# STRATEGIC PLANNING FOR SUSTAINABLE BUSINESS TRANSFORMATION USING DESIGN THINKING: A CASE STUDY IN AN INDONESIAN EPC COMPANY

**UNDERGRADUATE THESIS**

**Submitted to the Undergraduate Program in Industrial Engineering**
**in Partial Fulfillment of Requirement for the degree of Sarjana Teknik at the**
**Faculty of Industrial Technology**
**Universitas Islam Indonesia**


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**UNDERGRADUATE PROGRAM IN INDUSTRIAL ENGINEERING**
**FACULTY OF INDUSTRIAL ENGINEERING**
**UNIVERSITAS ISLAM INDONESIA**
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**2024**

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Yogyakarta, August 08, 2024


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# DEDICATION PAGE

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# MOTTO

"And I entrust my affairs to Allah"
(Q.S. Ghafir Verse 44)

"Life can be heavy, especially if you try to carry it all at once. Part of growing up and moving into new chapters of your life is about catch and release. What I mean by this, knowing what things to keep and what things ti release. You can't carry all things"

-Taylor Swift-

# PREFACE

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The author acknowledges the inherent limitations of this undergraduate thesis and invites constructive criticism and valuable suggestions to enhance its quality. The ultimate aim is to ensure that the thesis is a valuable resource for both current readers and prospective researchers. *Aamiin.*
***Wassalamu'alaikum Warahamatullahi Wabarakatuh.***

Yogyakara, August 08, 2024

Nadia Ika Sulistyawati

## ABSTRACT

The energy sector's rapid evolution towards sustainability necessitates significant adaptation and innovation, particularly for companies entrenched in the EPC (Engineering, Procurement, and Construction) industries. This research explores the challenges and strategies involved in sustainable business transformation in a long-established EPC company, from the current sector in oil and gas operations to a focus on green chemicals and green energy. The study examines the impact of high competition and regulatory frameworks, such as the Paris Agreement and Indonesian presidential regulations, which mandate a transformation towards renewable energy and net-zero emissions. In response to this transformation, the company has established a Transformation Management Office (TMO) and engaged consultants to guide its transformation towards sustainable practices. The role of consultants is crucial in this transition, as they provide specialized knowledge and strategic direction. However, as the consultants' contracts near completion, the company faces challenges in ensuring continuity and managing the transition effectively with internal employees. This research employs Design Thinking to develop a strategic plan addressing the differences between the transition activities capabilities between consultants and employees. By leveraging Design Thinking's stages, including empathize, define, ideate, prototype, and test, along with Root Cause Analysis (RCA), Analytical Hierarchy Process (AHP), PROMETHEE, and gantt chart, the study aims to create a comprehensive strategic plan. This plan seeks to facilitate smooth and sustainable business transformation, aligning the company's operations with green sector goals while enhancing resilience and agility. The findings of this research will provide actionable insights and practical solutions to enhance the company's ability to adapt and thrive in the green business sector, ultimately contributing to its goal of becoming a leader in sustainable energy solutions.

Keywords: Analytical Hierarchy Process, Design Thinking, Gantt Chart, PROMETHEE, Root Cause Analysis, Strategic Plan, Sustainability

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# INTRODUCTION

## 1.1 Research Background

The business practices constantly changed rapidly, aligning with the company's vision and mission. The high level of competition in the energy sector led to a change that further enhanced adaptation and innovation within the competitive industry. The energy sector has crucially employed renewable energy to provide significant solutions for reducing global warming and the greenhouse effect (Mammadov et al., 2022). In 2015, the Paris Agreement was passed by one hundred ninety-four world leaders, focusing on achieving a further global average temperature of less than 1.5$^{o}$ C (Lesnikowski et al., 2017). Given Indonesia's significant position within ASEAN and its contribution of 36% of ASEAN's total energy demand, supporting net-zero emissions by 2060 or sooner is aligned and reasonable (Soemanto & Koestoer, 2023; Vidinopoulos et al., 2020; Wahyudi et al., 2023). Furthermore, the transition from fossil fuels to renewable energy is necessitated, supported by Presidential Regulation No. 4 of 2016 and No. 66 of 2018 (Firmansyah et al., 2023).

EPC Company is typically associated with a focus on oil and gas, factory development, and infrastructure development (Mairizal et al., 2018). One of the well-known Indonesian EPC companies has been operational for the past fifty years in the energy, oil and gas, petrochemical, infrastructure, and telecommunication sectors, both domestically and internationally. Due to the company's close relationship with environmental impact, it is necessary to adapt to the changing business landscape and integrate sustainable green business practices into its core operations. In response to this situation, the company is committed to transforming itself from its current business sectors towards long-term involvement in the green sector. The company's expansion into new sectors aims to improve growth opportunities and profitability in the green sector, aligning with the increasing market demand (Bertoldi & Boza-Kiss, 2017).

