's salary can still be paid by myself, but for the construction materials, I use a credit term from the hardware store. Once you receive the project payment, you must immediately pay for the credit term. Otherwise, hardware stores will no longer accept credit terms".*

Working cash is essential for financing a company's day-to-day operations and it refers to the investment made in current assets or short-term assets, such as cash and deposits.

Companies typically utilize working capital for various purposes, including covering expenses for salaries, wages, and other operational costs such as purchasing raw materials or merchandise necessary for business operations. According to Sirajuddin et al, (2021), it is financial resources that a firm utilises to conduct its day-to-day business activities. The ability to rotate working capital within a company's cash cycle is known as working capital turnover (Amanda, 2019).

Therefore, it is crucial that the RTP contractor have sufficient working capital to be used by them to finance their RTP projects. By having a good working capital turnover, Pohan (2017) argues that the company will be able to tackle working capital issues and manage to pay financial commitments on time.

4.5.1.5 Labour Related Causes

In the context of labour related causes as perceived by the RTP contractors, the selected respondents had come out with three sub-themes as follows:

a) Shortage of Manpower

According to **Interviewee 7**, recruiting workers is a big challenge for him because employees prefer to work with large-scale contractors due to project continuity. He explained that, as a Class F contractor, the lack of project continuity often results in interruptions; he may be without a project for two or three months before the next one begins.

> *"This is a big challenge for me. It's hard to recruit employees. Not only the skilled, but the unskilled are also difficult because we, as small contractors, do not have fixed projects. After one project, wait for another one; it may take time. At least one or two*

months. Employees need to continue working because they are daily paid workers". ***(Interviewee 7)***

Interviewee 9 faced the same problem as him:

"It is difficult to find employees. Because our projects are not continuous, we rarely find experienced employees who are willing to work with us. I'll do it myself, with the help of family members".

While **Interviewee 1** informed that he did the construction work himself with the help of family members because, according to him:

"It is difficult to recruit employees due to their demand for a better salary and job stability."

Other respondents said that to overcome the problem of the labour shortage, they were resorting to temporary labour or recruiting individuals from the villages where the projects are situated.

"Usually, to solve this problem, I would use temporary workers and hire people from the village where the project is located". ***(Interviewee 8)***

"Utilizing local workers is more convenient. If the project is located in Village A, then employing workers from that village". ***(Interviewee 6)***

According to Dheenadhayalan & Alean (2015) shortage of labour causes work overloaded that effect construction productivity. The shortage of labour will create an imbalance in the labour supply and demand. As a result, the attitude of the workers will change, and there will be a tendency for excessive turnover and absenteeism. The lack of

project continuity poses a significant challenge for RTP contractors when it comes to recruiting workers, leading to the labour shortage on RTP projects within specific regions. Therefore, it is imperative for contractors involved in RTP projects to reduce their dependency on the RTP projects and proactively explore alternative projects, such as engaging in private constructions.

a) Lack of Skilled Manpower

According to Hanna et al. (2015), labor skills and efficiency play a pivotal role in project performance. The successful of construction project relies on the presence of a competent and skilled workforce. If project supervisors or contractors are unable to find skilled laborers meeting the required quality standards, the project may proceed with unskilled workers. Inexperienced and unskilled labour could hamper the project performance and leading to project delays. RTP projects face challenges in recruiting experienced and skilled workers, primarily because the RTP contractors often fail to provide enticing benefits such as competitive wages, job continuity, and other benefits commonly offered by large-scale contractors. This was acknowledged by **Interviewee 2**:

> *"This is a significant challenge. Recruiting suitable and skilled workers is difficult, and even if we find them, retaining them is also challenging. The lack of job continuity is a key factor. Typically, after completing a project, we experience a temporary shutdown while awaiting the commencement of another project, if any".*

While **Interviewee 4** shared a similar thought as him:

> *"Acquiring skilled workers is indeed challenging. One common obstacle is that skilled workers often prefer employment with larger or more secure companies. In*

my experience, I'm willing to provide training, but skilled workers typically demand higher salaries. If their demands aren't met, they tend to seek employment elsewhere".

According to **Interviewee 10**:

"It's often a matter of necessity. Regardless of their skill level, we sometimes have to hire due to a shortage of people willing to work with a small company like ours, Contractor Class F. Personally, I find myself having to pitch in because there simply aren't enough workers available. Retaining them poses a real challenge, especially when we struggle to pay them without ongoing projects".

Compared to town areas, skilled people are much more required in rural areas for project building in order to boost labour productivity. However, it is difficult to find qualified labour because of the project site's restricted access and "ruralness" (Tran, Hallowell, & Molenaar, 2014). Hendrickson (1998), defined worker productivity into three skill levels: skilled, intermediate, and unskilled. He suggested to sustain a skilled and quality workforce, contractors must provide a comprehensive work plan outlining roles, responsibilities, and interlinkages among the construction project's workforces. Therefore, contractors engaged in RTP projects must prioritize comprehensive planning, particularly regarding project continuity and offering additional benefits. This strategy is essential to compete effectively and attract skilled, experienced workers to join their teams.

b) Difficulty to Retain Manpower

McAnulty and Baroudi (2010) conducted a study aimed at identifying construction challenges in remote areas of Australia, and they emphasised that contractors are facing

difficulty attracting and retaining labour due to the projects located in rural, regional, and remote areas. The RTP projects in Sarawak facing the same scenario as mentioned by **Interviewee 3**:

> *"For quite some time now, turnover among my employees has been frequent. I can't stop them from looking for another job because they need a more secure one. This is because I myself often experience temporary shutdowns and the absence of projects. I've resorted to hiring my own relatives, which has made retention easier. After all, not many people want to work in rural areas".*

Interviewee 5 also mentioned the same thing:

> *"This is a big challenge for me. Every year, I find myself needing to onboard new employees. Skilled workers prioritise job security, which is difficult for me to provide as an F-class contractor. Since our work is often project-based, without a project, there's no guarantee of employment. Since I hire my workers on a daily wage basis, the absence of a project leaves them without work, leading them to seek employment elsewhere. As a workaround, I often hire people from the village where the* ***projects*** *are located".*

As a solution to this situation, Interviewee 10 relies on his own family members to assist him at the construction site:

> *"It is difficult to find and retain employees. I often rely more on my own family members for assistance. Occasionally, even the children lend a hand. While they may not possess advanced skills, they can still assist with tasks such as lifting cement or bricks."*

Although project-based employment is common for the RTP projects, providing assurances of future projects or offering longer-term contracts where possible can enhance job security for workers, thereby reducing turnover rates. This can be done by the RTP contractors through reducing dependency on RTP projects by actively seeking alternative projects. Diversifying the project portfolio can help them to mitigate the impact of temporary shutdowns or project absences and may lead to labour loyalty.

4.5.1.6 Material Related Causes

In the context of material related causes as perceived by the RTP contractors, the selected respondents had come out with six sub-themes as follows:

a) Increase in Price of Construction Material

According to the respondents, the rise in construction material prices will lead to an overall increase in project costs **(Interviewee 10),** which will be borne by the contractor **(Interviewee 3)**. Meanwhile, **Interviewees 4** and **6** believe that the increase will disrupts their initial planning, resulting in the project's original targets being missed **(Interviewee 8)**. Overall, the increase in the price of construction materials not only renders the initial capital insufficient **(Interviewee 3)** but also hampers the contractor's ability to complete the project within the initially planned timeframe **(Interviewee 10)**.

Interviewee 1 mentioned:

> *"..... Prices often rise rapidly, and the contract remains tied to the same value. Contractors may encounter difficulties when the cost of construction materials increases. Conversely, waiting for prices to decrease is impossible, as it may result in project delays and an inability to meet schedules".*

As mentioned by **Interviewee 3**, the cost of the RTP project is predetermined, and any changes in the price of construction materials during the construction stage will influence the overall cost.

> *"Typically, the cost of a project is predetermined. However, if the prices of materials increase during the construction phase, the contractor ends up bearing additional costs, resulting in reduced profit margins or even losses. At times, contractors extend project timelines to await sufficient budget allocations to cover increased expenses".*

The increase in construction material prices can lead to construction errors as contractors rush to complete the project quickly to avoid incurring higher costs, thereby resulting in project delays, as quoted by **Interviewee 7**:

> *"Yes, if prices decrease, it's rare. Prices tend to always rise. When prices increase, our costs increase as well, resulting in reduced profits. Some individuals rush through tasks to minimize labor costs, but often end up making mistakes or not adhering to the bill of quantities (BQ). I recall an incident where my friend had to redo a task, doubling the time spent on it, resulting in project delays".*

Gebrehiwet & Luo (2017) identified volatility in material costs is one of the causes contribute to project delays and according to Khaloufi (1956), fluctuation of the price of project material can lead to cost overrun. Van et al. (2016) mentioned price hikes may cause clients to decide to put off projects requiring a lot of materials in favour of waiting for costs to decline. However, in the context of RTP, postponing project construction is not feasible since it involves government projects aimed at providing essential infrastructure to rural residents. Consequently, any increase in the price of construction materials will be absorbed by the contractors involved.

b) High Price of Construction Material

According to **Interviewees 11** and **12**, the lack of supply of construction materials in certain areas has led to a price increase for these materials. **Interviewee 10** has identified purchases made on credit as a factor contributing to the high costs of construction materials. **Interviewee 7** mentioned that contractors in rural areas find it difficult to obtain affordable prices for construction materials due to the location factor:

> *"The most challenging aspect is obtaining affordable prices. Typically, the cost of materials required for projects is high, particularly in remote locations like Belaga. Compared to other areas, prices may be slightly higher due to Belaga's distance from urban centers or supply sources. However, given the circumstances, the closest store is often the only option. Ordering from Bintulu, the nearest town is not a viable alternative".*

As mentioned by **Interviewee 7**, this geographical constraint may result in higher prices for construction materials due to their distance from urban centers and supply sources. Another factor is that contractors relying on credit purchases to procure materials may incur additional costs in the form of interest or fees, thereby driving up the overall expenses.

c) Delay in Construction Material Supply

Assaf et al. (1995) investigated the reasons for delays in large construction projects in Saudi Arabia and pinpointed a cluster of causes concerning materials, including issues associated with material shortages and delivery delays. Rahman et al (2017), found the most influential cause of delay in material supply was poor materials procurement and inventory management system. According to Salleh. R. (2009), delay of construction materials stood out as one of the primary causes of project delays. In the RTP context, delays in the supply

of construction materials are attributed not only by logistical challenges but also to actions taken by suppliers, as mentioned by the respondents:

Interviewee 3:

> *"Delayed delivery of construction materials can indeed disrupt the project timeline. The delay in construction materials can occur for various reasons, not just because of the location's distance. Even if we buy on credit terms, the materials may arrive late at the project site because we are not the hardware store's priority. They prioritise customers who pay in cash, causing us to experience delays".*

Interviewee 7:

> *"I always try to negotiate with the store to expedite deliveries. However, sometimes delays occur due to road conditions and distance. I recall one instance when a lorry got stuck while delivering constructions material to my project site because of a muddy road, leaving me to figure out how to navigate the situation. It's undoubtedly a challenge".*

The RTP contractors should foster strong communication and collaboration with project stakeholders, including suppliers, to facilitate a more coordinated approach to managing material deliveries.

d) Shortage of Construction Material

According to Arditi et al. (2017), shortages of materials and equipment are one of the significant causes contributing to delays caused by contractors, and Durdyev et al. (2017) observed this due to contractors' inadequacy in resource management during construction.

According to **Interviewee 5**, the shortage of materials is primarily attributed to geographical barriers, such as distance, and the challenges associated with transporting materials to their specific area.

> *"Like in Lawas, I'm facing a shortage of construction materials. Because Lawas is far away or has to go through Brunei, sometimes items are more expensive because I have to buy from Kota Kinabalu if there's no stock in Lawas. During the past six months after COVID-19, I couldn't work due to the shortage of construction materials, especially cement".* ***(Interviewee 5)***

Interviewee 11 highlighted that when facing a shortage of construction materials in their area, they must source them from other locations, which leads to higher expenses due to transportation costs.

> *"In Betong, we sometimes encounter shortages of building materials like cement, sand, or iron. When we need to complete a project quickly, we have to order from elsewhere because we can't afford to wait, even though it ends up being a bit expensive, particularly due to transportation costs"* ***(Interviewee 11)***

His thought shared by **Interviewee 12**:

> *"In Serian, we face two main challenges related to construction materials. Firstly, the prices are often quite high. Secondly, there are occasional shortages in supply, forcing us to source materials from Kuching at times".*

e) Difficulty in Transporting Construction Material

Grgic & Cvetanovic (2023, November 6) in their discussion on Building Materials Movement: Challenges in Construction Transport mentioned five causes contributed to

transportation problem in construction industry such as supplier delays, safety regulations, communication gasp, traffic congestion and site access, and skilled transporters. This study identified two key causes contributing to the difficulty in transporting construction materials: the accessibility of the project site and the condition of roads or rivers. These causes can significantly impact the efficiency and cost-effectiveness of material transportation, potentially leading to delays and increased expenses for construction projects.

Interviewee 3 mentioned:

"Transportation can be a major issue, especially when the location is far from urban centers. Delivery is time-consuming, and costs are high, particularly when there are no tar-sealed roads. Typically, we resort to going along dirt roads or longboats".

Then, according to **Interviewee 4**:

"The commencement of the project tends to be delayed, which can subsequently result in project completion delays. This scenario is common, especially for projects located far from urban centres, as transportation becomes problematic in the absence of proper roads".

Rudberg (2016) emphasizes that logistics is an integral part of the supply chain, and it's essential for construction companies to effectively manage all its components. This includes paying close attention to logistics management to enhance productivity and prevent profit reductions. Therefore, contractors engaged in RTP projects must prioritize efficient logistics strategies to ensure timely delivery of construction materials and optimize resource utilization, ultimately contributing to improved project outcomes, profitability and avoid project delays.

f) High Transportation Cost

This study highlights high transportation costs as a significant factor among material-related issues contributing to construction project delays in the RTP projects. These costs are influenced by the accessibility of the project site and the condition of roads or rivers, as indicated by:

> "*Transportation can be a major issue, especially when the location is far from urban centers. Delivery is time-consuming, and costs are high, particularly when there are no tar-sealed roads. Typically, we resort to going along dirt roads or longboats".* ***(Interviewee 3)***

> *"Transporting materials to the project site is challenging and costly, especially when the project site is located far from urban centers".* ***(Interviewee 2)***

According to Ghanem et al. (2018), construction logistics consists of two main functions: first, the management of logistics activities directly on construction sites, and second, the transportation of resources and materials to and from the sites. Scholman (1997), in research suggesting that between 60–80% of the total work in construction involves the procurement and management of materials and services. Accessibility conditions to project sites significantly impact transportation costs for RTP projects, often placing constraints beyond the contractors' control.

4.5.1.7 Recipient Related Causes

a) Requests for Changes in Job Scope

Wu, Hsieh, and Cheng (2005) categorized the causes of change of job scope into two main groups: external causes, which encompass political or economic influences, natural environmental causes, and third-party causes; and internal causes, which include intervention from project owners or consultants. In this study, nine out of twelve respondents stated that their received request from the project recipient to change the job scope. This highlights a common occurrence in the RTP construction projects where recipients may request alterations or additions to the originally agreed-upon scope of work. Such requests can impact project timelines, budgets, and resource allocation, necessitating careful management and communication to ensure successful project outcomes as highlighted by:

Interviewee 1

"……. there are requests to alter the scope of work from the client or local residents. The scope does not align with the recipient's preferences, leading them to request that the contract be executed according to their instructions rather than the scope outlined in the plans. When this happens, it disrupts ongoing work and prevents the project from progressing. We are required to refer and seek approval from implementing agencies such as JKR or DID".

Interviewee 3

"..... but requests from villagers to change the scope of work do occur. In such cases, if it were me, I wouldn't proceed with the project. I would first refer the matter to the relevant agency. Because if I were to proceed, I would be in the wrong. In

situations such as these, the project could face not only delays but also the possibility of cancellation".

Interviewee 4

"……..but requests for additional work do arise. Sometimes, villagers request changes to the scope of work midway through the project, which can be quite challenging. In such cases, I typically refer to the relevant agency, whether it's JKR or the District Office".

Interviewee 5

"*…… However, requests for changes from the villagers are common. Nevertheless, I cannot make changes at my discretion; I must refer back to the agency. Usually, new approval is required if changes are to be made"*

Interviewees 7, 10, 11, and **12** also expressed similar opinions, indicating that these requests can disrupt construction work and lead to project delays until the issues are resolved or until new approvals are obtained. As mentioned by previous studies, modification requests or alterations to project scope during the construction phase can introduce disruptions and challenges (Ye & Rahman, 2010; Hisham & Yahaya, 2016; Al-Adwani et al., 2018; Azhar, 2019; and and Idrus, 2019). Hwang and Low (2012) suggest that conflicts over project changes can be minimized by identifying and addressing problems at the earlier phases of the project.

b) The Incapacity of JKKK to function as a Project Contractor

Casmi et al. (2019), in a study regarding the ranking of similarity for project delay causes in the construction industry, had discovered that incompetent subcontractors were identified as one of the top three causes contributing to project delays. Memon et al. (2014) explored causes leading to construction time overruns in Malaysia, revealing incompetent subcontractor as one of the major causes of time overruns. Salleh (2009) found that the awarding of projects to inexperienced and incompetent contractors contributed to project construction delays. The respondents in this study indicated that incompetent contractors have contributed to construction delays in RTP projects.

> *"Ali Baba projects. Some contractors participated in the balloting draw for the RTP project, were successful in winning the project, but subcontracted the project to someone else in exchange for a commission. If this occurs, the contractor performing the work may encounter profit margin issues because they have to pay a commission. This could lead to mistakes due to rushing to meet deadlines. If mistakes are made, the work may need to be redone, risking project approval. As a result, the project may take longer or be delayed.* ***(Interviewee 6)***

> *Sometimes, JKKK requests to handle RTP projects themselves. While this is allowed, issues often arise because they are not the ones performing the work. They typically subcontract someone else to do it for them. If the people they hire are competent, then there may not be a problem. However, sometimes they hire unregistered contractors who are not accustomed to handling projects. As a result, projects may be incomplete, causing losses for the JKKK.* ***(Interviewee 9)***

c) Request for Land Compensation

Land compensation or acquisition is typically compulsory when a construction project requires the use of land owned by individuals or entities other than the project developer or owner. Land acquisition for alienated land in Sarawak is covered under Part IV of the Sarawak Land Code as stipulated in Section 46, 47 and 48 while, unalienated land is covered under Part II of the Sarawak Land Code as stipulated in Section 5(3) & (4). However, the RTP project is practicing "no land/siting issue." To ensure smooth project implementation, each stakeholder is required to manage and resolve land-related issues at their respective levels, ensuring that proposed sites do not involve compensation or land acquisition. Even though the project is practicing a "no land/siting issue," contractors experienced the land issue during the construction stage, as highlighted by:

Interviewee 3

"*……sometimes villagers request compensation. If payment is not provided, they refuse to allow the project to proceed, necessitating negotiations, which can be time-consuming. Ideally, villagers should have prepared the site before requesting the project, but in some cases, they also request compensation."*

Interviewee 5

"Project site's issue. Sometimes, villagers encounter difficulties in providing project sites. While everything seems fine during the application process, the situation changes after approval. They request payment for the project site. Contractors like myself typically do not have a budget to pay for site compensation, especially since RTP projects do not allocate funds for compensation. The RTP budget is used solely for construction purposes."

d) Site Dispute

According to FAO (2002), a land conflict arises when numerous parties compete for the same interests in a specific piece of land, such as when two parties independently claim rights to the exclusive use of the agriculture lot. Kalande (2008) defined land disputes as conflicting claims regarding land ownership, rights to use land, the relevant legal framework, or a combination of these causes.

In the context of the RTP project, a site dispute arises when two or more landowners claim their exclusive rights over the RTP project site. Usually, the issue will arise if the project site affected is unregistered state land that may be subject to Native Customary Rights (NCR) claims. According to Interviewee 10, availability of the site is another issue facing by the RTP contractors where, the site is unavailable due to disputes among the claimant of the land. According to **Interviewee 10,** when permission-granting individuals differ from those claiming ownership, it creates a complex situation fraught with potential obstacles. Not only does it hinder smooth project progression, but it also leads to delays as valuable time is consumed in negotiations and discussions to solve the ownership issues.

> "*I've encountered situations where project sites faced issues due to overlapping land ownership. The individuals granting permission for the site were different from those claiming ownership. As a result, the project couldn't proceed smoothly, and even if it did, it would be delayed due to extensive time wasted on discussions".* ***(*Interviewee 10)**

Due to this situation, he said the project couldn't proceed smoothly and led to the project delays.

4.5.1.8 Findings' Summary for Research Question 1: Causes Perceived by Contractors as Contributing to Delays in RTP Projects

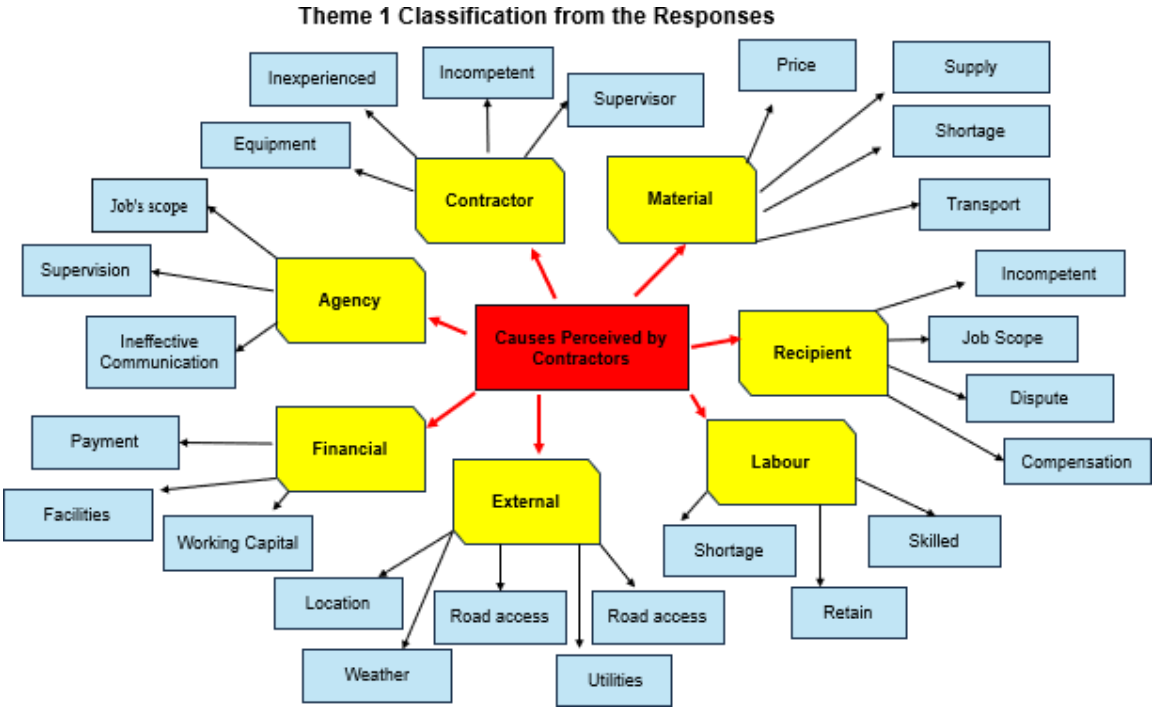


Figure 4.4: Finding of Theme 1

Figure 4.4 above is a summary of Research Question 1, which addresses the causes perceived by contractors as contributing to public construction delays. There are seven categories of causes as indicated in yellow boxes and twenty-six sub-causes as indicated in blue boxes, which, according to the respondents, are the causes of delays in public construction projects in rural areas.

4.5.2 Research Questions 2: Discussion on the Risks and Consequences Faced by Contractors Engaged in the Rural Transformation Project (RTP)

4.5.2.1 Bad Reputation

Ten out of twelve interviewees offer a holistic perspective on the ripple impacts of project delays, affecting not only contractors but also implementing agencies and the government. According to them, public perception of all involved parties can be tarnished by project failures. As mentioned by:

Interviewee 6

"In my opinion, many parties will be affected, not just the contractors but also the implementing agencies, including the Government. If many projects are not completed on time, people will perceive the contractors as incapable, the agencies as inadequately supervised, and the Government as ineffective and not helping the people. The image of everyone involved will be affected".

Interviewee 8

RTP is meant to accelerate infrastructure construction for the government. If there are problems, it will affect public perception towards the government and implementing agencies, including other involved agencies. Negative reactions from the public will arise.

The other interviewees were agreed with them; Interviewee 3 emphasized how delays tarnish their reputation, echoing Interviewee 2's concern about the company facing a bad reputation. Moreover, Interviewee 4 argued that not only the company's reputation is at stake

but also that of the local YB, potentially leading to perceptions of government ineffectiveness. It emphasizes the interconnectedness of reputational risks and the urgent need for proactive measures to uphold credibility and trust within the community and industry. According to Murray (2003), a company's reputation may pose a threat to the company. Therefore, from a perspective of the RTP, implementing agencies will not permit a company with a poor reputation to participate in the balloting draw for RTP project allocations.

4.5.2.2 Blacklisted

Interviewees 2, 3, and 7 all highlight the concern over the potential blacklisting of their companies by regulatory bodies such as the District Office and CIDB due to project delays. They emphasize how such blacklisting not only tarnishes the company's reputation but also has significant impact to their business. Their remarks underscore the critical importance of timely project completion and the maintenance of a good reputation to avoid adverse outcomes such as blacklisting, which can severely impact future business opportunities and relationships within the stakeholders.

> *"……The worst-case scenario is being blacklisted by the District Office and also CIDB".* ***(Interviewee 2)***

> *"If a project is delayed or incomplete, the contractor will be blacklisted by the District Office. They won't be able to participate in the balloting process. It tarnishes their reputation, like mine. If your reputation isn't good, how can your secure projects? Selangau is small; everyone knows each other".* ***(Interviewee 3)***

“..... if there are problems with the project, if it's not completed, the company will indeed be blacklisted. Being blacklisted alone isn't the only consequence. Sometimes, it tarnishes our reputation too. In Belaga, which isn't a big place, everyone knows each other. Also, we're acquainted with the local YB. So, if the local YB sees us as not serious in carrying out their projects, as not helping the people, it's detrimental". ***(Interviewee 3)***

If the companies were blacklisted by the relevant agencies, they are not allowed to participate in any project’s bidding or balloting draw. Therefore, the RTP contractors will not be allowed to participate in the balloting draw until their blacklists are lifted up.

4.5.2.3 Time Overrun

Interviewees 9 and **10** provide insights into their experiences with project durations within the RTP framework. **Interviewee 9** recalls encountering delays at the onset of the Covid-19 pandemic in 2020, which hindered work progress. However, extensions were granted, and he received an Extension of Time (EoT) to accommodate these delays. Usually, EoT can be given for the excusable delays such as delays causes by uncontrolled causes like pandemic Covid-19 as mentioned by **Interviewee 9**.

“Initially, there were some. Because when I first started RTP projects, it coincided with the onset of Covid-19 in 2020. So, at that time, projects were delayed because work couldn't proceed, but there was extension made. I was granted EoT” ***(Interviewee 9)***

In contrast, Interviewee 10 expresses satisfaction with the project durations, noting that they have been generally sufficient based on their experience. However, in cases of

unforeseen problems, he highlights the importance of communicating with the implementing agency and providing strong reasons when requesting an EoT to address time overruns within the RTP projects.