As the company progresses in this direction, the challenges of this transition are recognised. Proactive steps have been taken by establishing a dedicated division known as the Transformation Management Office (TMO). This division is tasked with driving the business transformation by strategically guiding and leading the company through the process of transforming its business (Hess et al., 2020). The expertise of consultants from Consulting Firms has been strategically engaged by the company from Q3 2022 until Q1 2024. This collaboration is sought to provide specialised knowledge and an external viewpoint for the

transformation process. Additionally, it supports the TMO in driving sustainable business transformation, increasing, and enabling new business processes (Hanelt et al., 2017). The collaboration may ensure that the transformation is coherent, resilient, agile, and sustainable (Camarinha-Matos et al., 2019). Throughout each phase of sustainable business transformation, consultants are involved. These consultants bring valuable insights and best practices from various industries, enabling the company to adapt and innovate its operations to meet the evolving demands of the sustainable energy sector. A visual representation of the sustainable business transformation timeline is provided in Figure 1.1.


Figure 1.1 Sustainable Business Transformation Timeline
Source: EPC Company Document

The working team was divided by the company to address both the new business opportunity and the improvement of the core business. Consultants were specifically hired to provide support for the new business opportunity within the framework of sustainable business transformation. Among the working teams involving consultants, Impact Center 5 has been identified as having a primary and significant impact on profitability. This focuses on identifying the "Right" business models and segments for mid-long-term growth, with the aim of finding the most profitable and effective business models within the green business industry, specifically green chemicals and green energy.

Full responsibility for specific activities, known as transition activities, is entrusted to consultants due to their specialisation. These transition activities play a crucial role in ensuring smooth and successful continuous improvement through change management efforts. Here, the employees need to take over the transition activities from consultants fully. A variety of tasks are encompassed by these activities, including daily operations, identifying and analysing potential issues, and monitoring and evaluating the transformation progress regarding the green

chemicals and green energy sectors, which have become areas of consultant specialisation. Transition activities are implemented to embed sustainability into the core of business operations. By focusing on these high-risk transition activities in change management (with a reported failure rate of around 70% that could lead to ultimate failure), the company is compelled to adopt new ways of working and thinking. This is done to sustain the positive impact of long-term objectives in sustainable business transformation (Burnes, 2011; Heilemann & Faix, 2023).

Additionally, consultants' roles within sustainable business transformation are defined as both execution and thought partner roles. Their specialisation in the green chemicals and green energy sectors positions them to assist the company in achieving its goal of becoming a leading player in the Indonesian green business sector. This specialisation in skills and abilities significantly impacts the positive outcomes of the transformation towards a green business model. However, with the consultants' contracts nearing completion, the company faces the challenge of ensuring continuity and sustaining further continuous improvement, which will be managed by employees. The transition activities' responsibilities will be entirely managed and taken over by employees without the assistance of consultants. Figure 1.2 illustrates the employees' readiness for transition activities.

| | | | Consultant support as of Q3 2023 | |
|---|---|---|---|---|
| | Transition Activities | EPC Company's Readiness | Execution | Thinking Partner |
| Green Chemicals | Business case framework development | 20% | High | High |
| | Business case development | 25% | High | High |
| | Off taker analysis | 30% | High | High |
| | Market research | 20% | High | High |
| | Partnership shortlisting and outreach | 30% | High | High |
| | Pitch deck and report development | 30% | High | High |
| | Pre-FS and FS execution | 30% | High | High |
| Green Energy | Research on additional ad-hoc request | 20% | High | High |
| | Market and subsector assessment | 30% | High | High |
| | Business case development | 25% | High | High |
| | Pitch deck and report development | 30% | High | High |
| | Pre-FS and FS execution | 30% | High | High |

Figure 1.2 Employee’s Readiness
Source: EPC Company Document

The existing difference in ability between consultants and employees leads the company to struggle to proceed with transition activities seamlessly. This has led to inefficiency,

ineffectiveness, and delays in sustainable business transformation due to several factors. These factors include a lack of communication, unclear responsibilities, and a lack of standards for employees to meet the consultant's standards. Furthermore, employees' resistance to change and the lack of strategies in change management are compounding this problem. To address these challenges requires a comprehensive strategic plan to tackle the differences in transition activities between the ability of consultants and employees, ensuring the smooth and successful process within sustainable business transformation in the company. It begins by identifying and assessing the current state and comparing it to the target state of transition activities objectives. By identifying and assessing the specific areas where differences exist, the company can create a strategic plan to bridge the differences effectively.