> *"I haven't had any issues with project durations. Based on experience, they're usually sufficient. If there are unforeseen problems, I will inform the implementing agency and request an EoT. However, there must be a strong reason for it"* ***(Interviewee 10)***

Distinguishing between excusable and non-excusable delays is vital in understanding why construction projects exceed their schedules. Excusable delays, as defined by Amoatey et al. (2015), are unavoidable causes beyond the contractor's control, like extreme weather or regulatory changes. In contrast, non-excusable delays stem from issues within the contractor's control, such as poor planning or resource shortages. When a project falls behind schedule, determining whether delays are excusable or non-excusable helps assign responsibility and plan for future disruptions effectively.

4.5.2.4 Cost Overrun

Interviewees 4 and **10** both highlight the negative consequences of project delays, particularly regarding cost overruns. **Interviewee 4** emphasizes that delays can lead to increase project costs, ultimately reducing profits. Similarly, **Interviewee 10** expresses concern over the prolonged duration of projects, which often result in cost overruns for contractors due to high construction expenses. They both stress that these cost overruns not only affect the contractors but also impact companies, agencies, and the government as a whole. Additionally, they note that the public holds them accountable for project failures, underscoring the broader implications of cost overruns on stakeholders' reputations and public trust.

"The company will be blacklisted by the District Office. Additionally, the reputation of the local YB who awarded us the project will be affected. People will accuse the YB of not monitoring the project or not doing their job. The costs of building the project also increase. If this happens, profits will decrease". ***(Interviewee 4)***

"A long time is needed to complete the project, usually exceeding the schedule. This is detrimental to me as a contractor because I have to bear the high construction costs. Companies, agencies, and the government all share the consequences because the public will blame us if the project fails". ***(Interviewee 10)***

Orangi et al., (2011) point out that time and cost overruns often occur when there are delays in project completion. Amhel et al. (2010) mentioned numerous construction projects face significant delays and overruns in terms of both time and budget and Wiguna and Scott (2005) identified key causes contributing to cost overruns, including weather, client-related design modifications, high inflation/increased material prices, poor design, delayed contract payment, and subpar construction work.

There are many causes that contribute to the occurrence of cost overruns in the construction of RTP projects, such as the difficulty of accessing the construction site due to a lack of proper road or river access. However, addressing the issue of cost overruns is essential to ensuring the financial viability and construction success of RTP projects while maintaining the credibility and trust of RTP contractors.

4.5.2.5 Contract's Termination

In the context of RTP, termination of contract by the implementing agency occurs when a project experiences critical delays, even after receiving an Extension of Time (EoT). This termination could be triggered by various causes, such as non-compliance with project

timelines, repeated delays, or failure to meet contractual obligations. As mentioned by **Interviewee 5**:

> "*There are many impacts. From the contractor's perspective, I could be blacklisted. I won't be able to participate in project bidding for that year. It's not easy to re-enter the balloting process because my name is already blacklisted due to poor performance rating. Worse yet, the contract could be terminated".*

Upon termination, the implementing agency will only compensate the contractor for the completed scope of work in the project. Usually, the contractor will be backlisted or suspended from participating in balloting draw for project allocation.

> **Interviewee 9:**
>
> " .....*my license could be suspended, or I could be blacklisted by CIDB or the District Office. From another perspective, the names involved in the project will be tarnished. This includes the local YB and the government".*

Consequently, the contractor will face challenges in participating in any future government project bidding.

4.5.2.6 Findings' Summary for Research Question 2: Risks and Consequences Faced by Contractors Engaged in the Rural Transformation Project (RTP)

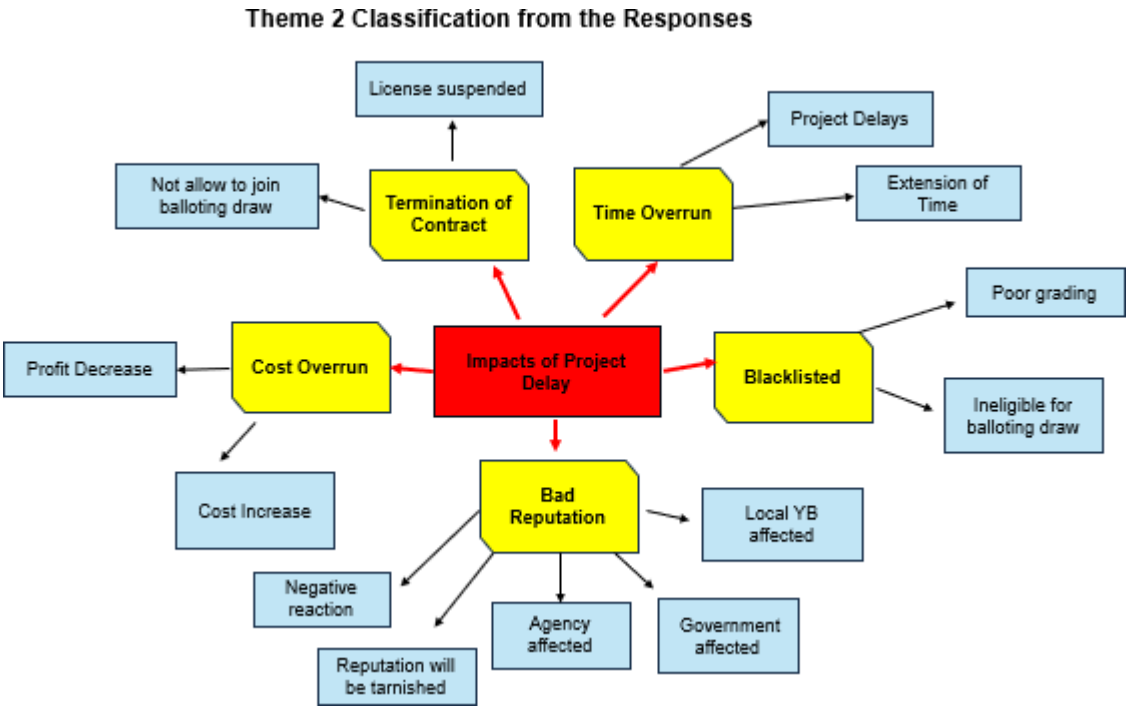


Figure 4.5: Finding of Theme 2

Figure 4.5 above is a summary of Research Question 2, which addresses the impacts of public construction delays as perceived by contractors. There are five main impacts, as indicated in yellow boxes, and thirteen sub-impacts, as indicated in blue boxes, which, according to the respondents, are the impacts of delays in public construction projects in rural areas.

4.5.3 Research Question 3: Discussion on the Importance of Effective Project Management and Monitoring Practices in Mitigating the Risks and Consequences of Project Delays

4.5.3.1 Managing Sources Effectively

Interviewee 1 emphasizes assessing project costs and profit potential beforehand to make decisions and avoid losses. Similarly, **Interviewee 6** highlights the significance of early planning to ensure that project selection matches the company's capabilities and available capital, reducing the risk of financial issues during execution. These insights highlight the importance of cost and profit assessment for management in ensuring successful RTP project execution.

> *"By preparing an early plan to select projects that align with the company's capabilities, I am confident that I can execute the projects effectively. This helps me avoid getting projects that exceed the company's capabilities and reduces the risk of failure".* ***(Interviewee 6)***

Interviewees 6, 9, and **10** highlighted the critical role of project alignment and financial management, as **Interviewee 6** emphasizes early planning to align project selection with the company's capabilities and finances, helping him reduce the risk of financial problems during the project execution. **Interviewee 9** stresses the importance of assessing project causes like location and cost early on to identify risks and plan transportation efficiently. Then, **Interviewee 10** mentions early planning's benefits in cutting costs and avoiding scheduling conflicts; he also mentions how effective workforce management enhances resource usage and boosts company performance.

"Early planning enables me to avoid excessive costs and scheduling conflicts. Consequently, the risk of financial issues and project delays can be minimized, which is essential for upholding the company's reputation. Accurate cost estimation enhances project financial management. Effective workforce management ensures an adequate number of skilled workers for construction tasks, thereby impacting the company's performance positively." ***(Interviewee 10)***

Interviewees 8 and **12** underscore the critical role of cost estimation and specification compliance for successful project execution. **Interviewee 8** emphasizes the importance of planning projects based on specifications to avoid delays and ensure compliance with standards. Additionally, accurate cost estimation and effective cost control measures contribute to efficient resource management, optimizing project outcomes while minimizing waste. **Interviewee 12** stresses the significance of planning ahead to manage construction resources effectively, particularly in estimating material costs and ensuring availability. **Interviewee 5** emphasizes the importance of continuous monitoring to identify and resolve issues promptly. He said project monitoring is crucial because it allows him to identify and resolve issues quickly before they become more serious or affect the entire project. **Interviewee 5** mentioned that:

"..... monitoring is crucial because it allows me to identify and resolve issues quickly before they become more serious or affect the entire project. Through monitoring the use of resources such as labor and construction materials, I can better control project costs. Continuous monitoring helps me ensure that the project is implemented according to the specified specifications or BQ. This is important to maintain the reputation of the company, and it ensures satisfaction from authorities like the JKR, DID, or local councils."

These proactive approaches mitigate the risk of delays and demonstrate efficient project management practices. They highlight the importance of thorough project assessment, project planning, cost management, and project monitoring to achieve successful project outcomes while minimizing risks and maximizing resource utilization.

4.5.3.2 Minimizing Risk

Interviewees 1 and **3** emphasize the importance of thorough project evaluation and planning to minimize risk. According to them, by considering causes such as project location, access, and budget constraints early on, they can identify potential risks and challenges before committing to a project. This strategy allows them to make informed decisions and mitigate risks associated with undertaking projects that may exceed their capabilities or pose logistical challenges. Their opinion also agrees by **Interviewee 7** as he mentioned:

> *"As I mentioned earlier, preliminary study on the available projects before the balloting draw will help me to assess which projects are most suitable for my company's capabilities. I can identify the risks and opportunities associated with each project that will be involved in the balloting draw. I can anticipate whether there will be profits or problems if I proceed with a particular project".*

Interviewees 2, 4, and **10** highlight the role of effective cost management in minimizing financial risk and maximizing profitability. They said, by accurately estimating project costs, identifying profit potential, and making informed decisions based on cost-benefit analysis, they can avoid participating in projects that may lead to losses. An effective cost management approach helps them mitigate the financial risks associated with overspending or underestimating expenses during the RTP project execution.

“By preparing an initial plan to calculate project costs, I can assess whether the project has profit potential or not. If the project costs are too high and do not provide sufficient profit, it's best to withdraw from participating in the balloting draw. This allows me to avoid losses and manage the company's resources more effectively. With good planning, I can identify better opportunities with profit potential. I won't rush into making decisions.” (Interviewee 4)

Then another respondent, **Interviewee 11** mentions the importance of aligning project selection with the company's capabilities to minimize operational and execution risks. He said, selection of project that match their financial resources, workforce skills, and management expertise, can reduce the likelihood of him encountering difficulties or delays during project execution. This strategic approach minimizes the risk of taking on projects beyond the company's capacity, thus safeguarding against potential failures or setbacks.

“.....selecting projects that align with the company's capabilities is crucial in ensuring that each project I undertake can be completed according to schedule. Choosing the right projects that my company is truly capable of handling, whether in terms of finances, workers' skills, or my own ability to manage the project, is essential. Therefore, by selecting the right projects, I can reduce the risk of losses due to incomplete projects.” ***(Interviewee 11)***

That study's findings found that by focusing on project evaluation, cost management, and strategic decision-making, construction firms can indeed minimize project delays and mitigate the risks of financial losses, time overruns, and wasted resources.

4.5.3.3 Maximizing Profit Opportunities

Interviewees 4 and **12** highlight the importance of proactive planning in managing resources effectively and maximizing profit opportunities in construction projects. **Interviewee 4** emphasizes the significance of conducting an initial cost assessment to determine the project's profit potential. According to him, by carefully evaluating project costs early on, he can decide whether to participate in the project or withdraw if the costs outweigh the potential profits.

> *"By preparing an initial plan to calculate project costs, I can assess whether the project has profit potential or not. If the project costs are too high and do not provide sufficient profit, it's best to withdraw from participating in the balloting draw. This allows me to avoid losses and manage the company's resources more effectively. With good planning, I can identify better opportunities with profit potential….."*. ***(Interviewee 4)***

On the other hand, **Interviewee 12** focuses on resource management as a key aspect of project planning. He said, by estimating the required quantity of construction materials in advance, he can procure them appropriately, preventing delays or shortages during the RTP project execution.

> *"In my opinion, by planning ahead, I can manage resources such as construction materials and labor more effectively. Estimating the cost of materials allows me to purchase them in the right quantity and suitable for the project. This helps me avoid delays or shortages of materials during the project. Overall, this will help me ensure that construction costs are not excessively high and that the project can be profitable".* ***(Interviewee 12)***

These proactive approaches not only ensure smooth project progress but also helps them to control construction costs, ultimately enhancing profitability.

4.5.3.4 Maintain Good Reputation

Interviewee 5 underscores the importance of monitoring in maintaining a good reputation for the construction company. According to him, continuously monitoring the RTP project progress and resource usage, he can promptly address any issues that arise, preventing them from escalating and potentially impacting the entire project negatively.

> *"..... Through monitoring the use of resources such as labor and construction materials, I can better control project costs. Continuous monitoring helps me ensure that the project is implemented according to the specified specifications or BQ. This is important to maintain the reputation of the company, and it ensures satisfaction from authorities like the JKR, DID, or local councils"* ***(Interviewee 5)***

While **Interviewee 10** mentions how early planning, accurate cost estimation, and effective workforce management directly contribute to a good reputation for the RTP construction company.

> *"Early planning enables me to avoid excessive costs and scheduling conflicts. Consequently, the risk of financial issues and project delays can be minimized, which is essential for upholding the company's reputation. Accurate cost estimation enhances project financial management. Effective workforce management ensures an adequate number of skilled workers for construction tasks, thereby impacting the company's performance positively."* ***(Interviewee 10)***

By consistently delivering projects on time, within budget, and to the highest quality standards, the company establishes itself as a reliable and reputable player in the industry, attracting repeat business and positive referrals.

4.5.3.5 Maintain Good Performance

An early planning is one of the critical causes in maintaining good performance for the construction company where, by initiating planning processes well in advance, the contractor can anticipate and mitigate potential risks such as excessive costs and scheduling conflicts, as mentioned by **Interviewee 10**:

> *"Early planning enables me to avoid excessive costs and scheduling conflicts. Consequently, the risk of financial issues and project delays can be minimized, which is essential for upholding the company's reputation. Accurate cost estimation enhances project financial management. Effective workforce management ensures an adequate number of skilled workers for construction tasks, thereby impacting the company's performance positively."*

Accurate cost estimation is another key aspect emphasized by **Interviewee 10**. He mentions that precisely estimating project costs, the company can effectively manage its finances and allocate resources optimally, reducing the risk of budget overruns and ensuring financial stability throughout the project lifecycle. According to him, an effective workforce management also plays a critical role in maintaining good performance of the company where, by ensuring that an adequate number of skilled workers are available for construction tasks, the company can optimize productivity and quality of workmanship, leading to timely project completion and client satisfaction.

This study found that early planning, accurate cost estimation, and effective workforce management are interconnected causes that contribute to maintaining good performance for the RTP's construction company.

4.5.3.6 Findings' Summary for Research Question 3: The Importance of Effective Project Management and Monitoring Practices in Mitigating the Risks and Consequences of Project Delays

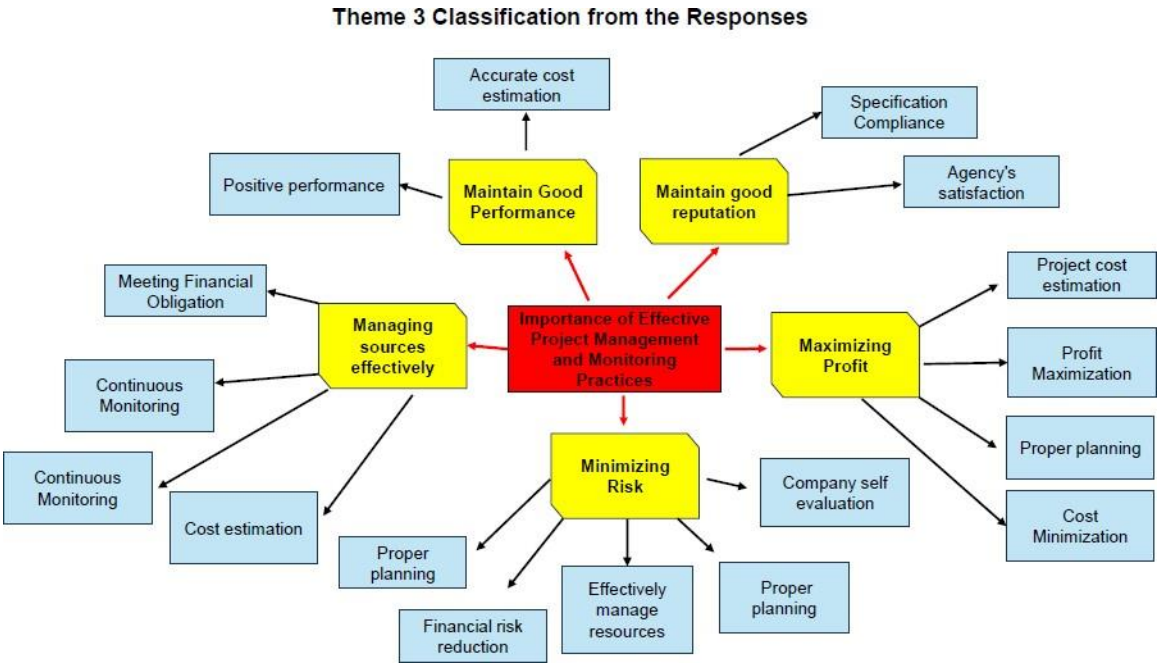


Figure 4.6: Finding of Theme 3

Figure 4.6 above is a summary of Research Question 3, which addresses the importance of effective project management, and monitoring practices as perceived by contractors. According to them, there are five main reasons why effective project management and monitoring practices are important in public construction projects in rural areas, as indicated in the yellow boxes, and seventeen sub-reasons, as indicated in the blue boxes.

4.6 Proposed Framework for the Rural Transformation Project

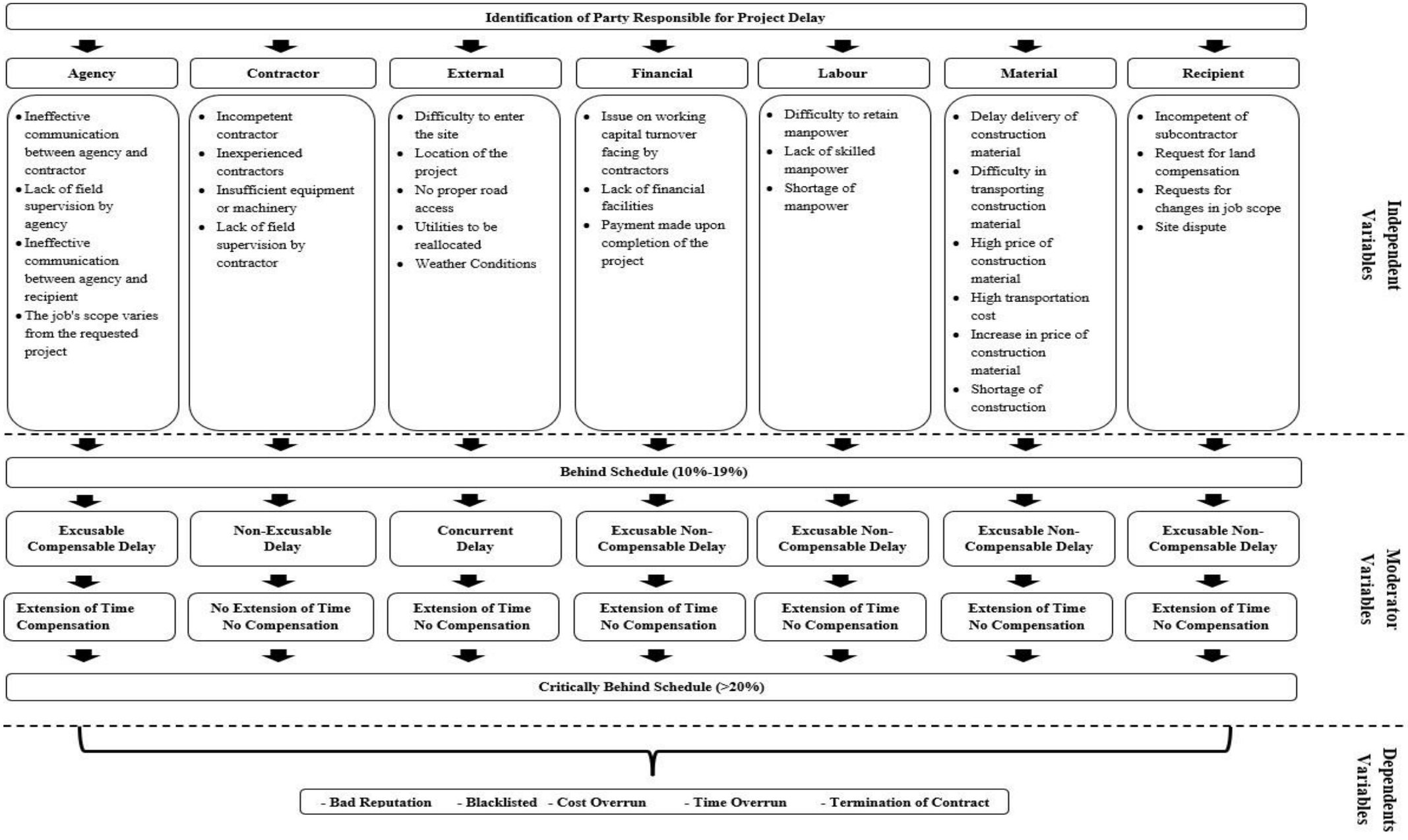


Figure 4.7: Proposed Framework for the Rural Transformation Project

Based on the findings, this study proposes related causes as independent variables that contribute to delays in public construction projects. These related causes include agency, contractor, external, financial, labour, material, and recipient. On the other hand, the dependent variables, which represent the consequences of these delays, include bad reputation, blacklisting, cost overruns, time overruns, and contract termination—burdens that the contractor must bear. The study also introduces two moderator variables: "behind schedule" and "critically behind schedule." These moderators influence the relationship between the independent variables (X) and the dependent variables (Y). Specifically, the percentage of construction delays affects the strength or weakness of the relationship. The greater the percentage of delays, the more significant the impact on the contractor, exacerbating the consequences such as cost overrun, time overrun, bad reputation, termination of contract and blacklisted.

Therefore, project construction delays can cause contractors to spend more money (cost overrun) and take longer time to finish the work (time overrun). It can damage the company's reputation where, clients or stakeholders may perceive the company as unreliable or inefficient, which can lead to a loss of trust. This bad reputation can harm future business opportunities, making it harder for the company to win new contracts and maintain relationships with stakeholders. Worst scenario, the project may stop before completion and the company contract is terminated. If this happened, the company will be blacklisted, means they are officially barred from participating in future projects and excluded from bidding on or working on government contracts. **Figure 4.7** illustrates the relationship between these three variables.

4.7 Conclusion

This chapter delves into the study's findings regarding the causes and impacts of project construction delays from the perspective of the RTP in Sarawak. The researcher, as promised, presents the names of the 12 respondents who participated in the face-to-face or phone-based interview sessions using pseudonyms to safeguard their personal information. This measure guarantees the protection of the respondents' data and its exclusive use for research purposes. The chapter presents a thematic analysis, content analysis, and cluster analysis that represent the feedback provided by the respondents. It explores the various causes contributing to project construction delays as perceived by the selected respondents among the RTPs' contractors in Sarawak, examines the impacts of project delays on them, and also provides their insights on the importance of effective project management and risk management. The following chapter will discuss the implications and recommendations related to this study's findings.

CHAPTER 5

IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

In this concluding chapter, a final overview of the study is provided, encompassing its background and problem statement. The research objectives are revisited to evaluate their accomplishment. Furthermore, the implications of the findings are thoroughly examined in relation to both theoretical and business significance. Emphasis is placed on acknowledging the limitations encountered during the research process, and suggestions for future studies that could address these gaps are proposed.

Numerous studies across various countries and continents investigated the causes contributing to project construction delays. In Malaysia, researchers found that many causes contributed to project construction delays and categorizes them into eight main categories: clients, contractors, consultants, materials, labor and equipment, financial aspects, contract-related causes, and external causes as mentioned by Sambasivan and Soon (2007) in their study to identify causes and impacts of delays in Malaysian construction industry. While Ramli et al., (2018), found that top five main causes contributing to project construction delays in the rural area are improper construction method implemented by contractor, weather condition, difficulties in providing delivery to site, breakdown of site equipment, and poor qualification of contractor technical staff. The outcome was derived from the feedback provided by respondents who possess experience and expertise in rural construction projects in Malaysia. The causes of delays vary across countries, locations, and projects as stipulated in **Table 2.2** above.

Delays can be categorized into two main categories; critical delays and non-critical delays as mentioned by Okereke, Zakariyau, & C. Eze, 2021 (see **Figure 2.5** above). Sambasivan and Yau Wen (2007) provided insights from the perspectives of clients, consultants, and contractors, identifying six main impacts of project delay as follows time overrun, cost overrun, disputes, arbitration, litigation, and total abandonment. The impact of the project delays also varies across the countries as show in the **Table 2.3** above.

The research aims to investigate the causes and impacts of construction delays within the domain of public construction, focusing on the RTP project in Sarawak. Spanning all twelve administrative divisions, which consists of a total of forty-five districts throughout Sarawak, the RTP objectives to furnish essential infrastructure and social amenities, with a particular emphasis on addressing the needs of rural communities. This study, viewed through the lens of RTP, aims to identify most, if not all, causes contributing to construction delays in public projects in Malaysia, as illustrated in **Figure 5.1** below. All significant causes will be grouped into themes or codes, such as "Contractor Related Factor," as identified during data analysis and findings. These will reveal relationships and attributes identified as causes and impacts of public construction delays.

Hence, this study will look at these three research objectives. The first one is to identify and analyze the causes perceived by contractors as contributing to delays in public construction projects, focusing specifically on the implementation of the Rural Transformation Project (RTP) in Sarawak. The second one is to assess the potential risks and consequences faced by contractors engaged in the Rural Transformation Project (RTP) in Sarawak due to construction delays and the final one is to explore the importance of effective project management and

monitoring practices in mitigating the risks and consequences associated with project delays in public construction projects, with a particular emphasis on the context of Sarawak's Rural Transformation Project (RTP).