The development of a strategic plan utilising the design thinking approach is necessary in light of the challenges and problems mentioned above. Design thinking is an approach to problem-solving and finding innovative, human-centred solutions to effectively address the challenges of transition activities within sustainable business transformation (Rao & Kalyani, 2021). This approach prioritises user needs and allows solutions to be tailored to specific needs for achieving objectives (Suzianti & Arrafah, 2019). By utilising design thinking, improvements in opportunities, capitalising on them, and driving change and innovation may be achieved (Garbuio et al., 2018). Based on Stanford Design School (Lo et al., 2019), design thinking employs five stages in solving complex problems, including empathize, define, ideate, prototype, and test. The implementation of design thinking within sustainable business transformation is chosen because it is a suitable method to tackle the various problems faced by the company (Niehaus & Mocan, 2024). It will generate solutions in the form of strategic plan. Through design thinking, user perspectives can be effectively understood, enabling the creation of efficient, practical, and collaborative solutions that help the company navigate the complexities of sustainable business transformation. This approach may also contribute to the company becoming more resilient, agile, and adaptable in its daily core operations (Crnogaj et al., 2022; Denning, 2019).

In view of these issues, immediate action is required to address the differences in transition activities between consultants and employees within the context of the company's sustainable business transformation into the green chemicals and green energy sectors. However, the urgency of tackling these problems is amplified by the imminent conclusion of the consultants' contracts. In creating a strategic plan using the design thinking approach, five

stages involve the identification and analysis of the problem in the empathize stage (Ilyas et al., 2024). An observation, study document, interview, and empathy map were carried out in this empathize stage to obtain the understanding information about the needs and challenges of the users as a foundation of this research (Syaflita et al., 2024; Ulita et al., 2024). A point-of-view table was utilised to make easier understanding of the core problems from the previous stage, then designing transition plan assessment with FGD with experts, including TMO Division and consultants (Ilyas et al., 2024). The validation by the Board of Directors (BOD) was carried out to review and validate the transition plan assessment. Then, it was filled out by BOD through expert judgments to gather in-depth, comprehensive insight regarding the existing problem in differences between consultants and employees. Also, a Root Cause Analysis (RCA) with a fishbone diagram is employed in this defining stage to identify and thoroughly analyse the root causes of these differences (Aristriyana & Ahmad Fauzi, 2023).

Furthermore, innovative solutions called action plans were generated in the ideate stage from the RCA result. The Analytical Hierarchy Process (AHP) and Preference Ranking Organisation Method for Enrichment Evaluation (PROMETHEE) methods are then used to determine the sequence of action plan activities are about to deliver in the first place based on three criteria such as urgency, impact, and cost reason, which support by Division Head of TMO reason through expert judgment (Ilyas et al., 2024; Sikalo et al., 2023). The prototype stage utilises the gantt chart as the visualisation of the action plan as the strategic plan type stage, where the ideas are transformed into tangible representations of the desired solution (Hajar et al., 2024). It clearly outlines the timeline and resource allocation needed to implement the strategic plan. An interview was conducted by the Division Head of TMO and the Consultant Leader to gain feedback from experts regarding the gantt chart visualisation as a strategic plan, which already meets their user's needs and expectations (Ilyas et al., 2024). Therefore, this research focuses on the development of the strategic plan, serving as a strategic tool, to address the differences above in transition activities through the application of Design Thinking and along with RCA, AHP, PROMETHEE, and gantt chart. The strategic plan provides actionable insights and practical solutions to enhance the company's adaptability and prosperity and contribute towards becoming a leader within the green business sector in Indonesia.

## 1.2 Problem Formulation

Based on the explanation of the background provided above, the company developed a strategic plan to address the differences in transition activities between consultants and employees within sustainable business transformation in an EPC Company. Consequently, the following research questions are identified to investigate this issue:

1. What are the differences in transition activities within sustainable business transformation in the EPC Company?
2. What are the root causes of differences in transition activities within sustainable business transformation in the EPC Company identified?
3. What solutions have been offered to address the differences in transition activities within sustainable business transformation in the EPC Company?
4. What has been the response of the experts to the results of the strategic plan design presented in the form of a gantt chart?

## 1.3 Research Objective

The following objectives of this study are presented based on the problem formulation above:

1. To analyse the differences in transition activities within sustainable business transformation in the EPC Company.
2. To identify and understand the underlying factors that contribute to variations in transition activities during sustainable business transformation within the EPC Company.
3. To provide the solutions proposed for the differences in transition activities within sustainable business transformation in the EPC Company.
4. To analyse and report on the feedback and reactions, provided by experts regarding the outcomes of the strategic plan design presented in a gantt chart.

## 1.4 Scope of Research

Several limitations should be considered as guidelines to ensure the effectiveness of this research. The limitations of this undergraduate research include:

1. The research was conducted within the Transformation Management Office (TMO) Division of an Indonesian EPC Company.
2. The research was carried out between August 28th to November 28th, 2023.