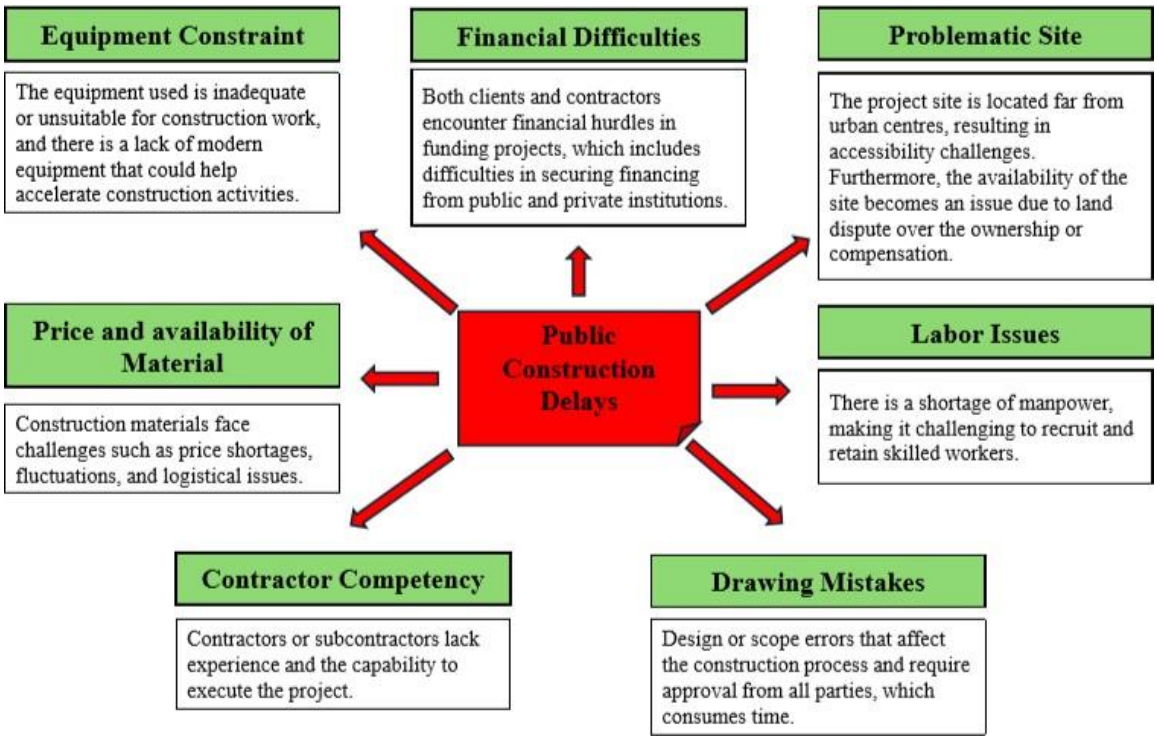


Figure 5.1: Summary of Significant Problems in Public Construction Project in Malaysia

The thorough analysis of the results in Chapter 4 demonstrated that the aforementioned objectives had been effectively achieved. Using the NVivo programme, further analysis was done on the data gathered from in-person interviews with the selected RTP contractors. In accordance with the recommendations of Hutchison, Johnston, and Breckon (2010) and Mohd Tobi (2019), the interview transcriptions were entered into the NVivo programme for theme and coding analysis. A few themes from the code analysis were identified. The purpose of this chapter is to discuss the theoretical and business consequences of this investigation.

5.2 Summary of the Findings

The study identified twenty-six causes contributing to delays in public construction projects, along with five impacts of these delays and five key aspects emphasizing the importance of project and risk management in mitigating project construction delays.

The twenty-six causes were categorized into seven categories as follows: The first category is Agency Related Causes which consist of ineffective communication between the agency and contractor, a lack of field supervision by the agency, ineffective communication between the agency and recipient, and the job's scope varying from the requested project. The second category is Contractor Related Factor which consist of inexperienced contractors, incompetent contractors, a lack of field supervision by the contractor, and insufficient equipment. The third category is External Causes which consist of the location of the project, no proper road access, difficulty entering the site, utilities to be reallocated, and weather conditions. The fourth category is Financial Related Causes which consist of a lack of financial facilities, payments made upon completion of the project, and issues with working capital turnover. The fifth category is Labor Related Causes which consist of a shortage of manpower, a lack of skilled manpower, and difficulty to retain manpower. The sixth category is Material Related Causes which consist of an increase in the price of construction materials, a high price of construction materials, a delay in construction material supply, a shortage of construction materials, difficulty transporting construction materials, and a high transportation cost. The seventh category is Recipient Related Causes which consist of requests for changes in job scope, incompetence of the subcontractor, requests for land compensation, and site disputes.

The study also found that project delays can lead to various consequences for contractors, such as a negative reputation, blacklisting by the implementing agency, contract termination, cost overruns, and time overruns. There are five important aspects of the project and risk management to be implemented by the contractors. As such, they should be able to manage sources effectively, minimize risks, maximize profit, and maintain a good reputation and performance as perceived by them. The proposed framework for the Rural Transformation Project as shown in **Figure 4.7** above.

5.3 Implications of the Study

5.3.1 Implications to Policy Makers and Implementation Agencies

The feedback from respondents highlighted four key Agency-Related Causes contributing to public project delays. Firstly, there is ineffective communication between the agency and the contractor, leading to misunderstandings and misaligned expectations. Secondly, when the agency and the recipient fail to accurately or timely convey important information, it leads to further complications. Fashina et al. (2020) point out that poor communication among stakeholders and project managers is a significant obstacle to project execution. Ineffective communication between the agency, the contractor, and the recipient can lead to misunderstandings and mismanagement, ultimately affecting the project's progress. Thirdly, the job's scope often varies from the initially requested project, causing discrepancies and adjustments that delay the overall timeline. Liu et al. (2020) stress the importance of effective communication and strict adherence to the project plan for smooth execution. This correlates with the issues identified, particularly the variation in the job's scope from the initially requested

project. When there is a breakdown in communication and a failure to follow the plan, maintaining consistency becomes challenging, leading to delays and complications that impede the project's successful completion. Together, these studies underscore the critical role that clear communication and adherence to project plans play in mitigating delays and ensuring effective project execution. The last finding directly relates to the agency's lack of field supervision, which results in inadequate oversight and monitoring of the project's progress. According to Nawi et al. (2016), ineffective on-site supervision at construction sites can lead to significant issues such as quality control lapses, safety concerns, and schedule delays. Without proper on-site supervision, potential problems can go unnoticed, leading to delays and compromising the overall quality and safety of the project. This highlights the critical role of proactive and efficient field supervision in guaranteeing the timely completion of construction projects, adhering to their scope, and meeting the necessary standards.

These findings have significant implications for policymakers and implementation agencies because they provide valuable insights into improving the effectiveness and efficiency of public construction projects. It helps policymakers recognise the need for a more robust and comprehensive project management framework that addresses the specific challenges faced by public construction projects. Fewing (2005) defined project management as the act of planning, controlling, and managing all aspects of a construction project to achieve the project objectives, which include time, cost, quality, and performance. Sofberi and Zainal (2020) emphasised that poor planning leads to the failure of construction projects. As a result, policymakers or implementation agencies should focus on project planning, continuous monitoring, and control, which are critical to ensuring the timely completion of construction projects. Five common

project management approaches, such as baseline planning, Gantt charts, progress meetings, activity lists, and kick-off meetings, that have a major impact on project outcomes can be used, as suggested by Tereso et al. (2019). This would involve regular site visits, progress evaluations, and the use of technology for real-time tracking of project milestones. Effective management practices play a crucial role in the success of a project by ensuring that all aspects of the project are systematically planned, executed, and monitored. According to Liu et al. (2020), these practices encompass a range of practices that contribute to the seamless execution of a project, from initial planning to final delivery.

Effective management practices implemented by policymakers or implementation agencies are essential for project success as they ensure clear planning, efficient resource allocation, and proactive risk management. By setting clear goals and defining the project's scope, all stakeholders share a common understanding, reducing the risk of miscommunication and scope creep. Proper management also optimizes resources, minimizes waste, and supports smooth project progress without delays. Quality control measures maintain high standards, while continuous monitoring allows for timely adjustments to keep the project on track. Effective communication fosters collaboration and keeps everyone informed, helping to meet timelines and satisfy stakeholders, ultimately leading to successful project outcomes. Therefore, policymakers or implementation agencies need to adopt adaptive project management practices that allow for flexibility in responding to unforeseen challenges in public construction projects.

5.3.2 Implications to Literature

Previous studies have categorized the causes and delays of construction projects into several groups and subgroups (Daba et al., 2018). Ramli et al. (2018) mentioned that the type of project, location, and area influence the causes of delays. Therefore, this study is crucial because it take into account the specific conditions, regulations, and cultural causes unique to the area where the project is being executed. These causes can significantly influence project outcomes and are often not fully addressed in broader, generalized studies. The findings offer valuable contributions to the existing literature on causes contributing to construction delays, their impacts, and potential mitigation strategies.

Firstly, by identifying twenty-six causes contributing to construction delays, the study adds depth and specificity to our understanding of the complexities involved in project management, particularly within the context of Sarawak's RTP. This comprehensive examination provides researchers with a nuanced understanding of the challenges faced in public construction projects, enabling more targeted interventions and solutions. Secondly, the study sheds light on the impacts of construction delays, highlighting issues such as reputational damage to contractors, contract termination, cost overruns, and time overruns. Understanding these consequences is crucial for stakeholders to assess the full impact of delays and implement proactive measures to mitigate their impacts. Lastly, by exploring potential mitigation strategies, the study offers practical insights into addressing construction delays effectively. By identifying the importance of project and risk management, the study underscores the significance of proactive planning, effective communication, and stakeholder engagement in minimizing delays and ensuring project success.

5.3.3 Implications to Society

Numerous global studies have investigated the causes and impacts of project delays in the construction industry (Mahamid et al., 2012; Akogbe et al., 2013; and Kaliba et al., 2009), but the impact of these delays has predominantly focused on the contracting parties, namely the owner, contractor, and consultant. However, construction delays impact not only on the construction industry but also on the affected area's socio-economic and socio-cultural conditions. Furthermore, previous studies have focused on contracting parties, while studies on project beneficiaries are rare (Hussain et. al., 2017). The respondents indicate that the JKKK or project recipients also contribute to construction delays. Frequently, they seek modifications to the job scope due to their perception that the contractor's work falls short of their expectations or differs from their initial requests. Their demands for compensation for the project site cause disputes with the contractor or implementing agency. Some of them requested to build the approved project themselves, which was delayed because they were incompetent contractors. As a result, the study's findings indirectly identify the difficulties, obstacles, and challenges faced by project recipients, also known as rural communities, due to their own actions.

The study findings have significant implications for society and by addressing the root causes of construction delays, the timely completion of infrastructure projects can enhance access to essential services and amenities, stimulate economic growth, and promote social equity. Transparent and efficient project management practices foster greater community engagement and trust, while minimizing environmental impact. Overall, these findings contribute to improved quality of life and well-being for individuals and communities, promoting sustainable development and social inclusion.

5.3.4 Implications to Contractor

The findings of this study highlight several key challenges faced by contractors involved in public construction projects, including inexperience, incompetence, a lack of field supervision, and insufficient equipment. These issues have significant implications for contractors and the overall success of the projects they undertake. According to Al-Adwani et al. (2018) and Sambasivan et al. (2017), inadequate knowledge of construction techniques, building codes, and safety regulations can lead to errors, rework, and delays in project completion. The ease of obtaining contractor licenses, especially for Grade F contractors, has led to the involvement of individuals lacking the necessary skills, knowledge, and experience. Casmi et al. (2019) had discovered that incompetent contractors were identified as one of the top three causes contributing to project delays. This inexperience contributes to inefficiencies, errors, and delays in project execution, damaging the reputation of contractors and affecting project outcomes. This not only results in rework and redundancy, but also undermines the project's quality and success. The absence of adequate supervision can lead to delays, quality control issues, and safety concerns, all of which can compromise the successful completion of the project. As mentioned by Nwosu (2018), an effective supervision is essential for construction management and according Alumbugu et al., (2014), site supervisors are crucial in supervising workers to ensure high productivity. Sambasivan, M., et al. (2017) and Amoatey et al., (2015) mentioned, the quality and availability of construction equipment is crucial to determine project success. The lack of adequate equipment, particularly heavy machinery, poses a significant challenge for contractors working on public construction projects. Thus, the main factor to consider is the frequency of use of the equipment, when deciding whether to lease or

purchase this equipment for the project (Kikwasi, 2012). Reliance on rented equipment, coupled with logistical challenges, can increase project costs and cause delays, especially when machinery is not readily available.

The implications of these findings are clear: contractors must recognize their limitations and ensure they have the necessary expertise, resources, and capacity before undertaking government projects. Contractors should invest in training and capacity-building to enhance their skills and knowledge, ensuring they are better equipped to manage and execute projects effectively. Additionally, contractors must prioritize effective supervision and planning to mitigate the risks associated with equipment shortages and other operational challenges. By addressing these issues, contractors can improve their performance, reduce the likelihood of delays, and enhance the overall success of public construction projects. It is importance for contractors to enhance accountability, professionalism, and risk management practices to mitigate project delays effectively. This can be done by investing in training, improving project management capabilities, and managing finances wisely, contractors can gain a competitive edge and ensure successful project delivery. Overall, adopting proactive strategies will be crucial for contractors to navigate the challenges of public construction projects efficiently. This, in turn, will contribute to the timely and efficient delivery of essential infrastructure, benefiting contractors and promoting sustainable development.

5.4 Limitation of the Research

There are a few limitations to this research. Firstly, this study is solely focused on public construction projects in rural areas of Sarawak, specifically concentrating on the construction

of RTPs that are predominantly located in remote areas. On the contrary, various public construction projects implemented through the Twelfth Malaysia Plan, the People's Projects, and even public projects carried out through regional development such as the Regional Development Agencies (RECODA), Northern Region Development Agency (NRDA), Sri Aman Development Agency (SADA), Mid Rajang Regional Development Agency (MiRRDA), and many more. Thus, this study faces challenges related to the sampling method. In fact, in the development of the RTP, there are many stakeholders involved in public construction projects such as implementing agencies, clients, users, suppliers, contractors, Members of Parliament (MPs), and members of the Sarawak Assembly (ADUSs), but this study only considers contractors as the sample. Therefore, the small sample size or potential lack of representativeness within public construction projects limited the generalizability of the findings. The small sample size or potential lack of representativeness within public construction projects limited the generalizability of the findings.

Secondly, the study's depth was limited by time constraints, as it was conducted over less than a year. An extended timeframe might have been necessary for a more comprehensive study of the causes and impacts of public construction delays in remote areas. Public construction projects are numerous and situated in different locations, each facing unique issues. Therefore, a more thorough investigation would require additional time to address the specific problems encountered by each project in various areas. Practical considerations, such as completion deadlines, may have influenced the thoroughness of the study, impacting its ability to explore all relevant causes and their impacts fully.

Thirdly, restrictions on access to specific information, particularly when it came to confidential or sensitive data, could have limited the scope of the analysis. It have not been easy to examine government documents or confidential information, particularly when dealing with confidential or sensitive data, could have constrained the scope of the analysis. Such limitations may have made it challenging to thoroughly examine government documents or other sensitive materials essential for a comprehensive study. Therefore, document analysis is not applicable in this study. Access to these types of documents is often restricted due to privacy concerns, security protocols, or legal regulations, which can hinder the ability to gather complete and detailed information. Consequently, the study has been limited in its ability to fully explore and address all relevant causes and impacts related to public construction delays.

5.5 Recommendations for Future Study

Based on the findings, future studies should consider expanding the sample size to encompass a broader range of contexts within Sarawak, allowing for a more representative analysis of construction delays in rural areas. A comparative analysis across different regions or countries facing similar challenges could offer valuable insights into contextual differences and common trends. Qualitative exploration, such as interviews or focus groups with stakeholders, would provide deeper insights into the underlying causes and impacts of construction delays. In-depth case studies of specific projects would allow for a detailed examination of the causes influencing delays and the effectiveness of mitigation strategies. Finally, future studies could explore innovative solutions, such as the integration of technology or alternative project delivery methods, to address construction delays in rural areas more effectively.

5.6 Conclusions

In conclusion, this study has provided valuable insights into the causes and impacts of construction delays in public projects, with a focus on the Rural Transformation Project (RTP) in Sarawak. Through an extensive examination of the challenges faced in rural construction projects, the study identified twenty-six causes contributing to delays, grouped into seven main categories. It also highlighted the negative impacts of these delays on contractors and underscored the importance of effective project and risk management to mitigate these issues. Additionally, the study highlighted the detrimental impacts of project delays on contractors and emphasised the importance of effective project and risk management in mitigating these delays. The stakeholders, especially contractors, can use the study's identification of twenty-six delay causes to better understand the specific challenges that may impact their projects. This knowledge allows them to proactively address these causes and implement preventive measures. By recognizing the common causes of delays, contractors can improve their project planning and scheduling processes. This includes allocating resources more efficiently and setting realistic timelines to account for potential delays. The study emphasizes the importance of risk management. Therefore, contractors can apply this by developing comprehensive risk management plans that include identifying potential risks, assessing their impact, and implementing strategies to mitigate them. With a clearer understanding of the causes affecting delays, contractors can make more informed decisions about project execution, resource allocation, and risk management strategies.

Based on the finding, it is found that stakeholders can benefit significantly from applying project management theory by integrating detailed planning into their project processes. This

involves developing comprehensive project plans that not only address potential delay causes but also include contingency plans to manage risks effectively. Additionally, effective resource management, a fundamental aspect of project management theory, enables allocation of resources more efficiently, ensuring that critical tasks are completed on time and within budget. By continuously monitoring project performance by performance metrics and indicators, project progress can be tracked and necessary adjustments to stay on schedule. This proactive approach helps in mitigating delays and enhances the overall success of the project.

Other than that, the study also found that stakeholders should effectively apply risk management theory by systematically identifying and assessing risks associated with the projects. This involves analyzing potential risks, evaluating their likelihood, and understanding their impact on project outcomes. The study suggested stakeholders develop and implement risk mitigation strategies, creating action plans designed to reduce the probability of risks and minimize their impact if they do occur. Furthermore, risk management theory underscores the importance of ongoing risk monitoring. Stakeholders should continuously review and update their risk management plans to adapt to new risks and changes in project conditions, ensuring that their strategies remain effective and relevant throughout the project's lifecycle.

The findings of the study provided meaningful insights not only for contractors but also for other stakeholders involved in public construction projects. By applying these insights, both contractors and stakeholders can improve their ability to manage delays and risks more effectively. This, in turn, leads to more successful project outcomes and enhanced operational efficiency. The study’s insights help in refining strategies and practices, benefiting all parties involved in achieving better project performance and overall success.

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APPENDICES

Appendix A1

Interview Questions (In English)

Part A: Demographic Questions

1. What is your position and role in the company?
2. How long have you been involved in the construction industry?
3. How long have you been involved in RTP construction projects?
4. How many RTP projects has your company completed?
5. Have you ever experienced delays in completing any of your RTP projects during your involvement?

Part B: Causes Contributing to Public Construction Delays

No.	Independent Variables	Definition	Interview Questions
(i)	Client Related Causes	Payment's progress is being delayed	6. Have you ever experienced delays in receiving payment for a project? 7. In your experience, what are the causes that typically lead clients to delay their payments? 8. Based on your experience, do you find that the allocated time frame for a construction project is adequate?
		Unreasonably lengthy of contract duration given the project's complexity	
(ii)	Consultant Related Causes	Ineffective on-site standing supervision	9. In your opinion, why does ineffective on-site standing supervision by the implementing agency impact the overall progress of the construction project?

		Ineffective communication between the contractor and consultant	10. In your opinion, how does ineffective communication between the implementing agency and you, the contractor, result in construction delays?
(iii)	Contractor Related Causes	Lack of sufficient expertise in the field of construction	11. Describe the experiences and practices you had in the construction field before you engaged in the RTP project.
		The quality and availability of construction equipment	12. Do you have enough and suitable construction equipment to carry out each project?
(iv)	Financial Related Factor	Difficulties in obtaining loans and short of funding	13. What challenges do you face in obtaining financial facilities, and how does this impact your ability to finance construction projects?
		Late payment. Failure of client or paymaster to pay according to the agreement	14. Does late payment or failure of clients to adhere to agreed payment schedules affect the development of the project?
(v)	Materials Related Causes	Volatility in the cost of materials	15. What challenges do you face related to building materials? 16. Do fluctuations in construction costs affect your ability to complete projects? 17. How does the delay in the delivery of building materials compared to the schedule to the site affect the progress of the construction of the project?
		Delayed delivery of materials to the construction site in compared to the project schedule	
(vi)	Labour and Equipment Related Causes	Failure to choose the right workforce	18. Are you having difficulty recruiting and retaining skilled and appropriate employees?

		Struggles with employee recruitment and retention.	
		Insufficient amount of equipment and inadequate modern equipment	19. Do you have adequate and suitable modern equipment for implementing your projects?
(vii)	Contract Related Causes	Mistakes and dispensaries in contract documents	20. How do mistakes and discrepancies in contract documents affect the progress of the project?
		Change of orders	21. Have you ever experienced situations involving changes in the work scope, and what were the impacts of these changes on the construction of the project?
(viii)	External Causes	Impacts of weather causes on construction activities	22. Any other external causes do you believe contribute to delays in the construction of RTP projects?
		Limitation on access to the project site. Required longer time and special vehicles	

Part C: Impacts of Public Construction Delays

23. How do you perceive the impact of project construction delays, particularly concerning the risks your company or another stakeholder may encounter?

Part D: Mitigation and Solution

24. Can you explain the strategies or plans applied in your company to reduce the risk of project delays?

25. What plans or strategies do you recommend be implemented to lower the risk of delays in public construction projects?

Appendix A2

Soalan Temuduga (Dalam Bahasa Melayu)

Bahagian A: Soalan Demografi

1. Apakah jawatan dan peranan anda di dalam syarikat?
2. Berapa lama anda telah terlibat dalam industri pembinaan?
3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?
4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?
5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

Bil.	Pembolehubah Tak Bersandar	Definisi	Soalan Temuduga
(i)	Punca Berkaitan Pelanggan	Kelewatan pembayaran	6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek? 7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka? 8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
		Tempoh kontrak yang tidak munasabah berbanding kerumitan projek	
(ii)	Punca Berkaitan Juru Perunding	Penyeliaan di lapangan yang tidak efektif	9. Kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
		Komunikasi tidak berkesan di antara agensi pelaksana dengan kontraktor	10. Bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

(iii)	Punca Berkaitan Kontraktor	Kurang kepakaran yang mencukupi dalam bidang pembinaan	11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?
		Kualiti dan kesediaadaan peralatan pembinaan	12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?
(iv)	Punca Berkaitan Kewangan	Kesukaran mendapatkan pinjaman dan kekurangan pembiayaan	13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?
		Bayaran lewat. Kegagalan pelanggan atau penggaji untuk membayar mengikut perjanjian	14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?
(v)	Punca Berkaitan Bahan Binaan	Turun naik kos bahan	15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan? 16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek? 17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?
		Kelewatan penghantaran bahan bahan ke tapak pembinaan berbanding dengan jadual projek	
(vi)	Punca Berkaitan Tenaga Kerja dan Peralatan Pembinaan	Kegagalan memilih tenaga kerja yang sesuai	18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?
		Kesukaran merekrut dan mengekalkan pekerja	
		Jumlah peralatan moden yang tidak mencukupi	19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

(vii)	Punca Berkaitan Kontrak	Kesilapan dan percanggahan dalam dokumen kontrak.	20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?
		Perubahan arahan atau skop kerja	21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?
(viii)	Punca Luaran	Impak punca cuaca terhadap aktiviti pembinaan	22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?
		Limitasi akses ke tapak projek. Memerlukan masa yang lebih lama dan kenderaan khas	

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Appendix B1

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 1: *Saya adalah pemilik syarikat dan saya berperanan untuk menguruskan Syarikat.*

   Interviewee 1: *I'm the owner of the company and my role is to manage the company.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 1: *Saya bermula sebagai pekerja binaan dan pada 2022 saya telah menubuhkan syarikat ini.*

   Interviewee 1: *Starting as a construction worker and then establishing my own company in the year 2022*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 1: *Lebih kurang dua tahun iaitu sejak 2022*

   Interviewee 1: *Approximately two years. Since the year 2022.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 1: *Sehingga kini ada tiga buah projek*

   Interviewee 1: *Up to now, there were three projects completed*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 1: *Setakat ini, semua projek RTP yang saya bina telah berjalan dengan lancar. Namun berdasarkan cerita daripada rakan-rakan kontraktor lain, terutamanya mereka yang telah lama terlibat dalam pembinaan projek RTP, mereka ada sedikit masalah untuk selesaikan projek terutama bagi lokasi-lokasi yang berada jauh di luar bandar. Kebiasaannya, jika lokasi jauh di luar bandar, kontraktor akan mengalami masalah transport.*

   Interviewee 1: *So far, all the RTP projects I've built have been running smoothly. However, based on stories from other contractor friends, especially those who have been involved in RTP project construction for a long time, they have encountered some difficulties in*

completing projects, especially for locations far from urban areas. Typically, for locations far from urban areas, contractors face transportation issues.

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?
   Interviewee 1: *Setakat ini belum pernah.*
   Interviewee 1: *Up to now, none*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?
   Interviewee 1: *Saya sendiri tidak pernah ada bayaran lewat diterima.*
   Interviewee 1: *I've personally never experienced any late payments.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 1: *Pada pendapat saya, tempoh masa projek yang diberikan adalah mencukupi. Namun, bagi pembinaan projek-projek RTP, lokasi juga harus dipertimbangkan dalam menentukan tempoh masa sesuatu projek. Ini kerana, projek-projek yang berada di luar bandar akan memerlukan tempoh masa perjalanan yang lebih panjang. Sebab itu, jarak yang jauh akan melambatkan kerja-kerja penghantaran bahan -bahan binaan seperti simen, batu bata, pasir atau kayu.*
   Interviewee 1: *In my opinion, the given project duration is sufficient. However, for constructing RTP projects, location should also be taken into account when determining project timelines. This is because projects located in rural areas will require longer travel times. Therefore, the distance will slow down the delivery of construction materials such as cement, bricks, sand, or wood.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 1: *Sepanjang penglibatan saya dalam RTP, wakil agensi hanya akan hadir ke lokasi pembinaan sekali-sekala. Jadi, saya akan sukar untuk mendapatkan penjelasan sekiranya timbul sesuatu masalah di tapak pembinaan. Biasanya akan wujud sedikit*

kekeliruan berkaiatan dengan skop kerja yang akan memerlukan penjelasan daripada wakil agensi atau penyelia projek.

Interviewee 1: *Throughout my involvement in RTP, agency representatives only visit the construction site occasionally. Therefore, it's challenging for me to get clarification if any issues arise on the construction site. There's usually some confusion regarding the scope of work that requires clarification from the agency representative or project supervisor.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

    Interviewee 1: *Kedudukan lokasi tapak pembinaan yang berada jauh di kawasan pendalaman adalah salah satu daripada penyebab komunikasi tidak efektif. Jika perlu penjelasan mengenai skop kerja, kami terpaksa tunggu sehingga balik ke bandar atau cari liputan telefon di kawasan berdekatan untuk menelefon.*

    Interviewee 1: *The location of the construction sites, located far in rural areas, is one of the reasons for ineffective communication. If we need clarification on the scope of work, we must wait until we return to the city or find phone coverage in nearby areas to make a call.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 1: *Seperti yang saya nyatakan tadi, saya telah lama berkerja dalam industri pembinaan sebagai pekerja binaan. Sebelum mendapat lesen Kelas F, saya juga kena hadir ke kursus asas kontraktor. Di situ, saya diajar menguruskan syarikat termasuk membuat kiraan kos projek.*

    Interviewee 1: *As I mentioned earlier, I have been working in the construction industry as a construction worker for a long time. Before obtaining my Class F license, I also had to attend a basic contractor course. There, I was taught how to manage a company, including project cost estimation.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 1: *Buat masa ini peralatan asas memang mencukupi tetapi jika melibatkan mesin seperti jentolak. memang tidak ada. Biasanya, jika perlu terutama kalua projek buat jalan, kami akan sewa tetapi kos mahal. Bergantung dengan jarak dan jumlah hari.*

    Interviewee 1: *For now, basic equipment is sufficient, but when it comes to machinery like bulldozers, we don't have any. Usually, if needed, especially for road construction projects, we'll rent them, but it's expensive. It depends on the distance and the number of days needed.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 1: *Macam syarikat saya sendiri, saya belum pernah cuba untuk minta pinjaman dari mana-mana bank atau syarikat pinjam wang untuk beli bahan binaan, biasanya saya akan hutang dari kedai hardware. Tetapi harga ada mahal sedikit berbanding pakai tunai.*

    Interviewee 1: *As the owner of my own company, I have never tried applying for a loan from any bank or lending company to purchase construction materials. Usually, I would obtain credit from hardware stores. However, the prices there are slightly higher compared to paying in cash.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 1: *Kebiasaannya bayaran akan dibuat selepas projek selesai. Jadi, bayar awal atau lambat tidak ganggu projek. Cuma akan ganggu kalau kami tidak bayar kedai, jadi projek seterusnya akan susah dapat ambil barang dahulu. Kena bayar dulu baru dapat ambil.*

    Interviewee 1: *Usually, payments are made after the project is completed. So, paying early or late doesn't disrupt the project. The only problem is that if we don't pay the hardware store, it will be hard to get credit for materials for the next project. We have to pay first before we can get credit for the next project.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

Interviewee 1: *Saya cakap tadi. Kalau ambil dulu, harga agak tinggi. Lepas itu, kalau tidak bayar, nanti kedai hardware tidak bagi hutang. Paling-paling cari lain kedai hardware tetapi lama-lama semua kedai akan tahu. Bukan banyak kedai jual itu barang dalam kawasan kita.*
Interviewee 1: *As I mentioned earlier, if we take the materials first, the price is quite high. Then, if we don't pay them, the hardware store won't extend credit. At most, we can try finding another hardware store, but eventually, all hardware stores will know. There aren't many stores selling those items.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

Interviewee 1: *Ya. Kadang-kadang harga tidak tentu. Cepat naik. Kalau harga kontrak ikut harga lama. kontraktor akan ada masalah apabila harga bahan binaan naik. Kalau tunggu harga turun, memang susah. Nanti projek lambat dan tidak siap ikut jadual.*

Interviewee 1: *Yes. Sometimes the price is uncertain. Prices often rise rapidly, and the contract remains tied to the same value. Contractors may encounter difficulties when the cost of construction materials increases. Conversely, waiting for prices to decrease is impossible, as it may result in project delays and an inability to meet schedules.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

Interviewee 1: *Kebanyakan lokasi pembinaan projek-projek RTP adalah berada di luar bandar dan kebiasaannya penghantaran bahan binaan ke tapak pembinaan tersebut mengambil masa. Tambahan pula, jika kawasan tersebut sukar dan hanya boleh dihubungi melalui jalan tanah merah ataupun sungai. Dalam keadaan ini, penghantaran barangan akan lambat dan ianya juga menyebabkan pembinaan projek tidak dapat mengikut perancangan awal.*
Interviewee 1: *Most RTP projects' construction sites are located in rural areas, and the delivery of building materials to the construction site is usually time-consuming. Furthermore, if the area is difficult to reach and can only be reached through a logging road or river, in*

this situation, the delivery of goods will be delayed, and it will also cause the construction of the project to be unable to follow the initial plan.

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

Interviewee 1: *Ketika ini ini, saya sendiri kerja. Sama dengan isteri dan dua anak. Kalau mahu ambil orang luar itu memang susah, biasa dia orang tidak mahu gaji kecil dan kedua, dia orang mahu kerja yang stabil, boleh kerja hari-hari.*

Interviewee 1: *At the moment, I'm doing it myself with the assistance of my wife and two children. It's difficult to hire outsiders because they typically don't want a low salary, and secondly, they seek stable work that allows them to work every day.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

Interviewee 1: *Tidak ada. Paling moden pun mesin biasa sahaja macam mesin elekrik untuk putar skru*

Interviewee 1: *There aren't any. The most modern thing we have is just basic machinery, like an electric screwdriver.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

Interviewee 1: *Setakat ini, saya tidak ada masalah dengan kontrak.*

Interviewee 1: *So far, I haven't had any issues with contracts.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

Interviewee 1: *Perubahan skop kerja tidak pernah berlaku tetapi pemintaan untuk ubah skop kerja daripada penerima atau orang kampung memang ada. Skop tidak ikut kehendak penerima. Jadi mereka minta kontrak buat ikut cakap mereka bukan ikut skop dalam pelan. Kalau ini berlaku, kerja-kerja terganggu, tidak boleh diteruskan. Kami kena rujuk dan minta kelulusan agensi pelaksana macam JKR atau DID.*

Interviewee 1: *Changes in the scope of work rarely occur, but there are requests to alter the scope of work from the client or local residents. The scope does not align with the recipient's*

preferences, leading them to request that the contract be executed according to their instructions rather than the scope outlined in the plans. When this happens, it disrupts ongoing work and prevents the project from progressing. We are required to refer and seek approval from implementing agencies such as JKR or DID.

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 1: *Kadang-kadang lokasi projek berada di kawasan pendalaman. Tanpa jalan dan hanya boleh dihubungi melalui jalan tanah merah atau sungai.*

    Interviewee 1: *Sometimes, project locations are in rural areas without proper roads, and they can only be accessed via dirt roads or rivers.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 1: *Kalau projek lewat atau tidak siap, kontraktor akan terima akibat. Biasanya kontraktor akan disenarai hitam dan tidak layak untuk menyertai cabutan undi untuk projek lain.*

    Interviewee 1: *If a project is delayed or not completed on time, the contractor will face consequences. Typically, the contractor will be blacklisted and deemed ineligible to participate in the balloting draw for other projects.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 1: *Macam saya, saya akan nilai dulu projek-projek yang saya hendak ikut untuk cabutan undi. Kalau boleh saya tidak mahu ikut cabutan undi bagi projek yang berada jauh di luar bandar atau yang sukar untuk dihubungi. Dapat projek dekat dengan bandar, senang hendak angkut barang binaan dan kos pun tidak tinggi.*

    Interviewee 1: *For me, I'll evaluate the projects in which I want to participate in balloting. If possible, I prefer not to participate in the ballot for projects located far out of town or difficult*

to access. Getting projects near urban areas makes it easier to transport construction materials, and costs aren't as high.

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

    Interviewee 1: *Macam yang saya cakap tadi, saya perlu menilai projek-projek yang perlu saya ikut dalam cabutan undi. Kena tengok tempat, kos dan juga jalan masuk ke tapak projek. Ini penting untuk saya merancangkan kerja, kos yang diperlukan dan juga tenaga kerja yang diperlukan. Ada perancngan yang bagus, saya boleh elakkan masalah semasa buat projek nanti.*

    Interviewee 1: *As I mentioned earlier, I need to evaluate the projects that I need to participate in through a balloting draw. I must consider the location, costs, and also the access roads to the project site. This is crucial for me to plan the work, estimate the required costs, and determine the necessary manpower. With proper planning, I can avoid problems during the project implementation later.*

Appendix B2

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 2: *Saya adalah pemegang lesen syarikat dan saya uruskan semua perkara berkaitan dengan syarikat termasuk kewangan dan juga uruskan pekerja.*

   Interviewee 2: *I'm the company licence holder, and I handle all matters related to the company, including finances and managing employees.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 2: *Syarikat ini dahulunya diuruskan oleh anak saya. Ditubuhkan pada tahun 2014 tetapi selepas anak-anak mendapat pekerjaan lain, saya ambil alih syarikat ini sepenuhnya pada 2018.*

   Interviewee 2: *The company was initially managed by my children. It was established in 2014, but after they found other jobs, I took over the company completely in 2018.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 2: *Syarikat mula tahun 2014. Saya sendiri secara sepenuh masa pada 2018. Jadi lebih kurang 6 tahun*

   Interviewee 2: *The company started in 2014, and I took over full-time management in 2018, so it's been about 6 years.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 2: *Ada lebih kurang tujuh buah projek.*

   There are approximately seven projects.

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 2: *Pernah. Ada satu projek dahulu iaitu pada tahun 2020. Tetapi masa itu, musim Covid-19. Semua tutup. Jadi tidak dapat buat kerja.*

   Interviewee 2: *There was one project previously, in 2020. However, during that time, it was the COVID-19 pandemic, and everything was closed, so no work could be done.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?
   Interviewee 2: *Belum pernah*
   Interviewee 2: *Not yet*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?
   Interviewee 2: *Tidak. Rakan-rakan juga lain tidak pernah cakap*
   Interviewee 2: *Not. None of my other friends have ever mentioned it.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 2: *Kena tengok besar atau kecil projeklah. Kalau besar bagi tempoh lebih lama. Satu lagi, lokasi projek. Walaupun projek tidak besar tapi lokasi jauh, juga kena bagi lebih sikit masa.*
   Interviewee 2: *To consider whether the project is large or small. Larger projects typically require a longer duration. Additionally, the project's location is important. Even if the project isn't large, being in a remote location may also require more time.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 2: *Saya tidak tahu lain orang. Kalau ikut pengalaman saya sendiri, kalau saya tidak ada selia projek, pekerja ada lambat sedikit buat. Kadang-kadang dia orang tidak tahun apa nak buat, tunggu kita sampai juga.*
   Interviewee 2: *I'm not sure about others, but based on my own experience, if I'm not supervising the project, the workers tend to work a bit slower. Sometimes, they're unsure of what to do and wait for my guidance.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

    Interviewee 2: *Arahan tidak sampai dengan betul. Kalau ada perlu perkara mahu tanya, wakil agensi tidak ada atau susah untuk dihubungi.Itu kita paham mereka banyak projek lain mahu jaga juga.*

    Interviewee 2: *The instructions don't come out accurately. If there are any questions or issues that need clarification, the agency representative may not be available or difficult to reach. We understand that they also have a lot of other projects to manage.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 2: *Kami ada latihan wajib untuk dapat lesen kontrakor. Macam saya sendiri, sebelum dapat ikut buat projek RTP saya kena hadir temuduga di Pejabat Daerah. Kalau tidak cukup latihan dan pengalaman, nanti gagal temuduga. Tidak dapat jadi kontraktor.*

    Interviewee 2: *We have to undergo mandatory training to obtain a contractor's license. Like myself, before being able to participate in RTP projects, I had to attend an interview at the district office. Without sufficient training and experience, one might fail the interview and not be able to become a contractor.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 2: *Mesin-mesin berat macam excavator memang tidak ada. Kalau perlu memang kena sewa. Sewa pun ikut lokasi, kalau jauh lagi mahal sebab kena bayar kos hantar.*

    Interviewee 2: *Heavy machinery, like excavators, is not available. If needed, we must rent. Rental costs depend on the location, with farther locations incurring higher costs due to transportation expenses.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 2: *Mahu pinjam dari bank memang susah. Tidak dapat sebab kami kontraktor kecil Sahaja. Projek pun tidak besar. Lagipun tidak tetap, satu dua bulan ada projek. Lepas itu mahu tunggu, kalau nasib bagus dapat satu lagi projek. Setahun ada dua projek. Kalau tidak ada, satu sahaja.*

    Interviewee 2: *Getting a loan from the bank is indeed difficult for us because we are small contractors. The projects are also not very large. Furthermore, our work is not steady; we may have a project for one or two months, and then we have to wait. If we're lucky, we might get another project. In a year, we might have only two projects, or sometimes just one.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 2: *Saya rasa tidak. Biasanya siap projek baru bayar.*

    Interviewee 2: *I don't think so. Usually, we get paid once the project is completed.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 2: *Susah nak angkut ke lokasi dan kos tinggi, lagi-lagi kalau lokasi projek jauh di luar bandar.*

    Interviewee 2: *Transporting materials to the project site is challenging and costly, especially when the project site is located far from urban centers.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 2: *Kalau harga naik, maka kos akan naik. Jadi budget kita juga akan lari, bila budget lari, kita susah mahu selesai awal sebab tidak cukup wang.*

    Interviewee 2: *If prices rise, our costs will increase, causing our budget to overrun. When the budget exceeds, it's difficult for us to finish early because we don't have enough money.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

Interviewee 2: *Barang binaan lewat sampai dan kita tidak dapat mula kerja. Jika ini berlaku, kita akan lewat dari jadual asal sebab kita kena tunggu barang ada baru buat kerja. Biasa ini berlaku kalau, lokasi jauh dan tiada akses jalan. Kadang-kadang ikut bot.*

Interviewee 2: *If construction materials arrive late and we can't start work, we'll fall behind the original schedule because we have to wait for the materials to arrive before we can proceed. This usually happens when the location is remote and there's no road access. Sometimes, we have to rely on boats for transportation.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

Interviewee 2: *Ini satu cabaran besar. Susah untuk dapat pekerja yang sesuai dan mahir, kalau ada pun susah nak kekalkan mereka. Ini disebabkan, kita tidak dapat tawarkan kerja yang berterusan. Kadang-kadang kita putus projek, sementara menunggu projek seterusnya mula, jika ada.*

Interviewee 2: *This is a significant challenge. Recruiting suitable and skilled workers is difficult, and even if we find them, retaining them is also challenging. The lack of job continuity is a key factor. Typically, after completing a project, we experience a temporary shutdown while awaiting the commencement of another project, if any.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

Interviewee 2: *Tidak. Kalau mesin-mesin besar memang tidak ada.*

Interviewee 2: *No. Don't have large machineries.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

Interviewee 2: Tiada masalah dengan surat tawaran.

Interviewee 2: *No issues with the offer letter.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 2: *Setakat ini tidak pernah.*

    Interviewee 2: *So far, no.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 2: *Ada lokasi projek susah dihubungi. Akses sukar kerana tidak ada jalan bertar.*

    Interviewee 2: *There are project locations that are difficult to reach. Accessibility is challenging because there are no tar-sealed roads.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 2: *Syarikat dapat nama buruk. Paling teruk nanti kena senarai hitam oleh Pejabat Dearah dan juga CIDB.*

    Interviewee 2: *The company can get a bad reputation. The worst-case scenario is being blacklisted by the District Office and also CIDB.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 2: *Tiada pelan tertentu. Tetapi untuk kurang kos pembinaan, saya akan semak harga bahan binaan dari beberapa buah kedai hardware. Jadi punca harga dan kos transport akan saya pertimbangkan untuk atur budget selain dari gaji.*

    Interviewee 2: *There's no specific plan, but to reduce construction costs, I'll compare prices of construction materials from several stores. So, I'll consider causes such as price and transportation costs to manage the budget, in addition to wages.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Interviewee 2: *Bagi saya kos memainkan peranan yang penting dalam menentukan kejayaan menyiapkan projek. Perancangan kos mesti dibuat sebagai panduan perbelanjaan syarikat dalam membeli bahan binaan, bayar gaji atau lain-lain, yang kalau tidak diatur dengan baik akan menyebabkan kerugian.*

Interviewee 2: *For me, costs play a crucial role in determining the success of completing a project. Cost planning must be done as a guideline for the company's spending on purchasing construction materials, paying salaries, or other expenses, which, if not managed properly, can lead to losses.*

Appendix B3

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interview 3: *Saya pemilik dan manager kepada syarikat ini Saya bertanggungjawab penuh kepada operasi Syarikat.*

   Interviewee 3: *I am the owner and manager of this company, and I am fully responsible for the company's operations.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 3: *Syarikat ini telah saya uruskan sejak 2006. Jadi, lebih kurang dalam 18 tahun. Memang selama ini saya berkerja sebagai kontraktor.*

   Interviewee 3: *This company has been under my management since 2006, so it's been about 18 years. I've been working as a contractor all this time.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 3: *Sejak dari mula-mula RTP dibuat dulu. Dari tahun 2015 sampai lah sekarang. Lebih kurang sepuluh tahun sudah.*

   Interviewee 3: *Since the establishment of the RTP, from 2015 until the present, it's been about ten years.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 3: *Tidak ingat berapa banyak, sebab agak banyak. Setiap tahun ada dapat satu projek atau kadang-kadang ada dua atau tiga. Saya rasa lebih sepuluh lah.*

   Interviewee 3: *I can't remember exactly how many because there are quite a few. Every year, we get one project or sometimes two or three. I think it's been more than ten.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 3: *Pernah. Dalam tahun 2021. Masa itu, Covid-19. Susah mahu keluar.*
   Interviewee 3: *It happened in 2021. At that time, it was during the COVID-19 pandemic, so it was difficult to go out.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 3: *Setakat ini paling lambat kalau sudah hantar claim pun dalam dua atau tiga minggu.*

   Interviewee 3: *So far, the longest waiting period for us to receive the payment after the claim was submitted is within two or three weeks.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?

   Interviewee 3: *Kalau ada pun sebab masalah dokumen tidak lengkap untuk claim. Tapi tidak lamalah. Tidak sampai bulan-bulan.*

   Interviewee 3: *If there are delays, it's usually due to incomplete documents for the claim. But it's not too long; it doesn't take months.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?

   Interviewee 3: *Dari yang saya lihat, projek RTP bukan projek besar-besar. Jadi, masa 3-5 bulan cukup. Tetapi kalau lokasi luar bandar kena tengok juga macam mana mahu sampai sana. Kalau ikut sungai makan masa sedikit la. Kadang-kadang Sungai cetek, susah mahu hantar. Jadi projek akan lambat sedikit la.*

   Interviewee 3: *From what I've seen, RTP projects are not large-scale projects. So, a duration of 3-5 months is sufficient. But if the location is in rural areas, we need to consider how to access it. If we have to go by river, it might take some time. Sometimes, the river is shallow, making it difficult to transport materials, so the project might be delayed slightly.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?

   Interviewee 3: *Dalam sepuluh tahun ini, saya tengok, pegawai yang jaga projek akan datang buat inspection masa mula projek, kalau masa projek tengah buat itu, jarang-jarang. Kemudian masa projek sudah siap baru ada datang buat inspection sekali lagi.*

Interviewee 3: *In these ten years, I've noticed that project officers come to inspect at the beginning of the project, but rarely during the project's progress. Then, they only come for inspection again once the project is completed.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

    Interviewee 3: *Masalah akan timbul atau projek akan tertangguh kalau pegawai agensi pelaksana tidak memberikan informasi yang cukup atau keputusan yang cepat. Kita sebagai kontraktor akan tertunggu.*

    Interviewee 3: *Problems will arise, or the project will be delayed if the agency's project officers do not provide sufficient information or make timely decisions. As contractors, we'll be left waiting.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 3: *Saya sendiri telah lama dalam industri ini. Macam-macam projek sudah saya buat. Sebelum ada RTP dahulu, saya buat kerja kontrak buat rumah orang. Memang banyak pengalaman. Dulu mahu jadi kontrak susah, iaitu sebab tidak ramai orang ada lesen. Sekarang lebih senang, ada duit boleh mohon. Itu pun ikut kursus sahaja satu dua sahaja, pengalaman kadang-kadang tidak ada. Ini banyak rosakkan nama kelas F sebab dia orang tidak pandai buat tapi ada lesen.*

    Interviewee 3: *I've been in this industry for a long time. I've done various projects. Before the RTP was established, I was primarily working as a construction laborer. I've gained extensive experience over the years. Previously, becoming a contractor was difficult; therefore, not many people had licenses. Now it's easier; you just need money to apply. However, some may only attend a couple of courses without gaining substantial practical experience. This situation adversely affects the reputation of Class F contractors, as they possess licences but lack skills.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 3: *Kalau setakat kerja-kerja biasa memang cukup. Tapi kalau projek besar macam buat jalan, kena ada excavator, itu memang tidak ada lah. Kena sewa. Biasa mesin-mesin berat, memang kontraktor kelas F macam saya tidak ada.*

    Interviewee 3: *For regular tasks, our equipment is usually sufficient. However, for larger projects like road construction that require excavators, we don't have those machines. We have to rent them. Generally, Class F contractors like us don't have heavy machinery like excavators.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 3: *Biasa saya akan guna duit sendiri untuk beli barang-barang binaan macam pasir, batu atau semin. Kalau tidak cukup, saya akan hutang kedai. Kalau pinjam itu, memang tidak lah. Bukan tidak mahu, tapi susah dapat. Minta dengan bank pun susah sebab pendapatan kita tidak tetap.*

    Interviewee 3: *Typically, I use my own money to purchase construction materials like sand, stone, or cement. If I don't have enough, I'll borrow from local hardware stores. Getting a loan from the bank is difficult for us. It's not that we don't want it, but it's hard to obtain because our income isn't stable.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 3: *Sepanjang pengalaman saya selama sepuluh tahun dalam RTP. Saya tidak ada masalah dengan bayaran.*

    Interviewee 3: *Throughout my ten years of experience with the RTP, I haven't encountered any issues with payments.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

Interviewee 3: *Masalah transport. Kalau lokasi jauh dari bandar. Hantar akan makan masa dan kos juga tinggi. Lagi-lagi kalau tiada jalan raya bertar. Biasanya ikut jalan tanah atau ikut bot Panjang.*

Interviewee 3: *Transportation can be a major issue, especially when the location is far from urban centers. Delivery is time-consuming, and costs are high, particularly when there are no tar-sealed roads. Typically, we resort to going along dirt roads or longboats.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

Interviewee 3: *Biasa kos sesuatu projek telah ditetapkan. Kalau harga barangan baik masa kita pembinaan sedang dibuat, maka kontraktor akan tanggung kos yang lebih. Margin untung kurang atau rugi. Kadang-kadang kontraktor ambil lebih masa siap sebab kena tunggu cukup budget baru buat.*

Interviewee 3: *Typically, the cost of a project is predetermined. However, if the prices of materials increase during the construction phase, the contractor ends up bearing additional costs, resulting in reduced profit margins or even losses. At times, contractors extend project timelines to await sufficient budget allocations to cover increased expenses.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

Interviewee 3: *Kalau barang lewat sampai memang ganggu projek. Kadang-kadang bukan sebab lokasi jauh saja, barang boleh lewat. Kalau kita hutang pun barang lewat sebab kita bukan priority kedai. Dia hantar lain orang yang bayar cash. Jadi kita tunggu saja. Ada lambat sedikit.*

Interviewee 3: *Delayed delivery of construction materials can indeed disrupt the project timeline. The delay in construction materials can occur for various reasons, not just because of the location's distance. Even if we buy on credit terms, the materials may arrive late at the project site because we are not the hardware store's priority. They prioritise customers who pay in cash, causing us to experience delays.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

Interviewee 3: *Dari dulu saya punya pekerja memang selalu tukar-tukar. Tidak tetap. Kita tidak dapat tahan dia orang sebab dia orang perlu cari kerja yang lebih terjamin. Macam Syarikat saya, kadang-kadang putus kerja. Tiada ada projek. Jadi susah mahu kekalkan mereka. Saya lebih banyak ambil saudara sendiri, boleh kerja lebih lama sedikit. Lagipun, tidak ramai orang mahu berkerja di luar bandar.*

Interviewee 3: *For quite some time now, turnover among my employees has been frequent. I can't stop them from looking for another job because they need a more secure one. This is because I myself often experience temporary shutdowns and the absence of projects. I've resorted to hiring my own relatives, which has made retention easier. After all, not many people want to work in rural areas.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

Interviewee 3: *Tidak ada. Projek RTP, biasa-biasa Sahaja. Buat jalan, buat jamban, buat jambatan kayu. Jadi alat modern itu, cuma peralatan eletrik seperti pemutar skru sahaja. Lain-lain tidak ada.*

Interviewee 3: *None. RTP projects are typically straightforward. We build roads, toilets, and wooden bridges. So, in terms of modern equipment, we only have basic electric tools like screwdrivers. Others, no.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

Interviewee 3: *Dari pengalaman saya terdahulu, tiada masalah dengan surat tawaran projek. Biasa tiada percanggahan. Tetapi yang selalu jadi masalah bila kontraktor salah buat tidak ikut skop yang dibagi. Macam seorang rakan saya, dia salah buat. Tidak ikut material yang dibagi dalam skop kerja. Jadi kena buka dan buat balik. Jadi projek akan lewat lah. Sebab satu kerja buat dua kali. Rugi.*

Interviewee 3: *From my past experience, I haven't had any issues with project offer letters. Usually, there are no discrepancies. But the common problem arises when contractors deviate from the given scope of work. Like one of my friends, he made a mistake by not following the*

materials specified in the scope of work. So, we had to redo the work. As a result, the project was delayed because we had to do the job twice. It's a loss.

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 3: *Tidak pernah. Tapi orang kampung minta tukar tidak ikut skop kerja ada lah. Dalam kes ini, kalau saya, saya tidak teruskan projek. Saya akan rujuk dengan agensi dulu. Sebab kalau saya buat, saya salah. Kalau macam kes ini, projek bukan sahaja lambat tapi boleh jadi batal.*

    Interviewee 3: *It never happened, but requests from villagers to change the scope of work do occur. In such cases, if it were me, I wouldn't proceed with the project. I would first refer the matter to the relevant agency. Because if I were to proceed, I would be in the wrong. In situations such as these, the project could face not only delays but also the possibility of cancellation.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 3: *RTP ini tidak ada bayaran pampasan tanah untuk tapak. Kadang-kadang, ada orang kampung minta pampasan juga, kalau tidak bayar tidak suruh kita mula projek. Jadi kena runding dengan mereka, memang makan masa lah. Sepatutnya sebelum minta projek, orang kampung mesti sudah sediakan tapak tapi dalam sesuatu kes, dia orang minta bayaran pula.*

    Interviewee 3: *In RTP projects, there is no compensation payment for land acquisition. However, sometimes villagers request compensation. If payment is not provided, they refuse to allow the project to proceed, necessitating negotiations, which can be time-consuming. Ideally, villagers should have prepared the site before requesting the project, but in some cases, they also request compensation.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan

Interviewee 3: *Kalau projek lambat atau tidak siap, kontraktor akan disenarai hitam oleh Pejabat Daerah. Tidak dapat ikut cabutan undi. Nama kita pun buruk. Orang tidak percaya. Macam saya. Kalau nama tidak bagus, macam mana mahu dapat projek. Selangau ini kecil, semua orang kenal.*

Interviewee 3: *If a project is delayed or incomplete, the contractor will be blacklisted by the District Office. They won't be able to participate in the balloting process. It tarnishes their reputation, like mine. If your reputation isn't good, how can your secure projects? Selangau is small; everyone knows each other.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

Interviewee 3: *Paling penting rancang mana satu projek yang kita hendak terlibat dalam cabutan undi. Banyak perkara kita kena tengok, satu lokasi projek. Takut jauh nanti kita tidak mampu buat sebab tidak ada transport. Kedua, kita tengok budget kita ada, sebab RTP kita keluar budget dulu baru claim. Ketiga, kita lihat kita pandai buat atau tidak. Kalau pandai buat, kita ikut cabut undi. Kalau tidak pandai buat, jangan. Nanti sendiri susah, projek tidak siap atau lambat sebab kita tidak tahu cara buat.*

Interviewee 3: *The most important thing is to plan which projects we want to participate in the bidding process. There are many causes to consider. Firstly, the project location. We need to ensure it's not too far, as we might struggle with transportation. Secondly, we need to assess our budget, as for RTP projects, we have to spend our own funds before claiming reimbursement. Thirdly, we need to evaluate if we're capable of executing the project. If we're confident in our abilities, then we participate in the balloting. If not, it's better don't. Otherwise, we might encounter difficulties, such as incomplete or delayed projects due to our lack of expertise.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Interviewee 3: *Saya boleh elakkan daripada dapat projek yang jauh dan ada masalah pengangkutan. Kalau projek jauh di pedalaman mungkin budget tinggi dan tidak sesuai dengan budget yang saya ada dan akhirnya saya mungkin tidak dapat siapkan projek. Jadi sangat penting, saya kena nilai kekuatan Syarikat. Apa yang mampu dan tidak mampu saya buat.*

Interviewee 3: *I can avoid accepting projects that are far away and have transportation issues. If the project is located far in the interior, the budget might be high and not suitable for the budget I have, and ultimately, I might not be able to complete the project. Therefore, it's crucial for me to assess the company's strengths, what I can and cannot.*

Appendix B4

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 4: *Saya adalah pengurus dan pemilik syarikat ini.*

   Interviewee 4: *I'm the manager and owner of this company.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 4: *Saya telah terlibat dalam bidang ini dari tahun 2002. Lebih kurang 24 tahun.*

   Interviewee 4: *I have been involved in this field since 2002, so it's been about 24 years.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 4: *Bermula dari tahun 2015. Saya antara yang terawal terlibat dengan projek RTP di kawasan Marudi ini.*

   Interviewee 4: *It started in 2015. I was among the earliest to be involved in RTP projects in the Marudi area.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 4: *Sudah lebih dari sepuluh saya rasa. Tiap tahun ada satu atau mungkin dua projek.*

   Interviewee 4: *It's been more than ten years, I believe. Every year, there's usually one or maybe two projects.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 4: *Ya. Pada masa itu, saya terlibat dengan projek RTP yang terletak di pedalaman Miri, dan kawasan ini hanya boleh dihubungi jalan balak. Akibat hujan lebat, jalan raya berlumpur dan sukar dilalui terutama kenderaan berat. Oleh itu, sukar untuk menghantar bahan binaan ke tapak projek dan ini mengakibatkan kelewatan projek. Jalan balak dan sungai menjadi laluan utama untuk mengakses beberapa kawasan pedalaman di Miri.. Malah sungai sukar dilalui semasa musim kemarau.*

Interviewee 4: *Yes. At that time, I was involved in an RTP project located in the rural areas of Miri, accessible only by logging roads. Due to heavy rain, the roads became muddy and difficult to traverse, especially for heavy vehicles. As a result, it was challenging to transport construction materials to the project site, leading to project delays. Logging roads and rivers serve as the main access routes to several rural areas in Miri. Additionally, the rivers become difficult to go through during the dry season.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?
   Interviewee 4: *Tidak pernah.*
   Interviewee 4: *Never.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?
   Interviewee 4: *Tidak pernah. Kalau projek JKR atau DID dalam dua minggu sudah ada bayaran. Tetapi kalau projek federal macam projek baiki rumah panjang, ada lambat sedikit.*
   Interviewee 4: *Never. For JKR or DID projects, payments usually come within two weeks. However, for federal projects like repairing longhouses, there might be a slight delay.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 4: *Pengalaman saya, tempoh yang diperuntukkan memang sudah cukup. Namun, kesukaran dan kerumitan projek perlu diambil kira. Ada projek sukar dibina sebab jauh, susah mahu bawa mesin atau barang masuk ke lokasi.*
   Interviewee 4: *In my experience, the allocated time is usually sufficient. However, the difficulties and complexities of the project need to be taken into account. Some projects are challenging to build because they are remote, making it difficult to transport machinery or materials to the site.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?

   Interviewee 4: *Memang penyeliaan di lapangan kurang dilakukan. Tetapi bagi saya ianya tidak mempengaruhi projek. Sebab sebagai kontraktor projek, saya sendiri yang harus sentiasa ada di lapangan bagi memantau kerja-kerja pekerja saya.*

   Interviewee 4: *Indeed, there is less field supervision. However, I don't find it affecting the project much. As the project contractor, I personally ensure that I am always present in the field to oversee the work of my employees.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi ***Interviewee 4:*** *Kalau projek jauh di luar bandar, macam di hulu-hulu Sungai. Memang ada masalah mahu berkomunikasi sebab line telefon tidak ada atau tidak bagus. Kalau ini berlaku, projek akan ada masalah sebab kita tidak dapat teruskan projek selagi perkara yang meragukan tidak dapat diselesaikan atau belum ada jawapan.*

   Interviewee 4: *If the project is located far in rural areas, like upriver, communication can indeed be challenging because there may be no phone signal or it's unreliable. When this happens, the project might face issues because we can't proceed until uncertain matters are resolved or we receive answers.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 4: *Saya telah lama dalam bidang ini. Lebih dari 15 tahun. Sebelum ada RTP, saya telah ada lesen kelas F. Jadi, pengalaman itu memang banyak. Macam projek sudah syarikat saya buat. Ada untung ada juga rugi.*

    Interviewee 4: *I've been in this field for a long time, more than 15 years. Before the RTP existed, I already had a Class F license. So, I have a lot of experience. My company has undertaken various projects, some profitable and others may not.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 4: *Kalau jentera berat memang tidak ada. Kalau setakat mesin kecil yang pakai elektrik atau bateri adalah.*

Interviewee 4: *We don't have heavy machinery. We only have small machines powered by electricity or batteries.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 4: *Biasa untuk projek RTP, bayaran akan dibuat oleh agensi pelaksana selepas projek siap. Sementara itu, memang guna duit atau modal sendiri. Kalau pinjaman itu, memang jaranglah. Boleh dikatakan tiada. Kadang-kadang kalau kurang budget, saya akan hutang dengan kedai hardware. Tapi hardware kedai yang sudah biasa dengan saya lah, senang mahu hutang dulu.*

    Interviewee 4: *Usually, for RTP projects, payments are made by the implementing agency after the project is completed. In the meantime, we use our own funds or capital. Loans are rare, to the point of almost non-existent. Sometimes, if there's a budget shortfall, I'll borrow from local hardware stores. But it's usually from stores I have an established relationship with, making it easier to borrow from them.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 4: *Saya rasa tidak. Sebab bayaran biasanya lepas projek siap.*

    Interviewee 4: *I don't think so. Because payments usually come after the project is completed.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 4: *Harga barang binaan macam semin, batu dan pasir cepat sangat naik. Biasa budget kita akan lari kalau harga naik. Kadang-kadang memang ganggu perancangan, sebab kena cara untuk cover kos yang naik.*

    Interviewee 4: *The prices of construction materials like cement, stones, and sand can rise very quickly. Our budget tends to overrun when prices increase. Sometimes, it disrupts our planning because we have to figure out how to cover the increased costs.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 4: *Ya. Mengggangu perancangan projek terutamanya kos. Kenaikan harga barang binaan akan meningkat kos projek, jadi perancangan kos asal akan lari.*

    Interviewee 4: *Yes, it disrupts project planning, especially in terms of costs. The increase in prices of construction materials will raise project costs, causing the original cost planning to deviate.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Interviewee 4: *Projek akan lambat mula. Bila kita lambat mula, mungkin projek akan lambat siap. Biasa berlaku kalau projek jauh di luar bandar sebab transport susah kalau tiada jalan.*

    Interviewee 4: *The commencement of the project tends to be delayed, which can subsequently result in project completion delays. This scenario is common, especially for projects located far from urban centers, as transportation becomes problematic in the absence of proper roads.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

    Interviewee 4: *Kalau nak dapat pekerja mahir itu susah. Sebab biasa pekerja mahir lebih minat kerja dengan syarikat besar atau terjamin. Dari pengalaman saya, saya sendiri akan ajar mereka tetapi kalau sudah pandai, biasa dia orang akan minta gaji tinggi. Kalau tidak bagi dia orang akan cari tempat kerja lain lah.*

    Interviewee 4: *"Acquiring skilled workers is indeed challenging. One common obstacle is that skilled workers often prefer employment with larger or more secure companies. In my experience, I'm willing to provide training, but skilled workers typically demand higher salaries. If their demands aren't met, they tend to seek employment elsewhere".*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

    Interviewee 4: *Mencukupi itu tidak lah, Tetapi kalau sesuai itu, mungkin. Sebab RTP projek pun bukan kos besar. Macam saya punya lesen Cuma sampai dua ratus ribu. Jadi projek tidak susah sangat perlu peralatan yang moden atau canggih.*

Interviewee 4: *It's not sufficient, but if it's suitable, then perhaps. Because RTP projects don't involve large costs. Like my license, it's only up to two hundred thousand. So, projects don't require very modern or sophisticated equipment.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 4: *Kalau dalam surat tawaran atau skop kerja kita memang jarang ada kesilapan. Cuma ia menjadi silap bila skop kerja kita tidak sama dengan kehendak penerima terutama orang kampung. Selalu terjadi perselisihan pendapat antara kami sebagai kontraktor dengan orang kampung. Saya rasa projek dilulus dengan projek diminta mereka tidak sama. Kadang-kadang sebab halangan had kos, projek perlu dibuat dalam dua fasa tetapi orang kampung tidak paham. Di sini ada, salah komunikasi antara agensi dengan pemohon.*

    Interviewee 4: *In the offer letter or the scope of our work, there are rarely mistakes. It's just that it becomes a mistake when the scope of our work is not the same as the wishes of the recipient, especially the villagers. There are always disagreements between us as contractors and the villagers. I think approved projects and requested projects are not the same. Sometimes due to cost limit obstacles, the project needs to be done in two phases, but the villagers don't understand. Here there is miscommunication between the agency and the applicant.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 4: *Tidak pernah. Tetapi kerja tambahan diminta ada. Kadang-kadang orang kampung minta diubah skop dipertengahan projek, kalau ini berlaku memang susah. Biasa saya rujuk agensi sama ada JKR atau Pejabat Dearah. Sebab kalau saya buat, saya tidak ikut skop kerja. Kalau tidak buat, orang kampung tidak puas hati.*

    Interviewee 4: *It has never happened, but requests for additional work do arise. Sometimes, villagers request changes to the scope of work midway through the project, which can be quite challenging. In such cases, I typically refer to the relevant agency, whether it's JKR or the District Office.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 4: *Masalah transport. Kadang-kadang tiada ada jalan bertar atau bersemin. Susah hendak bawa barang masuk. Lagi-lagi kalau jalan tanah merah. Kalau tidak hujan tidak apa. Kalau hujan memang sangkut.*

    Interviewee 4: *Transportation issues. Sometimes, there are no tar-sealed or gravel roads. It's difficult to bring materials in, especially if it's a dirt road. It's fine when it's not raining, but during rainy seasons, it becomes a problem.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 4: The company will be blacklisted by the District Office. Additionally, the reputation of the local YB who awarded us the project will be affected. People will accuse the YB of not monitoring the project or not doing their job. The costs of building the project also increase. If this happens, profits will decrease.

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 4: *Memang saya ada buat perancangan awal. Sebab kami memang diajar cara uruskan perniagaan masa mohon lesen dan juga masa mahu renew lesen. Terutamanya kira-kira untuk kos projek. Kalau kos tinggi sangat, tidak berbaloi untuk saya ikut cabut undi, saya tidak akan ikut. Tunggu projek lain yang lebih bagus.*

    Interviewee 4: *Indeed, I do make initial plans. We were taught how to manage business during the process of applying for licenses and when renewing licenses. Especially in estimating project costs. If the costs are too high, it's not worth participating in the balloting process. I won't participate. I'll wait for better projects.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Interviewee 4: *Dengan membuat perancangan awal untuk mengira kos projek, saya dapat menilai sama ada projek tersebut ada potensi untung atau tidak. Jika kos projek terlalu tinggi dan tidak memberi untung yang cukup adalah baik untuk tarik diri daripada terlibat dalam cabutan undi. Ini membolehkan saya elak dari rugi dan menguruskan sumber yang syarikat ada dengan lebih baik. Dengan perancangan yang baik, saya dapat tengok peluang yang lebih baik dan boleh beri untung. Tidak tergesa-gesa buat keputusan.*

Interviewee: *By preparing an initial plan to calculate project costs, I can assess whether the project has profit potential or not. If the project costs are too high and do not provide sufficient profit, it's best to withdraw from participating in the balloting draw. This allows me to avoid losses and manage the company's resources more effectively. With good planning, I can identify better opportunities with profit potential. I won't rush into making decisions.*

Appendix B5

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 5: *Pemilik syarikat dan saya mempunyai tanggungjawab yang besar untuk menguruskan business syarikat ini. Cari kontrak dan uruskan segala hal berkaitan dengan kewangan termasuk sewa dan gaji pekerja.*

   Interviewee 5: *As the company's owner, I have significant responsibility for managing the business. I seek out contracts and oversee all financial matters, such as renting premises and paying employee salaries.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 5: *Secara serius pada tahun 2014. Pada tahun itu, saya telah mengikuti kursus asas kontraktor dan kursus untuk menguruskan perniagaan. Berjaya mendapat lesen Kelas F pada tahun yang sama. Dari segi pengalaman Ketika itu masih kurang sebab saya masih baru.*

   Interviewee 5: *I took it seriously in 2014. During that year, I attended basic contractor courses and business management courses. I successfully obtained a Class F license in the same year. In terms of experience, I was still lacking at that time because I was relatively new.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 5: *Tahun 2014, saya mendapat lesen dan tahun 2015 mula projek RTP. Jadi memang masa itu kita terus menyertai cabutan undi untuk projek RTP lah.*

   Interviewee 5: *In 2014, I obtained my license, and in 2015, I started with RTP projects. So, at that time, we immediately participated in the ballot for RTP projects.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 5: *Kalau jumlah sebenar saya tidak ingat. Tapi kalau kira ikut tahun, memang lebih dari sepuluh. Sebab dalam satu tahun itu paling kurang dapat satu projek. RTP pun sudah lama, tahun ini kalau tidak silap sudah sepuluh tahun RTP dilaksanakan oleh Kerajaan.*

Interviewee 5: *I don't recall the exact number, but if I count it by year, it's definitely more than ten. Because in one year, we typically get at least one project. RTP has been around for a long time now, if I'm not mistaken, it's been implemented by the government for ten years already.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 5: *Macam Syarikat saya sendiri. Kita berdaftar di Lawas, jadi projek RTP pun kita mesti buat di kawasan Lawas sahaja. Kalau kena projek dekat dengan bandar, senang untut buat. Tetapi kalau jauh di luar bandar, memang bermasalah sebab transport. Memang aka nada lewat sedikit seminggu dua macam itu. Kalau lewat sangat itu, belum ada lah.*

   Interviewee 5: *Like my own company, we're registered in Lawas, so we only do RTP projects in the Lawas area. If the project is near the city, it's easy to manage. But if it's far out in the rural areas, transportation becomes a problem. There might be slight delays, like a week or two. But if it's too late, that hasn't happened yet.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 5: *Kalau bayaran lewat itu tidak ada. Kadang-kadang yang membuat dia lewat kalau inspection lewat dibuat oleh agensi perlaksana. Sebab kalau projek sudah siap, mereka perlu periksa dan ada borang perlu ditandatangan oleh penerima RTP. Biasanya ketua kampung atau tuai rumah yang tandatangan.*

   Interviewee 5: *There are no late payments. Sometimes, the delays are caused by late inspections conducted by the implementing agency. Because once the project is completed, they need to inspect it, and there are forms that need to be signed by the RTP recipient. Usually, it's signed by the head of village or the tuai rumah.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?

   Interviewee 5: *Belum pernah ada kes yang tertangguh lama. Kalau ada pun, dalam dua tiga minggu selepas kita buat tuntutan bayaran kepada agensi.*

Interviewee 5: *There have never been any long delays. If there are any, it's usually within two to three weeks after we submit the payment claim to the agency.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 5: *Bergantung kepada keadaan projek. Kesukaran biasanya berlaku bukan sebab skop kerja tetapi disebabkan lokasi projek. Jarak memainkan peranan, sebab kalau jauh di luar bandar, biasanya ada masalah penghantaran bahan binaan. Jadi perjalanan akan mengambil sedikit masa.*
   Interviewee 5: *It depends on the project's circumstances. Difficulty usually arises not because of the scope of work, but due to the project location. Distance plays a role, because if it's far from urban areas, there are usually issues with delivering construction materials. So, transportation takes a bit of time.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 5: *Bagi saya pemantauan yang berterusan harus ada. Kalau tidak dipantau maka perkembangan projek tidak dapat diketahui, mungkin ada masalah pun kita tidak tahu. Macam saya sendiri, saya akan turun padang. Paling tidak pun, saya akan telefon supervisor saya.*
   Interviewee 5: *In my opinion, continuous monitoring is essential. Without monitoring, we can't track the project's progress, and there might be issues that go unnoticed. Personally, I make it a point to visit the site regularly. At the very least, I'll call my supervisor to get updates.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?
    Interviewee 5: *Arahan atau polisi mereka tidak sampai dengan jelas. Jadi, kita akan masalah dalam melaksanakan projek.*
    Interviewee 5: *Their instructions or policies are not always clear. So, we face difficulties in implementing the project.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 5: *Macam yang saya cerita awal tadi. Saya memang ada hadir kursus sebelum mendapat lesen Kelas F. Tahun ini, saya kena renew lesen, jadi kena hadir kursus juga, sebab memang wajib. Dari segi pengalaman, saya telah lama buat RTP. Dari tahun 2015 lagi.*

    Interviewee 5: *Like I mentioned earlier, I did attend courses before obtaining my Class F license. This year, I need to renew my license, so attending courses is mandatory. In terms of experience, I've been involved in RTP for a long time, since 2015.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 5: *Ya. Memang sejak dulu saya beli sikit-sikit peralatan yang digunakan untuk projek.*

    Interviewee 5: *Yes. Since the beginning, I have been gradually purchasing equipment used for projects.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 5: *Setakat ini belum pernah minta pinjaman. Memang guna modal sendiri. Kalau adapun saya guna credit term dengan kedai hardware. Biasa kedai mahu, sebab sudah lama saya beli dengan dia.*

    Interviewee 5: *So far, I haven't requested any loans. I've been using my own capital. If needed, I utilize credit terms with hardware stores. They're usually willing since I've been a long-time customer.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 5: *Tidak juga. Sebab saya dibayar bila projek selesai. Tapi kalau boleh bayar atau tuntut ikut fasa skop kerja, ada bagus juga boleh buat modal pusingan. Tidak perlu habis projek baru tuntut.*

Interviewee 5: *Not really. I will get paid when the project is completed. But if it's possible to request payment according to the project's scope stages, it would be beneficial for cash flow. It's not necessary to wait until the project is entirely finished to request payment.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 5: *Macam saya di Lawas ini, saya ada masalah bekalan bahan binaan. Sebab Lawas jauh atau kena lalu Brunei. Jadi, kadang-kadang barang-barang lebih mahal sebab saya kena beli dari Kota Kinabalu kalau di Lawas tidak ada stok. Dalam setengah tahun lepas Covid-19 dulu, saya tidak dapat buat kerja sebab kekurangan bekalan bahan binaan terutamanya simen.*

    Interviewee 5: *Like in Lawas, I'm facing a shortage of construction materials. Because Lawas is far away or has to go through Brunei, sometimes items are more expensive because I have to buy from Kota Kinabalu if there's no stock in Lawas. During the past six months after COVID-19, I couldn't work due to the shortage of construction materials, especially cement.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 5: *Memang ada. Sebab saya cuma kontraktor Kelas F, paling tinggi projek pun dalam 200,000, itu pun kalau ada sampai itu harga. Biasanya bawah 50,000. Jadi margin untung kita tidak banyak, kalau harga naik mendadak, memang saya dalam masalah. Mahu bayar gaji pekerja lagi.*

    Interviewee 5: *There are indeed challenges. Because I'm only a Class F contractor, the highest project value I handle is around 200,000, and even that's not always the case. Usually, it's below 50,000. So, our profit margin isn't substantial, and if prices suddenly rise, I'm in trouble, especially when it comes to paying my workers' wages.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Interviewee 5: *Bagi sesetengah projek RTP yang saya laksanakan, penghantaran bahan binaan sering mengalami masalah kelewatan akibat daripada punca jalan. Jika, kawasan projek berada di hulu-hulu dan tiada jalan tar. Saya sendiri terpaksa membawa bahan binaan*

tersebut mengggunakan hilux atau kalau melalui sungai akan mengunakan perahu panjang. Memang sukar untuk saya.

Interviewee 5: *For some of the RTP projects I undertake, the delivery of construction materials often faces delays due to road conditions. If the project area is in remote locations with no tar-sealed roads, I have to transport the construction materials using a Hilux or, if through a river, a longboat. It's indeed challenging for me.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

Interviewee 5: *Ini memang cabaran besar bagi saya. Saban tahun saya akan mendapat pekerja baru. Sebab pekerja yang mahir, mereka mahu jaminan kerja. Kalau macam kelas F macam saya ini, susah mahu beri jaminan. Kadang-kadang putus kerja sebab tidak ada kontrak. Mereka gaji hari, kalau tidak ada kontrak , tidak ada kerja. Jadi mereka cari kerja tempat lain. Biasa saya akan gaji orang kampung sendiri, tempat di mana projek saya buat.*

Interviewee 5: *This is a big challenge for me. Every year, I find myself needing to onboard new employees. Skilled workers prioritise job security, which is difficult for me to provide as an F-class contractor. Since our work is often project-based, without a project, there's no guarantee of employment. Since I hire my workers on a daily wage basis, the absence of a project leaves them without work, leading them to seek employment elsewhere. As a workaround, I often hire people from the village where the projects are located.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

Interviewee 5: *Moden sangat itu tidak lah. Tetapi kalau setakat mesin-mesin kecil macam gergaji berantai, gerudi elektrik, itu ada.*

Interviewee 5: *Modern equipment is not really available. But if it's small machines like chainsaws, electric drills, those are available.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

Interviewee 5: *Setakat ini tidak pernah berlaku.*

Interviewee 5: *So far, it has never happened.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 5: *Arahan dari agensi pelaksana belum pernah berlaku. Tapi orang kampung minta tukar memang ada. Tapi saya tidak boleh tukar sesuka hati, mesti rujuk balik agensi. Biasanya kena dapat kelulusan baru kalau mahu tukar.*

    Interviewee 5: *Never received Instructions from the implementing agency. However, requests for changes from the villagers are common. Nevertheless, I cannot make changes at my discretion; I must refer back to the agency. Usually, new approval is required if changes are to be made.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 5: *Masalah tapak projek. Kadang-kadang orang kampung ada masalah mahu sediakan tapak projek. Masa mohon semua ok tetapi lepas lulus jadi lain. Minta dibayar tapak projek. Kontraktor macam saya memang tidak ada budget bayar pampasan tapak, lagipun RTP memang tidak ada budget bayar pampasa. Budget RTP untuk pembinaan sahaja.*

    Interviewee 5: *Project site's issue. Sometimes, villagers encounter difficulties in providing project sites. While everything seems fine during the application process, the situation changes after approval. They request payment for the project site. Contractors like myself typically do not have a budget to pay for site compensation, especially since RTP projects do not allocate funds for compensation. The RTP budget is used solely for construction purposes.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 5: *Impak memang banyak. Kalau dari sudut kontraktor, saya boleh kena blacklisted. Tidak dapat ikut cabut undi projek untuk tempoh tahun tersebut. Bukan senang mahu ikut cabut undi semula, sebab nama sudah blacklisted sebab kita punya gred prestasi tidak bagus. Lagi teruk, kalau kontrak boleh ditamatkan.*

Interviewee 5: *There are many impacts. From the contractor's perspective, I could be blacklisted. I won't be able to participate in project bidding for that year. It's not easy to re-enter the balloting process because my name is already blacklisted due to poor performance rating. Worse yet, the contract could be terminated.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 5: *Kalau saya, macam yang saya selalu buat. Saya akan pantau projek selalu. Sebab kalau ada apa-apa masalah, saya boleh tahu. Jadi senang mahu selesaikan. Biasa kalau kita tidak tengok, pekerja kadang-kadang tidak bagi tahu. Sebab makin lama projek tidak tidak siap, makin banyak hari dia kerja, makin banyak gaji tetapi yang bermasalah nanti saya. Kalau projek lewat siap, saya kena tanggung akibat. Tuntutan pun akan lewat, duit lambat masuk, saya akan susah bayar gaji dan bayar hutang kedai.*

    Interviewee 5: *For me, I usually keep a close eye on the project. Because if there are any problems, I can know about them and easily resolve them. Usually, if we don't check, workers sometimes don't inform us. Because the longer the project is not completed, the more days they work, the more wages they earn, but the problem will be on my end. If the project is delayed, I have to bear the consequences. Claims will also be delayed, money will come in late, and I will have difficulty paying salaries and debts to the hardware store.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

    Interviewee 5: *Bagi saya, pemantauan penting kerana ia membolehkan saya kenal pasti dan selesai masalah dengan cepat sebelum ia jadi lebih serius atau menjejaskan keseluruhan projek. Melalui pemantauan penggunaan sumber seperti tenaga buruh dan bahan-bahan binaan, saya dapat kawal kos projek dengan lebih baik. Pemantauan yang berterusan bantu saya memastikan projet dilaksanakan ikut spekfikasi atau BQ yang ditetapkan. Ini penting untuk jaga nama baik syarikat dan JKR, DID atau Majlis pun puas hati.*

    Interviewee 5: *For me, monitoring is crucial because it allows me to identify and resolve issues quickly before they become more serious or affect the entire project. Through monitoring the use of resources such as labor and construction materials, I can better control*

project costs. Continuous monitoring helps me ensure that the project is implemented according to the specified specifications or BQ. This is important to maintain the reputation of the company, and it ensures satisfaction from authorities like the JKR, DID, or local councils.

Appendix B6

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 6: *Saya pemilik Syarikat. Peranan saya sebagai pemilik, saya pengurus dan saya juga pekerja.*

   Interviewee 6: *I am the company's owner. My role encompasses that of an owner, manager, and worker.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 6: *Mula dalam tahun 2017. Lebih kurang dalam tujuh ke lapan tahun sudah.*

   Interviewee 6: *Started in 2017. It's been about seven to eight years now.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 6: *Memang dari 2017. Tahun mula dapat lesen dan terus ikut buat projek RTP.*

   Interviewee 6: *Yes, since 2017. That's when I obtained my license and immediately started participating in RTP projects.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 6: *Sepanjang lebih kurang lapan tahun ini, sudah ada lebih sepuluh projek. Sebab ada masa dalam satu tahun itu, dapat dua atau tiga projek.*

   Interviewee 6: *During these eight years, there have been more than ten projects. Sometimes, within a year, we manage to secure two or three projects.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 6: *Kalau yang kritikal sampai tidak siap tidak adalah. Tetapi dalam 10% itu memang ada.*

   Interviewee 6: *Critical delays to the point of not completing the project are rare, but they do happen, although they make up only about 10% of cases.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?
   Interviewee 6: *So far, tidak ada masalah.*
   So far, no problem.

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?
   Interviewee 6: *Bagi saya tidak ada masalah tetapi tidak tahu rakan-rakan yang lain lah.*
   Interviewee 6: *For me, there haven't been any issues, but I don't know the others.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 6: *Saya rasa tempoh masa 3-4 bulan memang cukup. Tetapi kena tengok besar atau kecil projek. Lagi satu tengok lokasi dan jalan masuk juga.*
   Interviewee 6: *I think a period of 3-4 months is generally sufficient. However, it depends on the size of the project. Also, the location and accessibility of the site need to be considered.*
9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 6: *Tiada pengawasan boleh menjadikan projek lewat. Macam saya sendiri, kalau saya ada memang pekerja buat kerja laju. Sama juga, kalau agensi tidak awasi, ada sesetengah kontraktor tidak turun padang, harapkan pekerja. Kalau ada masalah di lapangan, susah kita mahu tahu.*
   Interviewee 6: *The lack of supervision can indeed lead to project delays. Personally, I ensure that my workers are efficient and diligent. Similarly, if the agency doesn't supervise, some contractors may not visit the site regularly, relying solely on the workers. If there are issues on the ground, it's difficult for us to know without proper supervision.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?
    Interviewee 6: *Sebagai kontraktor saya bergantung dengan agensi pelaksanaan semasa buat projek. Kalau wakil agensi atau penyelia susah untuk dihubungi, saya akan mengalami*

masalah terutamanya kalau ada perkara yang saya perlu rujuk segara berkaitan dengan masalah di tapak projek.

Interviewee 6: *As a contractor, I rely heavily on the implementing agency during project execution. If agency representatives or supervisors are difficult to contact, I will encounter problems, especially if there are urgent matters I need to address related to issues at the project site.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 6: *Untuk dapat lesen Kelas F memang perlu ada kursus dahulu dengan CIDB. Kursus Asas Pengurusan Pembinaan. Itu pun belum tentu dapat ikut cabutan undi projek RTP. Kena interview dulu dengan Pejabat Daerah. Kalau tidak ada pengalaman memang tidak dapat. Macam saya sendiri, memang dulu saya pernah buat kerja-kerja sebagai buruh kasar.*

    Interviewee 6: *To obtain a Class F license, you need to attend a course with CIDB, the basic construction management course. Even then, it's not guaranteed that you'll be able to participate in the RTP project balloting. You need to be interviewed first by the District Office. Without experience, it's unlikely you'll succeed. Like myself, I used to work as a construction laborer before.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 6: *Peralatan asas pertukangan memang ada. Kalau tidak ada memang susah buat kerja, Kalau mesin-mesin berat macam jentolak, memang tidak ada. Itu kalau perlu saya akan sewa.*

    Interviewee 6: *Basic carpentry tools are available. Without them, it's difficult to work. However, heavy machinery like excavators, we don't have. If needed, I'll rent them.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 6: *Kalau pinjaman itu memang tidak pernah buat. Biasanya bank tidak terima sebab syarikat tidak ada projek tetap. Kecualilah kalau ada asset untuk dicagar, mungkin dapat. Buat masa ini memang modal sendiri atau hutang dengan kedai hardware.*

    Interviewee 6: *Loans are something I've never pursued. Banks usually reject us because our company doesn't have steady projects. Unless we have assets to offer as collateral, it might be possible. For now, it's either self-funding or borrowing from hardware stores.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 6: *Tidak. Projek siap baru bayar. Sebab RTP adalah projek Kerajaan Sarawak. Biasa nya state tidak bermasalah. Cuma kalau kena projek federal macam baik pulih rumah, mungkin ada lewat sedikit.*

    Interviewee 6: *No, payment is made only after the project is completed. Since RTP is a Sarawak State Government project, there are usually no issues with payments. However, for federal projects like repairing houses, there might be slight delays.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 6: *Saya rasa ini bukan masa kontraktor kecil macam saya, Syarikat-syarikat besar pun ada masalah dengan harga barang. Kadang-kadang harga mendadak naik, paling-paling 10-15%. Jadi perancangan awal terutamanya kos memang terganggu.*

    Interviewee 6: *I think this affects not just small contractors like me, but also large companies. Sometimes prices spike suddenly, by as much as 10-15%. So, early planning, especially regarding costs, is disrupted.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 6: *Macam yang saya cakap tadi. Harga kadang-kadang naik tinggi. Jadi kos pembinaan pun naik. Jadi memang susah lah, kita buat kerja. Kena piker balik macam mana*

nak kurangkan kos sebab margin untuk projek tidak besar. Kalau projek 50 ribu, memang susah.

Interviewee 6: *Like I mentioned earlier, prices sometimes skyrocket. So construction costs go up as well. It's tough for us to work. We have to think about how to reduce costs because the profit margin for projects isn't large. If it's a 50,000 project, it's really difficult.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

Interviewee 6: *Biasa saya ada masalah dengan penghantaran. Terutama kalau kawasan projek jauh di pendalaman. Sebab ikut jalan merah akan ada masalah kalau hujan. Lori tidak dapat masuk. Lagilah kalau ikut Sungai, lagi susah barang mahu sampai. Kena ikut masa yang betul. Kadang-kadang Sungai cetek.*

Interviewee 6: *I usually have issues with deliveries, especially if the project area is far into the interior. Because if it's along dirt roads, there are problems when it rains. Trucks can't get through. It's even harder if we have to use the river; getting the materials there is a challenge. We have to time it right. Sometimes, the river is shallow.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

Interviewee 6: *Biasa memang tidak tetap. Sebab itu saya biasa ikut projek. Pakai orang tempatan lagi senang. Kalau buat dekat Kampung A, jadi cari orang kampung itu yang mahu kerja. Pandai atau tidak itu, nasiblah. Sebab itu mesti mahu pantau betul-betul.*

Interviewee 6: *Usually, it's not stable. That's why I prefer to follow projects. It's easier to hire locals. If it's in Village A, I'll hire people from there. Whether they're skilled or not, it depends on luck. That's why I have to monitor closely.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

Interviewee 6: *Peralatan asas ada. Sebab kalau tidak ada memang susah buat kerja. Saya generator pun ada. Sebab kalau nak pakai elektrik kita tidak boleh sambung terus dari orang kampung.*

Interviewee 6: *Basic equipment is available. Because without it, it's really hard to work. I even have a generator. Because we can't directly connect to the village's electricity if we need power.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 6: *Setakat ini tiada masalah. Yang jadi masalah kalau kontraktor tidak ikut spec. Memang kena ubah la. Sebab mesti ikut skop kerja atau BQ.*

    Interviewee 6: *So far, there haven't been any issues. The problem arises when contractors don't adhere to the specifications. Then we have to make changes because we must follow the scope of work or the BQ.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 6: *Setakat ini tidak pernah berlaku.*

    Interviewee 6: *So far, it has never happened.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 6: *Ali baba projek. Ada kontraktor ikut cabutan undi, dapat tetapi tidak buat projek minta orang lain buat. Dia ambil komisyen. Jika ini berlaku, kontraktor yang buat akan ada masalah dengan margin profir sebab dia kena bayar komisyen. Jadi, boleh berlaku kesilapan sebab dia buat dengan tergesa-gesa nak kejar masa. Kalau silap kena buat balik, kalau tidak projek tidak lulus. Jadi projek akan makan lebih masa atau boleh jadi lambat.*

    Interviewee 6: *Ali Baba projects. Some contractors participated in the balloting draw for the RTP project, were successful in winning the project, but subcontracted the project to someone else in exchange for a commission. If this occurs, the contractor performing the work may encounter profit margin issues because they have to pay a commission. This could lead to mistakes due to rushing to meet deadlines. If mistakes are made, the work may need to be redone, risking project approval. As a result, the project may take longer or be delayed.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 6: *Pada pendapat saya banyak pihak akan terjejas, bukan kontraktor sahaja tetapi melibatkan agensi pelaksana termasuk Kerajaan. Kalau banyak projek tidak siap, orang akan anggap kontraktor tidak pandai buat kerja, agensi tidak pantau dengan baik dan Kerajaan tidak bagus, tidak bantu rakyat. Imej setiap yang terlibat akan terjejas*

    Interviewee 6: *In my opinion, many parties will be affected, not just the contractors but also the implementing agencies, including the Government. If many projects are not completed on time, people will perceive the contractors as incapable, the agencies as inadequately supervised, and the Government as ineffective and not helping the people. The image of everyone involved will be affected.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 6: *Saya buat perancangan awal. Pilih projek yang sesuai dengan kemampuan saya buat. Kadang-kadang tengok modal juga, sebab kalau modal tidak cukup nanti susah mahu siapkan projek. Barang boleh hutang kedai tetapi gaji pekerja tidak boleh hutang, Tiap bulan kena ada gaji. Projek lepas siap 3 atau 4 bulan baru ada bayaran. Kalau gaji tidak dapat bayar nanti pekerja tidak mahu turun kerja. Saya juga yang susah.*

    Interviewee 6: *I make early plans. I choose projects that match my capabilities. Sometimes I consider the capital too because if it's not enough, it will be difficult to complete the project. Materials can be bought on credit from stores, but workers' salaries cannot be delayed. Every month, they need to be paid. Payment for completed projects usually comes after 3 or 4 months. If I can't pay salaries, workers won't come to work. It's a difficult situation for me as well.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Interviewee 6: *Dengan membuat perancangan awal untuk pilih projek yang sesuai dengan kemampuan syarikat, saya yakin dapat siapkan projek dengan baik. Ini bantu saya elakkan diri dapat projek yang melampaui kemampuan syarikat buat dan boleh kurangkan risiko gagal. Buat projek ikut modal yang ada bagi pastikan syarikat tidak mengalami masalah kewangan yang serius akibat tidak cukup modal semasa buat projek. Rancangan kewangan boleh bantu saya ada modal yang cukup untuk bayar gaji pekerja dan bayar keperluan kewangan lain.*

Interviewee 6: *By preparing an early plan to select projects that align with the company's capabilities, I am confident that I can execute the projects effectively. This helps me avoid getting projects that exceed the company's capabilities and reduces the risk of failure. Adhering to the available capital ensures that the company doesn't face serious financial issues due to insufficient funds during project execution. Financial planning assists in ensuring that I have sufficient capital to pay employee salaries and meet other financial obligations.*

Appendix B7

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 7: *Saya pemegang lesen Syarikat. Syarikat ini adalah milik sendiri. Jadi segala urusan Syarikat saya kena uruskan sendiri. Dari urusan cari projek sampai ke bayar gaji, saya buat sendiri.*

   Interviewee 7: *"I am the holder of the company license. This company is my own. So, I have to manage all company matters myself. From finding projects to paying salaries, I do it all myself."*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 7: *Saya mula dalam bidang ini pada 2020 iaitu setahun selepas saya bersara wajib.*

   Interviewee 7: *"I started in this field in 2020, which was a year after I retired."*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 7: *Lebih kurang tiga tahun iaitu sejak 2020.*

   Interviewee 7*: "About three years, since 2020."*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 7: *Lebih kurang dalam lima ke sepuluh projek.*

   Interviewee 7*: "Around five to ten projects."*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 7: *Ada juga. Tetapi tidak teruk sangat lama. Kalau ada masalah luar jangka, kita boleh mohon untuk extend. Lagi-lagi kalau jauh dari bandar sebab masalah transport.*

   Interviewee 7: *"Yes, there are. But they're not too severe or prolonged. If there are unexpected problems, we can apply for an extension, especially if it's far from the city due to transportation issues."*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 7: *Sepanjang tiga tahun ini. Tidak pernah*

   Interviewee 7: *"Throughout these three years, never."*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?

   Interviewee 7: *Saya sendiri tidak pernah. Kalau ikut pengalaman rakan-rakan yang lebih lama dalam RTP, mungkin sebab lambat buat inspection akhir. Sebab lepas projek siap, kita kena bagi tau agensi pelaksana untuk datang tengok. Kalau lulus baru dapat tuntut.*

   Interviewee 7: *"I personally never have. But according to the experience of my colleagues who have been longer in RTP, it might be because of delayed final inspections. After the project is completed, we have to inform the implementing agency to come and inspect. Only after approval can we make a claim."*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?

   Interviewee 7: *Setakat yang saya buat ketika ini, tiada masalah. Cuma kena tengok tempat dan jarak projek. Kalau jauh dan ada masalah transport, memang perlu lebih masa sikit sebab susah mahu sampai bawa barang binaan masuk sana.*

   Interviewee 7: *"So far, with the projects I've undertaken, there haven't been any issues. It's just a matter of assessing the location and distance of the project. If it's far and there are transportation problems, it naturally takes a bit more time because it's challenging to transport construction materials there."*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?

   Interviewee 7: *Kalau mereka tidak pantau, kita susah mau bertanya. Kadang-kadang ada skop kerja yang kita kurang pasti. Jadi kena tanya, kalau mereka tidak ada kita kena telefon. Itu pun kalau dapat telefon, kalau jauh, tiada line, memang kena tunggu kita balik bandar, baru kita dapat jumpa dan tanya.*

Interviewee 7: *"If they don't monitor, it's difficult for us to inquire. Sometimes, there are scopes of work that we're unsure about. So, we have to ask. If they're not around, we have to call. But even if we manage to call, if it's far away or there's no signal, we have to wait until we return to the city to meet and ask."*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?
    Interviewee 7: *Kita susah hendak berkerjasama. Kalau tidak kenal atau tidak biasa, mahu cakap pun susah. Kadang-kadang kita tidak tahun siapa yang selia projek, sebab kadang-kadang ada bertukar orang selia projek tetapi kita tidak tahu.*
    Interviewee 7: *"It's difficult for us to collaborate. If we don't know or aren't familiar with someone, it's hard to communicate. Sometimes, we don't even know who's supervising the project because sometimes there are changes in project supervisors, but we're not informed."*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?
    Interviewee 7: *Kursus memang ada. Sebab memang diwajibkan. Tetapi pengalaman itu, macam saya dulu cuma tengok orang buat tetapi lepas dari jadi kontraktor baru betul-betul buat sendiri.*
    Interviewee 7: *"Training courses are indeed available because they're mandatory. However, in terms of experience, like myself, I only observed others before becoming a contractor, but it was only after becoming one that I truly started doing it myself."*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?
    Interviewee 7: *Barang kerja memang ada. Kalau tidak cukup memang susah buat kerja. Peralatan pun yang kecil-kecil saja. Cukup untuk buat projek. Lainlah kalau buat jalan, atau jambatan konkrit memang perlu mesin besar macam jentolak.*
    Interviewee 7: *"Work materials are indeed essential. If there's a shortage, it's challenging to proceed with the work. As for equipment, I only have the basics, sufficient for the projects. It's different when it comes to roadworks or concrete bridge construction, where large machinery like excavators are necessary."*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 7: *Pembiayaan kewangan memang tidak ada. biasa pakai modal sendiri.*

    Interviewee 7: *"Financial financing isn't available. I usually use my own capital."*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 7: *Tidak pernah berlaku selama ini.*

    Interviewee 7: *"It has never happened so far."*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 7: *Paling susah adalah mahu dapat harga murah. Biasa harga barang pakai buat projek memang mahal. Lagi-lagi tempat macam Belaga ini. Kalau banding tempat lain, harga mungkin ada mahal sedikit sebab Belaga jauh dari bandar atau sumber bekalan. Tapi apa boleh buat, itu saja kedai yang paling dekat. Kalau order dari Bintulu lagi jauh.*

    Interviewee 7: *The most challenging aspect is obtaining affordable prices. Typically, the cost of materials required for projects is high, particularly in remote locations like Belaga. Compared to other areas, prices may be slightly higher due to Belaga's distance from urban centers or supply sources. However, given the circumstances, the closest store is often the only option. Ordering from Bintulu, the nearest town is not a viable alternative.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 7: *Ya. Kalau turun itu memang tidak. Harga sentiasa naik. Kalau harga naik, kos kita pun naik. Untung pun jadi kurang. Ada orang cepat-cepat buat sebab mahu kurang kos gaji, tapi ujung-ujung salah buat atau tidak ikut BQ. Ini pernah berlaku, rakan saya kena buat semula. Jadi masa double. Projek jadi lewat.*

    Interviewee 7: *Yes, if prices decrease, it's rare. Prices tend to always rise. When prices increase, our costs increase as well, resulting in reduced profits. Some individuals rush*

through tasks to minimize labor costs, but often end up making mistakes or not adhering to the Bill of Quantities (BQ). I recall an incident where my friend had to redo a task, doubling the time spent on it, resulting in project delays.

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

Interviewee 7: *Kalau saya, memang selalu cuba runding dengan kedai supaya hantar cepat. Tapi kadang-kadang atas punca jalan adan jarak, mereka pun lambat sampai.Ada satu masa, lori hantar barang sangkut sebab jalan becak, lagi pening pikir macam mana mau tarik. Memang cabaranlah.*

Interviewee 7: *I always try to negotiate with the store to expedite deliveries. However, sometimes delays occur due to road conditions and distance. I recall one instance when a lorry got stuck while delivering constructions material to my project site because of a muddy road, leaving me to figure out how to navigate the situation. It's undoubtedly a challenge.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

Interviewee 7: *Ini satu cabaran besar bagi saya. Susah mahu dapat pekerja. Bukan sahaja yang mahir, yang tidak mahir pun sukar sebab kita sebagai kontraktor kecil-kecilan tidak ada projek tetap. Habis satu projek, tunggu projek lain ada, mungkin makan masa. Paling kurang satu atau dua bulan. Mereka perlu kerja sebab gaji hari.*

Interviewee 7: *This is a big challenge for me. It's hard to recruit employees. Not only the skilled, but the unskilled are also difficult because we, as small contractors, do not have fixed projects. After one project, wait for another one; it may take time. At least one or two months. Employees need to continue working because they are daily paid workers.*

.

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk ***Interviewee 7:*** *Kalau mahu kata moden itu tidak tapi kalau alat-alat yang saya guna untuk kerja hari-hari memang ada. Macam jigsaw, ketam eletrik atau generator adalah.*

Interviewee 7*: "If you mean modern in terms of technology, no. But as for the tools I use for daily work, yes, I have them. Tools like jigsaws, electric planers, or generators are.*

20. ″Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 7: *Kesilapan dalam BQ sebelum ini tidak berlaku. Cuma BQ tidak ikut kehendak orang kampung ada. Mereka selalu kata, skop kerja kita salah sebab tidak ikut apa yang mereka minta. Kalau ikutkan, kita buat ikut BQ. Jadi saya rasa, ada salah faham antara agensi yang buat BQ dengan orang kampung.*

    Interviewee 7: *Errors in the Bill of Quantities (BQ) have not been an issue before. However, the BQ does not match the preferences of the villagers. They frequently argue that our scope of work is inaccurate because it does not reflect their requests. Ideally, we adhere to the BQ. I believe there is a misunderstanding between the agency responsible for preparing the BQ and the villagers.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 7: *Macam saya cakap tadi. Petukaran arahan dari agensi tidak ada, tetapi orang kampung suruh tukar ikut yang mereka mahu, memang ada.*

    Interviewee 7: *"Like I mentioned earlier, there are no changes in directives from the agency, but there are requests from villagers to change things according to their preferences."*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 7: *Mungkin modal. Macam saya masih baru dalam projek ini, modal memang masalah. Mahu beli barang, mahu bayar gaji memang perlu modal. Kadang-kadang kita rasa takut kalau pekerja banyak hari kerja dalam satu bulan, takut nanti tidak cukup duit bayar gaji. Sebab kalau tunggu claim, kena tunggu projek siap. Jadi masa sukar itu di antara projek mula dengan projek selesai. Di tengah-tengah itu, kita perlu duit. Kalau boleh, kita sebagai kontraktor kecil dibayar secara berperingkat mengikut fasa projek yang telah selesai.*

    Interviewee 7: *Capital maybe. As a newcomer to this project, capital is a significant concern for me. Buying goods and paying salaries require substantial capital. Sometimes, I worry about haven't enough funds to pay salaries, especially if employees work many days in a month. Waiting for a claim means waiting until the project is completed, which creates*

financial challenges between the project's start and completion. If possible, small contractors like us could receive payments in stages based on the completed project phases.

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 7: *Kalau ikut taklimat dari Pejabat Daerah Belaga. Kalau ada masalah dengan projek. project tidak siap, memang syarikat akan kena blacklisted. Kalau kena blacklisted saja tidak apa. Kadang-kadang nama kita pun tidak bagus. Ini Belaga tidak besar semua orang kenal. Lagi satu, kita sama YB pun kenal. Jadi YB tengok kita tidak serius buat projek dia. Tidak tolong rakyat.*

    Interviewee 7: *"According to the briefings from the Belaga District Office, if there are problems with the project, if it's not completed, the company will indeed be blacklisted. Being blacklisted alone isn't the only consequence. Sometimes, it tarnishes our reputation too. In Belaga, which isn't a big place, everyone knows each other. Also, we're acquainted with the local YB. So, if the local YB sees us as not serious in carrying out their projects, as not helping the people, it's detrimental."*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 7: *Biasanya saya akan study dulu projek mana yang saya mahu ikut cabut undi. Kalau sudah cabut undi, kalau dapat, mesti kena buat. Kalau tarik diri. Nanti kena blacklisted juga.*

    Interviewee 7: *"Usually, I study which projects I want to participate in before entering the ballot. Once I've entered the ballot and been selected, I have to proceed. If I withdraw, I'll still end up blacklisted."*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Interviewee 7: *Macam saya cakap tadi, kajian awal mengenai projek-projek yang ada sebelum cabutan undi, akan bantu saya nilai projek mana yang paling sesuai dengan keupayaan syarikat saya. Saya dapat lihat risiko dan peluang yang ada pada setiap projek yang akan terlibat dalam cabutan undi. Saya dapat jangka, kalau saya buat nanti, ada untung atau ada masalah.*

Interviewee 7: *As I mentioned earlier, preliminary study on the available projects before the balloting draw will help me to assess which projects are most suitable for my company's capabilities. I can identify the risks and opportunities associated with each project that will be involved in the balloting draw. I can anticipate whether there will be profits or problems if I proceed with a particular project.*

Appendix B8

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 8: *Saya merupakan pemilik Syarikat dan pada masa yang sama juga pengurus Syarikat.*

   Interviewee 8: *I'm the owner of the company and at the same time also the manager of the company.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 8: *Sebelum buka Syarikat ini, saya telah berkerja dalam indutri binaan iaitu selepas saya menamatkan pengajian Ijazah Kejuruteraan Mekanikal Dan Sistem Pembuatan Universiti Malaysia Sarawak pada 2006. Syarikat ini saya tubuhkan pada tahun 2021.*

   Interviewee 8: *Before starting this company, I worked in the construction industry after graduating with a degree in Mechanical Engineering and Manufacturing Systems from the University Malaysia Sarawak in 2006. I established this company in 2021.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 8: *Lebih kurang tiga tahun.*

   Interviewee 8: *About three years.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 8: *Setakat ini lebih kurang ada lima projek.*

   Interviewee 8: *As of now, there have been approximately five projects.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 8: *Setakat ini, belum ada yang bermasalah sangat.*

   Interviewee 8: *So far, there hasn't been any major issues.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 8: *Setakat pembayaran lancar. Selepas buat tuntutan, dalam 2 minggu macam tu dah dapat bayaran.*

   Interviewee 8*: So far, payments have been smooth. After submitting a claim, typically receive payment within about two weeks.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?

   Interviewee 8: *Kalau projek RTP memang belum ada masalah ini la. Tetapi kalau projek persendirian memang ada. Kadang-kadang pelanggan kekurangan budget. Jadi kena tunggu budget cukup, baru bayar.*

   Interviewee 8*: There haven't been any issues with RTP projects so far. However, with private projects, there have been challenges. Sometimes, clients have budget constraints, so we have to wait until they have enough budget before they can make payments.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?

   Interviewee 8: *Setakat ini, paling lama tempoh projek pun dalam 8 bulan iaitu buat parit konkrit. Saya rasa masa cukup lah setimpal dengan skop kerja atau BQ.*

   Interviewee 8: *So far, the longest project duration has been around 8 months, which involved constructing concrete drains. I feel that the time was adequate and aligned well with the scope of work or BQ.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?

   Interviewee 8: *Kalau dari perspektif saya sebagai kontraktor, pemantauan di lapangan sangat penting untuk kita mengetahui perkembangan projek atau sebarang masalah yang mungkin timbul. Jadi kalau tiada pemantauan, saya rasa kemungkinan projek tersasal dari sasaran adalah tinggi.*

Interviewee 8: *From my perspective as a contractor, on-site monitoring is crucial for us to track the project's progress and identify any potential issues that may arise. Without monitoring, I believe there's a high possibility of the project deviating from its targets.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

    Interviewee 8: *Keberkesanan komunikasi amat penting. Komunikasi dua hala boleh menambahbaik pelaksanaan RTP. Masing-masing boleh mendapat input yang baik untuk kebaikan projek tetapi kalau tiada komunikasi yang baik atau berkesan, sebarang masalah atau idea tidak dapat diutarakan. Kalau boleh ada post mortem selepas projek selesai supaya yang baik kita kekalkan tetapi yang tidak baik, elakkan dalam projek akan datang.*

    Interviewee 8*: Effective communication is crucial. Two-way communication can enhance the implementation of RTP. Each party can provide valuable input for the project's benefit. However, without good or effective communication, any problems or ideas cannot be expressed. If possible, there should be a post-mortem after the project is completed so that we can retain what worked well, but also avoid what didn't work in future projects.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 8: *Seperti yang sama maklumkan di awal tadi. Saya pernah berkerjaan dalam industri ini sebaik tamat pengajian di UNIMAS. Jadi, pengalaman itu banyak tetapi berkerja makan gaji dengan berkerja sendiri ada banyak beza. Kini, saya lebih bebas buat keputusan sendiri tetapi satu cabaran juga disebabbkan semua kena buat sendiri termasuk cari bisness.*

    Interviewee 8: *As I mentioned earlier, I've been in this industry since completing my studies at UNIMAS. So, I have a lot of experience, but there's a big difference between working as an employee and working for yourself. Now, I have more freedom to make my own decisions, but it's also a challenge because I have to do everything myself, including finding business opportunities.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 8: *Dari segi peralatan itu, tiada masalah. Cuma kalau projek besar macam buat parit konkrit, kena ada jentolak untuk korek tanah. Jadi, kalau projek macam ini memang kena sewa peralatan atau mesin.*

    Interviewee 8: *In terms of equipment, there are no issues. However, for larger projects like constructing concrete drains, we need an excavator to dig the soil. So, for projects like this, we have to rent equipment or machinery.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 8: *Walaupun saya ada lesen kelas D tetapi pinjaman masih menjadi masalah kepada kontraktor kecil macam kami. Kalau boleh minta Kerajaan bantu sediakan kemudahan kewangan seperti soft loan dengan bayaran interest yang rendah dari institusi swasta.*

    Interviewee 8: *Even though I have a Class D license, obtaining loans is still a challenge for small contractors like us. It would be helpful if the government could provide financial assistance such as soft loans with low-interest payments compared to those from private institutions.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 8: *Setakat ini, dari pengalaman saya, untuk projek RTP tiada masalah ini.*

    Interviewee 8: *Based on my experience so far, RTP projects haven't posed this issue.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 8: *Kenaikan harga bahan binaan adalah masalah utama. Jika ianya berlaku, maka semua kos yang dirancang pada awal projek tersasar. Kos pembinaan meningkat, berbanding harga projek yang kita terima semasa tandatangan Letter of Acceptance.*

    Interviewee 8: *The increase in construction material prices is a major issue. When this happens, all the costs planned at the beginning of the project go off track. Construction costs*

rise, compared to the project price we agreed upon at the time of signing the Letter of Acceptance.

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 8: *Ya. Projek boleh terjejas disebabkan kontraktor ke sedia modal tambahan. Lagipun kontarktor kecil-kecil seperti kami hanya dibayar selepas projek selesai. Kalau modal tidak cukup, memang pembinaan projek akan terganggu dalam kemungkinan lewat siap atau lewat jadual.*

    Interviewee 8*: Yes, projects can be affected because small contractors need additional capital. Moreover, small contractors like us are only paid after the project is completed. If we don't have enough capital, the construction project may be disrupted, potentially leading to delays or being behind the schedule.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Interviewee 8: *Kelewatan bahan binaan seringkali timbul kalau projek jauh di kawasan pendalaman. Contohnya, kalau nak order simen di Gedong, memang jauh dan makan masa Kadang-kadang kena order dari Serian. Kos pun mahal. Jadi kita akan ambil masa lebih sedikit nak selesaikan projek. Belum kiranya kalau lokasi projek tiada ada akses jalan. Jadi lebih teruk.*

    Interviewee 8: *Delays in construction materials often occur when the project is in remote areas. For example, if we need to order cement from Gedong, it's quite far and time-consuming. Sometimes we have to order from Serian, which is expensive. This leads to us taking a bit longer to complete the project. It's even worse if the project site has no road access, which makes it more challenging.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

    Interviewee 8: *Memang susah. Sebab itu saya ambil kalangan keluarga sendiri. Kalau tidak mahir, tiada masalah. Saya sendiri akan latih mereka sambil berkerja. Tetapi kadang-kadang tidak cukup pekerja juga. Biasa untuk selesaikan masalah ini, saya akan gunakan pekerja sementara, ambil orang kampung tempat projek dibuat.*

Interviewee 8: *It's indeed challenging. That's why I often rely on family members for help. If they're not skilled, it's not a problem. I'll train them while they work. However, sometimes we still don't have enough workers. To solve this issue, I hire temporary workers from the local community near the project site.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

    Interviewee 8: *Buat masa ini, belum gunapakai teknologi-teknologi moden sepenuhnya. Kalau bina parit mungkin boleh guna IBS. Tetapi kebanyakan projek RTP masih pakai cara konvensional, disebabkan nature of business melibatkan infrastruktur asas yang berskala kecil.*

    Interviewee 8: *At the moment, we haven't fully embraced modern technologies. For projects like building drains, we might consider using IBS. However, most RTP projects still follow conventional methods because our business mainly involves small-scale basic infrastructure projects.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 8: *Biasa jarang ada kesilapan dalam BQ disebabkan ianya tidak terlalu rumit untuk disediakan.*

    Interviewee 8: *There are usually few mistakes in the BQ because it's not too complicated to prepare.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 8: *Belum pernah berlaku. Tetapi saya tidak mintalah. Sebab kalau ada, projek akan terjejas. Kontraktor kena buat semua atau buat modifikasi. Setakat ini tiada.*

    Interviewee 8: *It hasn't happened yet, but I don't ask for it. Because if it happens, the project will be affected. The contractor has to do everything or make modifications. So far, it hasn't happened.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 8: *Keadaan cuaca, jarak projek dengan pembekal bahan binaan, akses jalan atau kadang-kadang kerjasama dengan agensi lain. Kadang-kadang, jika melibatkan jalan kampung, kalau ada tiang elektrik, makai a perlu dialihkan oleh agensi terlibat. Di sini selalu ada masalah, kalau agensi tidak ambil tindakan segera, projek akan lambat sebab kita kena tunggu mereka.*

    Interviewee 8: *Weather conditions, distance from the project to construction material suppliers, road access, or sometimes collaboration with other agencies can pose challenges. Sometimes, if it involves village roads, and there are electric poles, they need to be relocated by the relevant agency. Here, there are often issues; if the agency doesn't take immediate action, the project will be delayed because we have to wait for them.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 8: *RTP ini untuk Kerajaan percepatkan pembinaan infrastuktur, kalau ianya bermasalah maka persepsi orang ramai kepada Kerajaan dan agensi pelaksana termasuk agensi terlibat tidak baik. Reaksi negatif rakyat akan wujud.*

    Interviewee 8: *RTP is meant to accelerate infrastructure construction for the government. If there are problems, it will affect public perception towards the government and implementing agencies, including other involved agencies. Negative reactions from the public will arise.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 8: *Secara jujurnya, saya tidak ada pelan atau strategi tertentu tetapi untuk setiap projek yang saya akan buat, saya berpandu kepada perancangan dalam BQ atau LOA supaya projek tidak berada di belakang jadual yang disediakan oleh agensi pelaksana. Dari segi kewangan, saya akan buat estimate terutamanya untuk kos pembinaan dan kos gaji pekerja.*

Interviewee 8: *Honestly, I don't have a specific plan or strategy, but for each project I undertake, I refer to the planning in the BQ or LOA to ensure that the project doesn't fall behind the schedule set by the implementing agency. In terms of finances, I make estimates, especially for construction costs and employee wages.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

    Interviewee 8: *Kalau saya buat perancangan projek berdasarkan BQ atau LOA, saya dapat pastikan projek boleh mematuhi spesifikasi yang ditetapkan oleh agensi pelaksana. Ini bantu elakkan kelewatan dan masalah projek tidak ikut spekfikasi. Anggaran kos yang betul juga penting, syarikat dapat kawal kos projek lebih baik, elakkan pembaziran. Jadi, saya boleh siapkan projek tanpa mengalami masalah kewangan di tengah jalan.*

    Interviewee 8: *If I do plan of my projects based on BQ or LOA, I can ensure that the project complies with the specifications set by the implementing agency. This helps avoid delays and ensures that the project meets the required standards. Accurate cost estimation is also crucial, as it allows the company to control project costs better and avoid wastage. Therefore, I can complete the project without experiencing financial problems along the way.*

Appendix B9

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 9: *Saya adalah pemilik syarikat dan juga berperanan sebagai pengurus syarikat ini.*

   Interviewee 9: *I'm the owner of the company and also serve as its manager.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 9: *Saya telah mula berjinak dalam industri ini pada 2018. Menyertai kursus-kursus untuk menjadi kontraktor dan pada tahun 2019, saya telah mendapat lesen kontraktor.*

   Interviewee 9*: I started getting involved in this industry in 2018. I attended courses to become a contractor, and in 2019, I obtained my contractor's license.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 9: *Lebih kurang lima tahun. Masa saya mula-mula dapat lesen dahulu, terus mengikut cabutan undi di Pejabat Daerah Sebauh.*

   Interviewee 9: *About five years. When I first obtained my license, I immediately entered the balloting draw at the Sebauh District Office.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 9: *Banyak juga. Kali kira ikut tahun, dalam satu tahun itu kadang-kadang ada dua atau tiga projek. Tetapi bukan projek besar. Dalam 50,000 ke 150,000 macam itu. Dalam tiga atau empat bulan boleh siap. Lebih kurang sepuluh projek.*

   Interviewee 9: *Quite a few. If I count by year, sometimes there are two or three projects in one year. But they're not big projects, typically ranging from 50,000 to 150,000. They can be completed within three or four months. Around ten projects, more or less.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 9: *Mula-mula dulu ada. Sebab masa saya mula-mula buat RTP dulu, cun-cun kena Covid-19 pada tahun 2020. Jadi masa itu. Memang projek lambat sebab tidak dapat buat kerja tetapi masa itu ada kelonggaran. Saya diberi EoT.*

   Interviewee 9: *Initially, there were some. Because when I first started RTP projects, it coincided with the onset of Covid-19 in 2020. So, at that time, projects were delayed because work couldn't proceed, but there were extension made. I was granted EoT.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 9: *Sepanjang tempoh lima tahun ini, semua claim saya on time.*

   Interviewee 9: *Throughout these five years, all my claims have been paid on time.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?

   Interviewee 9: *Setakat ini, kalau projek state, tidak ada. Kalau projek Federal macam baik pulih rumah, memang ada. Ada sampai satu tahun belum bayar. Jumlah tidak besar dalam 15,000 tetapi kontraktor kecil macam saya, 15,000 itu banyak.*

   Interviewee 9: *So far, for state projects, there haven't been any delays. But for federal projects like home renovations, there have been delays. Some payments have been outstanding for up to a year. The amount isn't significant, around 15,000, but for small contractors like me, that's quite a sum.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?

   Interviewee 9: *Kalau projek yang saya buat setakat ini memang cukup. Paling lama pun dalam 5 bulan. Itu projek tidak lah terlalu besar.*

   Interviewee 9: *So far, the projects I've undertaken have been manageable. The longest one took about 5 months. These projects haven't been too large in scale.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?

   Interviewee 9: *Kadang-kadang saya mungkin ada yang kurang pasti dengan skop kerja, jadi kalau nak tanya itu ada susah sedikit sebab tidak ada tempat kita rujuk. Kalau telefon pun kadang-kadang susah mahu terangkan sebab kita tidak tengok keadaan sebenar di tapak projek. Memang masa mula-mula buat projek, wakil agensi dari Pejabat Daerah ada turun tetapi masa projek tengah buat, tidak ada. Masa projek selesai baru ada turun satu kali lagi.*

   Interviewee 9*: Sometimes, I may be uncertain about the scope of work, so if I need to ask something, it can be a bit difficult because there's no one that can be referred. Even on the phone, it can be challenging to explain because we can't see the actual site conditions. Initially, when starting a project, representatives from the District Office agency would come down, but during the construction of the project, they're not present. They only come once the project is completed.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

    Interviewee 9: *Saya setuju. Kalau tidak ada komunikasi yang baik memang susah nak buat projek sebab kadang-kadang, kontraktor ada perkara yang mahu ditanya.*

    Interviewee 9: *I agree. Without good communication, it's indeed difficult to carry out projects because sometimes, contractors have questions that need to be addressed.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 9: *Sebelum ada lesen pada tahun 2019, memang saya ada buat sedikit kerja-kerja kontrak. Pergi repair rumah orang atau buat renovate. Lepas itu baru terpikir mahu mohon lesen. Sebab kalau tidak ada lesen, tidak dapat buat projek RTP.*

    Interviewee 9: *Before obtaining my license in 2019, I did undertake some construction work. I would go repair people's homes or do renovations. After that, I thought about applying for a license. Because without a license, I couldn't undertake RTP projects.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 9: *Peralatan pertukangan asas memang cukup. Saya beli sedikit-sedikit macam generator, mesin ketam kayu, gerudi dan drill elektrik. Kalau mesin besar tidak ada. Kalau perlu, akan sewa.*

    Interviewee 9: *I have enough basic carpentry tools. I bought things like a generator, wood planer machine, drills, and electric drills bit by bit. I don't have any large machines. If needed, I'll rent them.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 9: *MARA ada sediakan pinjaman. Tetapi syarat agak ketat juga.Tetapi saya tidak pernah mohon. Biasa memang guna modal sendiri.*

    Interviewee 9: *MARA does provide loans, but the requirements are quite strict. However, I've never applied. I usually use my own capital.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 9: *Kalau RTP memang bayaran tidak lewat. Biasa kalau lewat dari agensi Federal.*

    Interviewee 9: *For RTP projects, payments are usually not delayed. It's more common for delays to occur with federal agencies.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 9: *Harga barang tidak stabil. Kadang-kadang naik mendadak.*

    Interviewee 9: *The prices of goods are unstable. Sometimes they suddenly rise.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 9: *Kalau harga naik, memang kita sebagai kontraktor terjejas. Dari pengalaman saya, kalau harga naik, kos pembinaan juga naik. Jadi modal, cukup-cukup siapkan projek. Sebab masa kita terima offer dulu, harga barang rendah, mungkin boleh dapat sedikit untung.*

    Interviewee 9: *"If prices rise, we as contractors are indeed affected. From my experience, when prices rise, construction costs also increase. So, it's essential to prepare sufficient capital for the project. Because when we initially receive an offer, prices may be low, allowing for some profit."*

    Interviewee 9: *If prices rise, indeed we as contractors are affected. From my experience, when prices rise, construction costs also increase. So, it's essential to prepare sufficient capital for the project. Because when we accept the offer initially, prices of goods are low, and might be able to make a little profit.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Interviewee 9: *Kalau bahan binaan lewat sampai, kerja-kerja tidak dapat dibuat. Kadang-kadang diluar kawalan juga sebab tempat jauh dan susah untuk lori sampai. Lebih-lebih lagi kalau jalan tidak bagus atau jalan tanah.*

    Interviewee 9: *"If construction materials arrive late, work cannot proceed. Sometimes it's beyond our control, especially if the location is remote and difficult for lorries to access. This is especially true if the roads are in poor condition or unpaved.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

    Interviewee 9: *Kalau nak cari orang mahu kerja itu memang susah. Boleh dikatakan, jarang ada pekerja yang ada pengalaman mahu kerja dengan kita sebab selalu putus projek. Kalau saya, saya sendiri buat dan dibantu oleh ahli keluarga.*

    Interviewee 9: *Finding workers willing to work can be difficult. It's rare to find experienced workers willing to work with us because projects often end abruptly. For me, I do the work myself and assisted by family members.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

    Interviewee 9: *Kalau untuk projek kecil-kecil macam lesen saya boleh sampai 200,000, peralatan tidak lah banyak sangat yang diperlukan. Kalau peralatan pertukangan asas itu memang ada. Kalau angkat barang, saya pakai kereta hilux sendiri. Kecuali kalau banyak, memang kena minta tauke kedai hardware hantar.*

    Interviewee 9: *For small projects like those covered by my license, which can go up to 200,000, not much equipment is needed. I already have basic carpentry tools. If I need to transport materials, I use my own Hilux. Unless it's a lot, then I'll ask the owner of the hardware store to deliver.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 9: *Biasanya kita diberi dan diterangkan mengenai BQ projek. Jarang ada percangggahan.*

    Interviewee 9: *Usually, we are given and briefed on the project's BQ. There are rarely any discrepancies."*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 9: *Ini pun jarang berlaku. Tetap kalau orang kampung minta tukar memang ada. Kalau projek belum mula, saya rujuk balik kepada agensi pelaksana. Tetapi kalau projek sudah separuh jalan memang tudak dapat. Nanti, saya pula susah, projek tidak lulus sebab tidak ikut BQ*

    Interviewee 9: *This also rarely happens. But if villagers request changes, it does occur. If the project hasn't started yet, I refer back to the implementing agency. However, if the project is already halfway through, changes cannot be made. Then, I'll face difficulties if the project doesn't pass because it doesn't adhere to the BQ.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

Interviewee 9: *Kadang-kadang ada JKKK minta mereka sendiri buat projek RTP. Memang dibenarkan tetapi masalah seringkali wujud, sebab bukan mereka yang buat. Mereka akan cari orang lain buat untuk mereka. Kalau orang yang mereka suruh buat itu pandai buat, tiada masalah tetapi ada orang yang mereka suruh buat bukan kontraktor berdaftar. Jadi, tidak biasa buat projek. Hujung-hujung projek tidak siap. JKKK juga yang rugi.*

Interviewee 9: *Sometimes, JKKK requests to handle RTP projects themselves. While this is allowed, issues often arise because they are not the ones performing the work. They typically subcontract someone else to do it for them. If the people they hire are competent, then there may not be a problem. However, sometimes they hire unregistered contractors who are not accustomed to handling projects. As a result, projects may be incomplete, causing losses for the JKKK.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

Interviewee 9: *Kalau dari sudut saya sebagai kontraktor, saya boleh digantung lesen atau dikenakan tindakan senarai hitam oleh CIDB atau Pejabat Daerah. Kalau dari sudut lain, nama-nama yang terlibat dalam projek akan tercemar. Ini termasuk YB Kawasan dan Kerajaan.*

Interviewee 9: *From my perspective as a contractor, my license could be suspended, or I could be blacklisted by CIDB or the District Office. From another perspective, the names involved in the project will be tarnished. This includes the local YB and the government.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

Interviewee 9: *Bagi saya, saya kena buat perancangan awal. Pilih mana satu projek yang saya boleh buat. Kena tengok betul-betul lokasi projek, kos projek dan juga skop kerja. Kalau rasa-rasa tidak mampu buat saya tidak pilih untuk ikut cabutan undi.*

Interviewee 9: *For me, I need to plan ahead. I choose which projects I can undertake. I have to carefully assess the project location, costs, and scope of work. If I feel that I can't handle it, I don't choose it for the balloting process.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

    Interviewee 9: *Saya percaya dengan menilai lokasi, kos, dan skop kerja projek, saya dapat tentukan sama ada syarikat layak dan boleh buat sesuatu projek. Menilai kos dan skop kerja bantu saya untuk lihat risiko kewangan dan teknikal yang mungkin timbul semasa projek berjalan. Jadi, anda boleh rancang awal-awal langkah untuk kurangkan atau mengelakkan masalah yang mungkin timbul. Lokasi projek kena lihat juga, apa risiko ada selain dari jauh, mungkin saya perlu ambil tahu macam mana hendak sampai ke sana. Sebab saya kena rancang apa jenis kenderaan akan digunakan, ikut keadaan jalan.*

    Interviewee 9: *I believe, by assessing the location, cost, and scope of the project, I can determine whether my company is suitable and capable of carrying out the project. Evaluating the cost and scope of work helps me identify the financial and technical risks that may arise during project implementation. With that, I can plan early steps to reduce or avoid potential issues. The project location is also crucial to consider; besides the distance factor that can affect the project, I also need to consider other risks such as road conditions and accessibility. Therefore, early planning regarding the type of vehicle to be used is important to ensure efficiency and effectiveness in transportation to the project site.*

Appendix B10

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 10: *Saya pemilik lesen dan juga pengurus untuk syarikat ini.*
   Interviewee 10: *I'm both the licensee and the manager for this company.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 10: *Saya telah terlibat dengan industri telah lama sejak tahun 2008 lagi. Tahun 2015 baru dapat lesen Kelas F.Kebanyakan masa saya adalah buat kerja pentadbiran dan menguruskan Syarikat. Kerja-kerja pembinaan saya serahkan kepada penyelia dan pekerja.*
   Interviewee 10: *I have been involved in the industry since as far back as 2008. It wasn't until 2015 that I obtained the Class F license. Most of my time is spent on administrative work and managing the company. I delegate construction tasks to supervisors and workers.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 10: *Lebih kurang sepuluh tahun iaitu sejak RTP mula-mula diperkenalkan pada tahun 2015. Masa itu belum ramai Kontraktor Kelas F.*
   Interviewee 10: *It's been around ten years, since the RTP was first introduced in 2015. Back then, there weren't many Class F Contractors yet.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 10: *Setahun sekurang-kurangnya satu projek. Saya ingat dalam 15 projek RTP sudah selesai dibina. tapi kalau campur projek Federal atau projek persendirian memang banyak.*
   Interviewee 10*: At least one project per year. I remember about 15 RTP projects that have been completed. But if we include Federal projects or private projects, there are indeed many more.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 10: *Pada zaman Covid-19 ada dua projek tetapi ketika itu diberi kelonggaran. Tetapi dalam keadaan biasa, ada juga lewat tetapi tidak lah sampai lewat jauh dari jadual. Kalau RTP, kalau lewat lebih dari 10% dari jadual baru dikira lewat jadual. Kalau lebih 20%, dikira lewat jadual kritikal.*

   Interviewee 10: *During the Covid-19 period, there were two projects, but they were granted some flexibility. However, under normal circumstances, there are occasional delays, but they don't usually extend far beyond the schedule. For RTP projects, if the delay exceeds 10% of the schedule, it's considered behind schedule. If it's over 20%, it's deemed critically behind schedule.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 10: *Tidak pernah. Pembayaran kalau projek Kerajaan negeri selalu cepat tetapi kalau federal ada lambat sedikit.*

   Interviewee 10: *Never. Payments for state government projects are always prompt, but for federal projects, there might be a slight delay.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?

   Interviewee 10: *Bagi saya setakat ini, tidak ada masalah ini kalau projek RTP. Kalau projek lain ada. Macam dulu ada projek federal, Program Perumahan Rakyat Termiskin (PPRT),banyak kontraktor lewat terima bayaran. Ada yang terpaksa gulung tikar sebab tidak mampu bayar hutang terutama yang hutang dengan kedai. Ini berlaku sekitar tahun 2018-2019 dulu. Masalah ini berlaku disebabkan proses birokrasi. Macam PPRT ini diselaraskan oleh FELCRA dan dibawah Kementerian Pembangunan Luar Bandar, tetapi kalau kita lihat FELCRA, bisnes dia bukan pembinaan, dia buat kerja perladangan. Macam mana boleh urus?*

   Interviewee 10: *As far as I'm concerned, there haven't been any issues with RTP projects. However, there have been issues with other projects in the past. For instance, with federal projects like the Program Perumahan Rakyat Termiskin (PPRT), many contractors*

experienced delays in receiving payments. Some even had to close down their businesses because they couldn't pay their debts, especially those owed to suppliers. This occurred around 2018-2019. The problem stemmed from bureaucratic processes. PPRT, for example, was coordinated by FELCRA under the Ministry of Rural Development, but if we look at FELCRA, their core business isn't construction; it's agriculture. So, how could they manage it effectively?

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 10: *Saya tidak ada masalah dengan tempoh projek. Kalau ikut pengalaman memang cukup. Kalau ada masalah luar jangka, kena maklumkan kepada agensi pelaksana mohon untuk diberi EoT. Tetapi kena ada alasan yang kukuh.*
   Interviewee 10: *I haven't had any issues with project durations. Based on experience, they're usually sufficient. If there are unforeseen problems, I will inform the implementing agency and request an EoT. However, there must be a strong reason for it.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 10: *Ya.Saya bersetuju. Sebab kalau tiada pengawasan yang ketat, kontraktor mungkin tersasar dari jadual. Sebab ada kontraktor buat banyak projek pada satu-satu masa, jadi focus dia mungkin akan kurang sebab banyak kena buat. Jadi, bagus kalau sekali-sekala ada buat pemeriksaan mengejut ke tapak pembinaan. Tidak perlu sampai tunggu projek siap baru pergi periksa.*
   Interviewee 10: *Yes, I agree. Without strict supervision, contractors might deviate from the schedule. Some contractors handle multiple projects simultaneously, which can diminish their focus. So, it's good to conduct surprise inspections at construction sites occasionally. There's no need to wait until the project is completed to inspect.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?
    Interviewee 10: *Dari pengalaman saya, kerjasama antara kontraktor dan agensi pelaksana amat penting. Sebab kalau ada masalah boleh diselesaikan dengan cepat. Kalau tidak,*

diselesaikan, projek akan terganggu. Sebab sebagao kontraktor saya tidak boleh buat projek membelakangkan agensi pelaksana. Jadi hubungan yang baik perlu ada.

Interviewee 10: *From my experience, cooperation between contractors and implementing agencies is crucial. It allows for quick resolution of any issues that may arise. Without it, projects can be disrupted. As a contractor, I cannot proceed with projects without considering the implementing agency. Therefore, maintaining a good relationship is essential.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 10: *Saya memang telah lama buat kerja-kerja pembinaan. Walaupun di belakang takbir, tapi semua urusan syarikat saya yang buat. Termasuk buat anggaran kos dan cari business.*

    Interviewee 10: *I have indeed been involved in construction work for a long time. Even though I may not be in the forefront, I handle all the company's affairs, including cost estimation and business development.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 10: *Setakat ini mungkin tidak ada keperluan untuk gunakan peralatan moden sebab projek saya pun di bawah 200,000. Kebanyakan projek pun buat naik taraf jalan, baiki atau bina baru jambatan, jadi alatan pertukangan asas sahaja.*

    Interviewee 10: *So far, there may not be a need to use modern equipment because my projects are typically under 200,000. Most of the projects involve road upgrades, repairs, or constructing new bridges, so basic carpentry tools are usually sufficient.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 10: *Setakat ini saya tidak ada mohon mana-mana pinjama atau bantuan kewangan. Saya juga modal sendiri. Kalau tidak cukup, macam beli barang boleh pinjam atau hutang dari kedai hardware. Memang harga ada sedikit tinggi.*

Interviewee 10: *So far, I haven't applied for any loans or financial assistance. I use my own capital. If it's not sufficient, I sometimes borrow or take credit from hardware stores, especially when purchasing equipment, even though the prices are a bit higher.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 10: *Ikut pengalaman sendiri, memang agak sukar lah untuk saya. Projek yang lewat dibayar tidak terjejas tetapi projek yang kita dapat selesai itu yang terjejas sebab modal kita sudah kurang.*

    Interviewee 10*: "Based on my own experience, it can be quite challenging for me. Projects that are delayed in payment don't affect me much, but the ones we've completed are the ones affected because our capital has been depleted."*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 10: *Kenaikan harga barang asas seperti semin, batu bata, batu, pasir dan besi, memang jadi masalah terutama kepada kontraktor kecil-kecilan seperti saya. Sebab saya tidak mampu beli banyak buat stok. Jadi terpaksa ikut harga pasaran semasa, kalau naik masa tengah buat projek, memang jadi kelam kabut. Sebab kos keseluruhan projek naik tinggi*

    Interviewee 10: *The increase in prices of basic materials like cement, bricks, stones, sand, and iron has indeed become a problem, especially for small contractors like myself. Because I can't afford to buy in bulk for stockpiling, I have to follow the current market prices. If prices rise while I'm in the middle of a project, it becomes chaotic because the overall project costs increase significantly.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 10: *Kenaikan harga barang akan menyebabkan kos keseluruhan projek naik. Jadi, saya perlu sediakan modal lebih untuk menampung kenaikan harga barang.*

    Interviewee 10: *The increase in prices of goods will lead to a rise in the overall project costs. Therefore, I need to allocate additional capital to accommodate the increased prices of materials.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Lebih-lebih lagi kalau jalan tidak bagus atau jalan tanah.

    Interviewee 10: *Ini juga masalah masa buat RTP. Kadang-kadang barang lewat sampai ke lokasi atas punca jaraknya yang jauh dan juga atas sebab akses masuk tidak bagus. Kalau kampung-kampung, jalan kadang-kadang masih jalan tanah atau ada yang ikut jalan ladang.*

    Interviewee 10: *This is also a problem during the construction of the RTP projects. Sometimes, materials arrive late at the site due to the long distance and poor access. In rural areas, roads are often unpaved or follow agricultural paths.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

    Interviewee 10: *Sukar hendak cari dan kekalkan pekerja. Saya sendiri lebih banyak guna ahli keluarga sendiri. Kadang-kadang anak-anak bantu. Mungkin kurang pandai tapi sekurang-kurangnya boleh tolong angkat semin atau angkat batu bata.*

    Interviewee 10: *"It is difficult to find and retain employees. I often rely more on my own family members for assistance. Occasionally, even the children lend a hand. While they may not possess advanced skills, they can still assist with tasks such as lifting cement or bricks."*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

    Interviewee 10: *Peralatan itu saya pakai yang biasa sahaja. Tidak ada teknologi moden. Cuma ada mesin-mesin asas seperti drill atau ketam mesin.*

    Interviewee 10: *I use basic equipment, nothing modern. Just basic machines like drills or power planers.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 10: *Setakat ini, saya tidak ada pengalaman macam ini. Biasa BQ memang sudah jelas apa skop kerja yang perlu saya buat.*

    Interviewee 10: So far, I don't have any experience like this. Typically, the BQ clearly outlines the scope of work that needs to be done.

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 10: *Tidak pernah. Kalau ada pun, pada mula-mula nak start projek. Selalunya berlaku kalau orang kampung yang terima projek tidak setuju dengan tapak projek atau minta tukar atau tambah skop.*

    Interviewee 10: *Never. If it does happen, it's usually at the beginning when starting a project. It typically occurs when villagers who receive the project disagree with the project site or request changes or additional scope.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 10: *Saya pernah ada pengalaman, tapak projek ada masalah. Sebab berlaku pertindihan pemilik tanah. Yang bagi kebenaran tapak orang lain, manakala yang mendakwa diri pemilik pula orang lain. Jadi projek tidak dapat dijalankan, kalau jadi pun akan lambat sebab banyak masa terbuang untuk perbincangan.*

    Interviewee 10 ***‘‘****I've encountered situations where project sites faced issues due to overlapping land ownership. The individuals granting permission for the site were different from those claiming ownership. As a result, the project couldn't proceed smoothly, and even if it did, it would be delayed due to extensive time wasted on discussions.''*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 10: *Masa yang panjang diperlukan untuk siapkan projek. Biasanya lebih dari jadual. Ini merugikan saya sebagai kontraktor sebab kena tanggung kos pembinaan yang tinggi. Syarikat, agensi dan Kerajaan sama-sama tanggung akibatnya. Sebab rakyat akan salahkan kita kalau projek gagal.*

    Interviewee 10: *A long time is needed to complete the project, usually exceeding the schedule. This is detrimental to me as a contractor because I have to bear the high construction costs. Companies, agencies, and the government all share the consequences because the public will blame us if the project fails.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 10: *Saya akan buat perancangan awal. Buat estimate kos, atur pekerja dan juga uruskan pembelian barang-barang untuk projek. Terutamanya kos projek, kena rancang supaya tidak tersasar. Kalau budget lari, kemungkinan projek akan bermasalah.*

    Interviewee 10: *I will prepare an initial plan, estimate costs, arrange for workers, and manage the procurement of materials for the project. Especially regarding project costs, it's crucial to plan to avoid deviations. If the budget exceeds, the project is likely to encounter problems.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

    Interviewee 10: *Dengan merancang awal, saya akan dapatkan mengelakkan kos yang melampau dan ketidakselarasan jadual. Jadi, risiko masalah kewangan dan kelewatan dalam penyelesaian projek dapat dikurangkan. Ini penting untuk menjaga reputasi syarikat. Anggaran kos yang tepat, dapat membantu pengurusan kewangan projek dengan lebih bagus. Pengurusan pekerja yang baik akan menyebabkan saya, dapat memastikan bahawa terdapat jumlah pekerja yang mencukupi dan mempunyai kemahiran yang diperlukan untuk melaksanakan kerja-kerja pembinaan. Jadi prestasi syarikat pun bagus.*

    Interviewee 10: *Early planning enables me to avoid excessive costs and scheduling conflicts. Consequently, the risk of financial issues and project delays can be minimized, which is essential for upholding the company's reputation. Accurate cost estimation enhances project financial management. Effective workforce management ensures an adequate number of skilled workers for construction tasks, thereby impacting the company's performance positively.*

Appendix B11

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 11: *Saya adalah pemilik merangkap pengurus kepada syarikat ini. Jadi sebagai pengurus, saya mentadbir urus syarikat ini dan memastikan kesinambungannya.*

   Interviewee 11: *I am the owner as well as the manager of this company. So, as the manager, I oversee the administration of this company and ensure its continuity.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 11: *Saya telah mula berkecimpung dalam bidang ini sejak tahun 2016 lagi. Lebih kurang dalam lapan tahun.*

   Interviewee 11: *I have been involved in this field since 2016, so it's been about eight years.*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 11: Lebih kurang lapan tahun. Saya mula setahun lewat dari pelaksanaan RTP.

   Interviewee 11: *About eight years. I started about a year after the implementation of RTP.*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 11: *Sudah lebih dari sepuluh projek setakat ini.*

   Interviewee 11: *It's been more than ten projects so far.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 11: *Setakat ini semua okey.*

   Interviewee 11: *So far everything is fine.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?

   Interviewee 11: *Tidak pernah.*

   Interviewee 11: *Never*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?
   Interviewee 11: *Setakat ini pun belum pernah ada kalau projek Kerajaan Negeri macam RTP.*
   Interviewee 11: *So far, there haven't been any issues with State Government projects like RTP.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 11: *Masa yang diberi cukup. Sebab projek pun tidak terlalu besar.*
   Interviewee 11: *The given time is sufficient. Because the project isn't too large.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 11: *Sukar untuk mendapat maklumat lanjut berkaitan dengan skop kerja.*
   Interviewee 11: *It's difficult to obtain further information regarding the scope of work.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?
    Interviewee 11: *Sukar untuk mendapat maklumat atau bertanya kalau projek ada masalah.*
    Interviewee 11: *It's difficult to obtain information or ask questions when there are issues with the project.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?
    Interviewee 11: *Pengalaman sebelum RTP tiada ada. Tetapi kursus memang ada sebab wajib hadir kalau hendak ambil lesen.*
    Interviewee 11: *There was no prior experience before the RTP. However, there were courses available because attendance was mandatory to obtain the license.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 11: *Kalau peralatan asas, saya memang ada tetapi kalau mesin-mesin berat macam jentolak, itu kena sewa. Sebab kalau beli pun saya tidak mampu lagipun bukan selalu projek perlukan jentera berat.*

    Interviewee 11: *I do have basic equipment, but for heavy machinery like excavators, I need to rent them. Buying such machinery is beyond my budget, especially since projects don't always require heavy machinery.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 11: *Kalau institusi swasta memang sukar. Kerajaan, MARA ada bagi tetapi syarat agak ketat. Kalau projek bawah 100,000, saya biasa pakai modal sendiri untuk bayar gaji pekerja dan barang pula boleh ambil dulu dari kedai.*

    Interviewee 11: It's indeed challenging to get support from private institutions. The government and MARA do provide assistance, but the conditions are quite strict. For projects under 100,000, I usually use my own capital to pay workers' salaries, and I can also get materials on credit from suppliers.

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 11: *Setakat ini tidak ada.*

    Interviewee 11: *So far, there hasn't been any.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 11: *Kadang-kadang di kawasan Betong sini, kami mengalami kekurangan bahan binaan seperti simen, pasir atau besi. Jadi, kalau projek perlu cepat siap, kena order dari tempat lain. Sebab kita tidak dapat tunggu, tetapi harga ada mahal sikit la. Lebih-lebih lagi kos transport.*

    Interviewee 11: *Sometimes in the Betong area, we face shortages of construction materials like cement, sand, or steel. So, if a project needs to be completed quickly, we have to order*

from elsewhere because we can't afford to wait, even though it ends up being a bit more expensive, especially with transportation costs added.

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 11: *Memang akan mempengaruhi keupayaan siapkan projek. Kos projek akan meningkat. Modal asal mungkin tidak cukup. Jadi kena cari alternatif lain.*

    Interviewee 11: *It will definitely affect the ability to complete the project. Project costs will increase, and the original capital may not be sufficient. So, we have to find alternative solutions.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Interviewee 11: *Barang lewat sampai sering berlaku kalau kawasan projek susah dihubungi. Lagi-lagi kalau tidak ada jalan, yang guna bot. Bukan saja jarak jauh, tetapi makan masa dan tenaga sebab kena angkat barang dua tiga kali. Dari kedai masuk lori, dari lori angkat masuk bot…dari bot angkat lagi ke kawasan projek. Memang lambat lah kalau ada masalah ini.*

    Interviewee 11: *"Delays often happen when delivering construction materials to hard-to-reach project sites, especially those without road access, where boats are used instead. It's a long and tiring process, involving multiple transfers: first from the hardware shop to the lorry, then from the lorry to the boat, and finally from the boat to the project site. Consequently, delays in the arrival of construction materials at the project site are inevitable".*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

    Interviewee 11: *Tidak banyak pilihan. Pandai atau tidak pandai,kadang-kadang kena ambil sebab tidak ramai yang hendak kerja dengan syarikat kecil-kecilan macam kita Kelas F. Saya sendiri pun kena buat kerja sebab tidak cukup pekerja. Kalau cakap mahu kekalkan mereka, memang susah sebab kita ada masalah mahu bayar mereka kalau masa projek tidak ada.*

    Interviewee 11: *It's often a matter of necessity. Regardless of their skill level, we sometimes have to hire due to a shortage of people willing to work with a small company like ours, Contractor Class F. Personally, I find myself having to pitch in because there simply aren't*

enough workers available. Retaining them poses a real challenge, especially when we struggle to pay them without ongoing projects.

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

    Interviewee 11: *Kalau untuk diri, saya boleh katakana ya. Sebab kita cuma buat projek kecil-kecil*

    Interviewee 11: *For myself, I can say yes. Because we only do small projects.*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 11: *Setakat ini tiada ada berlakulah.*

    Interviewee 11: *So far, nothing like that has happened.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 11: *Kalau dari agensi tidak ada. Tetapi kalau dari orang kampung, ada. Selalu minta tambah skop. Kalau projek sudah siap,ada untuk sedikit, saya buat juga. Asal tidak rugi la. Tolong mereka.*

    Interviewee 11: *There hasn't been any from agencies. However, from local villagers, yes, there have been requests to expand the scope of work. If the project is already completed and there's a little extra, I'll do it as long as it's not a loss. It's about helping them out.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 11: *Selalunya masalah sukar untuk mendapatkan tenaga kerja yang mahir. Bila pekerja kurang mahir, kerja jadi lambat, Saya sendiri bukan sahaja kena buat tetapi kena ajar mereka. Kadang-kadang itu memang ikut kita tetapi kalau sudah pandai, lari pula…*

    Interviewee 11: *Usually, it's difficult to find skilled labor. When workers lack skills, the work slows down. I not only have to do the work myself but also have to teach them. Sometimes they stick around, but once they become skilled, they tend to leave.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 11: *Syarikat boleh kena blacklisted. Kalau tidak Syarikat akan mendapat grade prestasi yang rendah. Kalau diberi grade 3, kita tidak dijemput untuk menyertai cabutan undi. Jadi, tidak ada projek lah tahun itu. Nama Syarikat sudah terjejas.*

    Interviewee 11: *The company can get blacklisted. If not, the company will receive a low performance grade. If given a grade 3, we won't be invited to participate in the balloting draw. So, there won't be any projects for that year. The company's reputation will be tarnished.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 11: *Saya kena pilih projek yang sesuai dengan kemampuan syarikat. Sebab sebelum cabutan undi, senarai projek bersama nama projek, lokasi dan kos projek diberi oleh Pejabat Dearah Betong. Jadi saya, akan nilai mana satu projek yang saya rasa mampu saya buat. Yang pasti, projek tidak lebih 200,000 sebab saya cuma lesen kelas F. Tetapi.. kebanyakan projek RTP di bawah 200,000. Sebab budget YB pun tidak banyak cuma ada 1,000,000,000 sahaja satu tahun. Jadi kena bagi-bagi, supaya banyak kawasan boleh dapat.*

    Interviewee 11: *I have to choose projects that match my company's capabilities. Because before the draw, a list of projects with project names, locations, and project costs is provided by the Betong District Office. So, I will evaluate which project I feel capable of doing. Certainly, projects are not more than 200,000 because I only have a Class F license. But... most RTP projects are below 200,000. Because the YB's budget is not much, only 5,000,000.00 per year. So, shared a little among recipients so that many areas can benefit.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

    Interviewee 11: *Bagi saya, memilih projek yang sepadan dengan kemampuan syarikat sangat membantu untuk memastikan setiap projek yang saya bina dapat diselesaikan mengikut jadual. Kenal pilih projek yang betul-betul mampu Syarikat saya buat sama ada dari segi*

modal, kemahiran pekerja dan diri saya untuk uruskan projek. Jadi, kalau pilih projek yang betul, saya boleh kurangkan risiko kerugian sebab projek tidak dapat siap.

Interviewee 11: *For me, selecting projects that align with the company's capabilities is crucial in ensuring that each project I undertake can be completed according to schedule. Choosing the right projects that my company is truly capable of handling, whether in terms of finances, workers' skills, or my own ability to manage the project, is essential. Therefore, by selecting the right projects, I can reduce the risk of losses due to incomplete projects.*

Appendix B12

Skrip Temuduga

Bahagian A: Soalan Demografi (Dalam Bahasa Melayu)

1. Apakah jawatan dan peranan anda di dalam syarikat?

   Interviewee 12: *Pemilik dan pengurus Syarikat. Semua urusan pentadbiran termasuk kerja-kerja di tapak pembinaan adalah di bawah jagaan saya.*

   Interviewee 12: *Owner and manager of the Company. All administrative matters including works at the construction site are under my care.*

2. Berapa lama anda telah terlibat dalam industri pembinaan?

   Interviewee 12: *Saya mula tahun 2017. Lebih kurang enam tahun sudah*

   Interviewee 12: *I started in 2017. It's been about six years already*

3. Berapa lama anda telah terlibat dalam pembinaan projek RTP?

   Interviewee 12: *Sudah enam tahun*

   Interviewee 12: *It's been six years*

4. Berapa banyak projek RTP yang telah siap dibina oleh syarikat anda?

   Interviewee 12: *Kalau dalam satu tahun itu ada satu atau dua projek. Kalau tidak silap saya, dalam tujuh projek RTP sudah saya buat. Kalau campur projek-projek lain itu memang banyak.*

   Interviewee 12: *If in one year, there are one or two projects. If I'm not mistaken, I have done seven RTP projects. If include other projects, there are many.*

5. Sepanjang penglibatan anda dalam projek RTP, adakah anda pernah mengalami kelewatan dalam menyiapkan mana-mana projek tersebut?

   Interviewee 12: *Pernah juga tetapi tidak sampai kritikal. Kalau dalam RTP, kritikal lewat kalau projek lebih 20% di belakang jadual. Kalau tempoh projek dalam empat bulan, lebih kurang 120 hari, projek tidak boleh lewat lebih dari 24 hari.*

   Interviewee 12: *It has happened before, but it didn't reach a critical point. In RTP, it's considered critical if the project is more than 20% behind schedule. If the project duration is four months, about 120 days, the project cannot be delayed more than 24 days.*

Bahagian B: Punca-Punca Yang Menyumbang Kepada Kelewatan Pembinaan Projek Awam

6. Pernahkah anda mengalami kelewatan dalam menerima bayaran untuk projek?
   Interviewee 12: *Dalam tempoh enam tahun ini, semua bayaran RTP saya terima lancar.*
   Interviewee 12: *During these six years, all my RTP payments have been received smoothly.*

7. Berdasarkan pengalaman anda, apakah punca yang seringkali menyebabkan pelanggan menangguhkan pembayaran mereka?
   Interviewee 12: *Kalau pengalaman saya dalam RTP, belum ada lewat bayar. Paling-paling mungkin dalam satu bulan, biasa dalam dua minggu sudah dibayar.*
   Interviewee 12: *In my experience at RTP, there have been no late payments. Most likely in a month, usually in two weeks already paid.*

8. Berdasarkan pengalaman anda, adakah anda mendapati bahawa tempoh masa yang diperuntukkan untuk projek pembinaan adalah mencukupi?
   Interviewee 12: *Tempoh sesuatu projek RTP adalah sesuai dengan kesukaran dan juga size projek. Biasa tempoh projek yang saya dapat, dalam tiga ke enam bulan.*
   Interviewee 12: *The duration of an RTP project is appropriate to the difficulty and also the size of the project. Normal project duration I get, in three to six months.*

9. Pada pandangan anda, kenapa penyeliaan yang tidak berkesan di tapak oleh agensi pelaksana mempengaruhi kemajuan keseluruhan projek pembinaan?
   Interviewee 12: *Maklumat tidak sampai dengan tepat dan cepat. Kadang-kadang saya sendiri confuse dengan BQ atau skop kerja, kalau ini berlaku saya perlu bantuan mereka yang jaga projek untuk beri penjelasan.*
   Interviewee 12: *Information does not arrive accurately and quickly. Sometimes I myself get confused with the BQ or scope of work, if this happens, I need the help of those in charge of the project to explain.*

10. Pada pandangan anda, bagaimana komunikasi yang tidak efektif antara agensi pelaksana dan anda, sebagai kontraktor, menyebabkan kelewatan dalam pembinaan?

    Interviewee 12: *Seperti yang saya cakap tadi, susah mahu dapatkan maklumat atau penjelasan dengan segera.*

    Interviewee 12: *As I said earlier, it is difficult to get information or an explanation immediately.*

11. Nyatakan pengalaman dan latihan yang anda miliki dalam bidang pembinaan sebelum anda terlibat dengan projek RTP?

    Interviewee 12: *Saya pernah hadir kursus asas untuk pengurusan perniagaan dan juga kursus asas kontraktor sebelum diberi lesen Kelas F. Dari segi pengalaman itu, saya belajar dari projek ke projek sebab masa awal-awal dulu. Sekarang sudah mahir sedikit selok belok uruskan syarikat dan buat projek juga.*

    Interviewee 12: *I attended a basic course for business management and also a basic contractor course before being given a Class F license. In terms of that experience, I learned from project to project because of the early days. Now I'm adept at the ins and outs of managing a company and doing projects as well.*

12. Adakah anda mempunyai peralatan pembinaan yang mencukupi dan sesuai untuk melaksanakan setiap projek?

    Interviewee 12: *Peralatan tidak lengkap sepenuhnya. Tetapi yang asas semua ada. Kalau mesin-mesin besar macam excavator, saya tidak ada. Tidak mampu beli. Kalau projek ada perlu jentera berat, kena sewalah. Kalau orang lain tengah sewa, kena tunggu dia selesai sebab tempat kecil macam kita tidak banyak orang sewa. Kalau sewa dari Kuching, jauh dan kos lagi mahal.*

    Interviewee 12: *The equipment is not fully equipped. But the basics are all there. If there were big machines like excavators, I don't have them. Can't afford to buy. If a project needs heavy machinery, you must rent it. If someone else is renting, you must wait for him to finish because there aren't many people renting in a small place like ours. If you rent from Kuching, it is far, and the cost is more expensive.*

13. Apakah cabaran yang anda hadapi untuk mendapatkan pembiayaan kewangan, dan bagaimanakah ini memberi impak kepada keupayaan anda untuk membiayai projek pembinaan?

    Interviewee 12.: *Semua projek yang lepas saya keluar modal sendiri. Belum pernah cuba minta loan dari bank. Projek tidaklah besar sangat, kalau gaji pekerja dapat cover tapi kalau barang boleh hutang dekat kedai. Cuma lepas terima bayar mesti bayar cepat-cepat, sebab nanti tidak bayar, tauke tidak mahu bagi hutang lagi.*

    Interviewee 12: *For previous projects, I used my own capital. So far, I have never applied for a loan from the bank. The project is not that big, and the employee's salary can still be paid by myself, but for the construction materials, I use a credit term from the hardware store. Once you receive the project payment, you must immediately pay for the credit term. Otherwise, hardware stores will no longer accept credit terms.*

14. Adakah pembayaran lewat atau kegagalan pelanggan mematuhi jadual pembayaran yang dipersetujui menjejaskan pembinaan projek?

    Interviewee 12: *Kalau ikut teori memang macam itu.. Tapi saya tidak pernah terima lewat. Selalu dalam dua tiga minggu, sudah dapat bayaran.*

    Interviewee 12: *If you follow the theory, it's like that. But I've never received it late. Always in two or three weeks, you get paid.*

15. Apakah cabaran yang anda hadapi berkaitan dengan bahan binaan?

    Interviewee 12: *Kalau di sini, Serian sini, ada dua masalah dengan bahan binaan. Satu harga agak mahal. Kedua, kadang-kadang bekalan tidak ada. Kadang-kadang kena ambil dari Kuching*

    Interviewee 12: *In Serian, we face two main challenges related to construction materials. Firstly, the prices are often quite high. Secondly, there are occasional shortages in supply, forcing us to source materials from Kuching at times.*

16. Adakah turun naik dalam kos pembinaan menjejaskan keupayaan anda untuk menyiapkan projek?

    Interviewee 12: *Ya. Harga barang semakin tinggi. Macam, saya kontraktor Kelas F, selalu jadi mangsa barang naik sebab tidak mampu simpan stok. Kos projek meningkat tapi saya tidak boleh tinggalkan separuh jalan, kalau tidak siap, saya akan kena senarai hitam.*

    Interviewee 12: *Yes. The price of goods is getting higher. Like, I'm a Class F contractor, always a victim of rising goods because I can't keep stock. The cost of the project is increasing but I can't leave it halfway, if I don't finish it, I will be blacklisted.*

17. Bagaimanakah kelewatan penghantaran bahan binaan berbanding jadual ke tapak menjejaskan progres pembinaan projek?

    Interviewee 12: *Saya selalunya minta kedai hardware bantu untuk hantar sebab kalau sekali order memang banyak. Kalau barang ini lewat dihantar atas sebab kedai ada banyak order lain atau lokasi projek jauh, selalunya akan lambat dalam seminggu macam itu. Jadi projek pun belum dapat start.*

    Interviewee 12: *I usually ask the hardware store to help me send it because if I order it once it's a lot. If this item is delivered late because the store has many other orders or the project location is far away, it will usually be delayed in a week like that. So, the project has not started yet.*

18. Adakah anda menghadapi kesukaran merekrut dan mengekalkan pekerja mahir dan sesuai?

    Interviewee 12: *Ini masalah saya sekarang. Orang lebih suka kerja dengan Syarikat besar sebab tidak putus kerja. Macam syarikat saya, ada masa dalam satu tahun itu, tidak ada projek. Jadi pekerja pun lari cari kerja lain sebab dia perlu kerja juga.*

    Interviewee 12: *This is my problem now. People prefer working with big companies because they don't get fired. Like my company, there is a time in that one year, there is no project. So, the employee runs away to find another job because he needs work too.*

19. Adakah anda mempunyai peralatan moden yang mencukupi dan sesuai untuk melaksanakan projek anda?

    Interviewee 12: *Untuk projek RTP, saya tidak ada pakai peralatan moden dalam projek macam IBS sebab projek pun kecil saja. Kalau repair jambatan, mana ada pakai teknologi.*

    Interviewee 12: *For RTP projects, I do not use modern equipment in projects like IBS because the projects are small. If the bridge is repaired, where is technology used?*

20. Bagaimanakah kesilapan dan percanggahan dalam dokumen kontrak menjejaskan pembinaan projek?

    Interviewee 12: *Kadang-kadang BQ tidak ikut permohonan orang kampung. Bila kita buat, orang kampung komplen salah. Saya rasa, BQ mesti mahu bincang dengan orang kampung dulu baru buat.*

    Interviewee 12: *Sometimes BQ does not follow the requests of the villagers. When we do it, the villagers complain that it is wrong. I think, BQ must want to discuss with the village people first before doing.*

21. Pernahkah anda mengalami situasi melibatkan perubahan arahan atau skop kerja, dan apakah impak daripada perubahan ini terhadap pembinaan projek?

    Interviewee 12: *Seperti saya cakap tadi… BQ salah tidak ikut permohonan orang kampung, jadi dia orang minta saya ubah ikut yang diam ahu. Memang tidak boleh, sebab kalau tukar, kena ada kelulusan dulu. Jadi projek tidak dapat jalan kalau masalah ini tidak selesai.*

    Interviewee 12: *As I said earlier... BQ was wrong not to follow the requests of the villagers, so he asked me to change and follow what I was silent about. It's not possible, because if you change, you must get approval first. So, the project cannot work if this problem is not solved.*

22. Apakah punca-punca luaran lain yang anda percaya menyumbang kepada kelewatan dalam pembinaan projek?

    Interviewee 12: *Kalau masalah lain itu memang ada, selalu ada masalah pengangkutan terutamanya jalan masuk ke kawasan projek. Macam di Serian, kampung kadang-kadang di kawasan tinggi, kereta atau lori tidak dapat naik. Kena angkut naik barang. Lambatla… sebab kita banyak guna tenaga angkat, makan masa.*

Interviewee 12: *Another issue pertains to transportation, specifically accessing the project site. In Serian, occasionally, villagers reside on hills inaccessible by vehicles such as lorries or cars. Consequently, I must manually transport construction materials, which is time and energy consuming.*

Bahagian C: Impak Kelewatan Pembinaan Projek Awam

23. Bagaimanakah anda melihat kepada impak kelewatan pembinaan projek, terutamanya mengenai risiko yang mungkin dihadapi oleh syarikat anda atau pihak berkepentingan yang lain?

    Interviewee 12: *Impak bukan hanya pada kontraktor. Memang kontraktor akan kena blacklisted atau digantung. Tetapi pihak lain juga terkesan seperti YB, agensi pelaksana, pejabat Daerah termasuk Kerajaan GPS.*

    Interviewee 12: *The impact is not just on contractors. Indeed, the contractor will be blacklisted or suspended. But other parties are also affected such as YB, implementing agencies, District offices including GPS Government.*

Bahagian D: Mitigasi dan Penyelesaian

24. Bolehkah anda menerangkan strategi-strategi atau pelan-pelan yang digunapakai dalam syarikat anda untuk mengurangkan risiko berlakunya kelewatan dalam projek?

    Interviewee 12: *Perancangan kena buat awal. Kos barang kena kira supaya barang boleh order awal, gaji pekerja kena kira juga supaya kita tahu berapa kita perlu bayar. Macam barang, kita oleh ambil dulu takut nanti harga naik, simpan kedai dulu, bila mahu pakai baru minta kedai hantar.*

    Interviewee 12: *Planning must be done early. The cost of the goods must be calculated so that the goods can be ordered early, the salary of the workers must also be calculated so that we know how much we must pay. Like materials, we take them first because the price will go up, store them in the store first, when we want to use them, ask the store to send them.*

25. Pada pandangan anda, mengapakah strategi-strategi atau pelan-pelan tersebut penting untuk mengurangkan impak kelewatan projek kepada syarikat anda?

Interviewee 12: *Saya berpendapat, dengan merancang awal, saya dapat menguruskan sumber seperti bahan binaan dan pekerja dengan lebih baik. Kiraan kos barang membolehkan saya membeli bahan binaan dalam kuantiti yang betul dan sesuai untuk projek. Jadi, dapat elakkan kelewatan atau kekurangan barang semasa projek berjalan. Secara keseluruhan kan bantu saya memastikan kos pembinaan tidak terlalu tinggi dan projek boleh dapat untung.*

Interviewee 12: *In my opinion, by planning ahead, I can manage resources such as construction materials and labor more effectively. Estimating the cost of materials allows me to purchase them in the right quantity and suitable for the project. This helps me avoid delays or shortages of materials during the project. Overall, this will help me ensure that construction costs are not excessively high and that the project can be profitable.*

Appendix C1

Interview Protocol

Interview #_____

Date_____/_____/_____

Interview Protocol Script

Greetings, and thank you for joining me in this interview session. My name is Petrus anak Basik, and I am pursuing a Doctor of Business Administration degree at Universiti Malaysia Sarawak (UNIMAS). I appreciate your participation in my study, which is part of my doctoral requirement. Your completion of the surveys is greatly valued. During this interview, lasting approximately 30-60 minutes, I will ask you 25 questions about your experiences in the execution of public construction projects, particularly those related to the Rural Transformation Project (RTP) in Sarawak.

Before we proceed, I kindly request your consent to record this interview. Recording will enable me to transcribe the conversation accurately and document the valuable insights you share. Please inform me if you prefer not to record or wish to discontinue the recording at any point. Please rest assured that all your responses will be treated with the utmost confidentiality, and your identity will remain anonymous. The information you provide will be instrumental in gaining deeper insights into the causes and impacts of delays in public construction projects. The purpose of this study is to identify the root causes of public construction delays in Sarawak, their impacts, and propose effective mitigation strategies to address these delays and their adverse impacts. Your participation in this interview is entirely voluntary, and you are free to withdraw at any time. If you have any questions or concerns, please feel free to raise them before we begin. Otherwise, with your consent, let's proceed with the interview.

Appendix C2

Interview Protocol

Interview #_____

Date_____/_____/_____

Interview Protocol Script

Salam dan terima kasih kerana sudi mengambil bahagian dalam sesi temubual ini. Saya Petrus anak Basik, calon Ijazah Doktor Pentadbiran Perniagaan di Universiti Malaysia Sarawak (UNIMAS). Saya menghargai penyertaan anda dalam kajian saya, yang merupakan sebahagian daripada keperluan tahun akhir Ijazah Kedoktoran ini. Saya amat menghargai masa anda dan dijangkakan sesi ini mengambil masa kira-kira 30-60 minit. Saya akan mengemukakan 25 soalan berkaitan dengan pengalaman anda dalam melaksanakan projek pembinaan awam, terutamanya yang berkaitan dengan Rural Transformation Project (RTP) di Sarawak.

Sebelum kita meneruskannya, saya mohon persetujuan anda untuk merakam temubual ini. Rakaman tersebut nanti, akan membolehkan saya mentranskripsi perbualan dengan tepat dan mendokumentasikan pandangan berharga yang anda telah kongsikan. Mohon maklumkan saya, jika anda ingin menghentikan rakaman pada bila-bila masa. Sila ambil maklum, semua maklumbalas anda akan dikendalikan dengan kerahsiaan yang tinggi terutamanya, identiti anda akan kekal rahsia. Maklumat yang anda berikan amat penting dalam mendapatkan pandangan yang lebih mendalam tentang punca dan impak kelewatan dalam projek pembinaan awam. Tujuan kajian ini adalah untuk mengenal pasti punca kelewatan pembinaan awam di Sarawak, impak-impaknya, dan mengemukakan cadangan strategi mitigasi yang berkesan untuk menangani kelewatan ini dan impak buruk yang timbul daripadanya. Penyertaan anda dalam temubual ini adalah sepenuhnya secara sukarela, dan anda bebas untuk menarik diri pada bila-bila masa. Jika anda mempunyai sebarang pertanyaan atau kebimbangan, sila jangan ragu untuk mengemukakannya sebelum kita mula. Jika tidak, dengan persetujuan anda, mari kita teruskan dengan temubual ini.