3. The objective was to develop a strategic plan to addressing the differences in transition activities, with the aim of enhancing the company's operations in Indonesia's green sectors.
4. At the design thinking stage, testing is not carried out on implementation but is only conducted through interviews to gain valuable feedback from experts towards the strategic planning results.

## 1.5 Research Benefit

The findings of this research are anticipated to benefit several stakeholders involved in the study, including academics, the company itself, and future researchers.

1. For Academics

   Knowledge regarding the challenges faced during transition activities and the development of a strategic plan to address these differences within the context of an EPC company's sustainable business transformation is expected to be generated by this study.
2. For Company

   The study's results are expected to provide the EPC Company with a curated solution in the strategic plan that can be considered for tackling the identified differences in transition activities between consultants and employees during their sustainable business transformation journey.
3. For Researchers

   This research offers a novel perspective on strategic business planning within the framework of sustainable business transformation, potentially serving as a valuable reference point for future research endeavours.

# CHAPTER II
# LITERATURE REVIEW

## 2.1 Inductive Review

Inductive review involves an in-depth synthesis of findings compiled and analysed from previous studies and research relevant to the current research objectives. This process entails using various explanations to facilitate comprehension, understanding, and comparison, ultimately serving to inform future research endeavours.

The previous research entitled “Cultivating Design Thinking for Sustainable Business Transformation in a VUCA World: Insights from a German Case Study” (Niehaus & Mocan, 2024), this study suggests that design thinking can be effectively leveraged by companies to adapt and innovate in challenging environments with diverse workforces and cultures. This approach can lead to successful business innovation and adaptation while promoting sustainable practices that are both human-centric and environmentally responsible.

A study entitled “Flipped Online Teaching of Histology And Embryology with Design Thinking: Design, Practice and Reflection” (Guo et al., 2024), this study demonstrates that design thinking can be used to develop flipped online teaching methods, potentially enhancing student engagement and learning outcomes. By applying design thinking to understand student needs, define problems, and generate solutions, the study suggests significant benefits for further implementation of design thinking in various educational fields.

The research entitled “Software Design for Users with Autism Using Human-Centered Design and Design Thinking Techniques” (Constain Moreno et al., 2023), this study highlights the successful implementation of the FRIDA framework, a human-centred design and design thinking approach, in developing accessible software for users with autism spectrum disorder (ASD). The FRIDA framework reportedly reduces development time and results in highly usable software. Therapists report positive outcomes regarding the software's ability to enhance emotional and social skills in children with ASD.

The research namely “Development of Strategic Plan for Palm Sugar Agro-Industry using SWOT Analysis and Business Model Canvas: Case Study in Lombo Village, Sidrap District” (Fitriwati et al., 2023), this paper finds that Pam Sugar Agro-Industry holds an advantageous position for industry development by focusing on leveraging its strengths and growth opportunities. The study suggests that a strategic plan, guided by government and local resources, can enhance the company's business strategy and improve community well-being.

A study entitled “Damage Analysis of Caterpillar C9 Acert Machine Using Root Cause Analysis Method at PT. XYZ” (Yohana et al., 2023), this paper identifies human error in engine maintenance, specifically related to the water pump component, as the root cause of the engine failure. A malfunctioning cooling system is reported to have led to engine overheating. Consequently, the company is considering revising the water pump engine component's maintenance schedule to minimise similar future damage.

The research entitled “A Proposed Hybrid Root Cause Analysis Technique For Quality Management” (Abellana, 2021), a combined CED-ISM hybrid method analysis conducted in this study suggests a lack of top management support as the primary cause of recurring defective jobs within the automobile service industry. This finding underscores the critical role management plays in quality management practices.

The research namely “An Evaluation of Alternative Business Excellence Models Using AHP” (N. Gupta & Vrat, 2020), this study evaluated various Business Excellence Models (BEMs) using the Analytic Hierarchy Process (AHP) with a focus on human resource aspects, which received over 35% of the total weight. This emphasis highlights the crucial role of human capital in achieving organisational objectives. The proposed model, with its potential to serve as a global standard in quality awards frameworks, could significantly impact the effectiveness of business practices.

A study entitled “Customer Satisfaction Evaluation for Drugs: A Research Based on Online Reviews and PROMETHEE-II Method” (Zhao et al., 2023), this study utilised the PROMETHEE-II method to identify critical factors influencing customer online reviews of purchased drugs. Drug efficacy and online customer service were found to be particularly significant for anti-cold, rheumatism, and orthopaedic drugs. At the same time, logistics and transportation played a more critical role in skin drugs. For tonics, cost performance was the top factor, while online customer service was most important for vitamins and calcium.

The research entitled “A Combined AHP-PROMETHEE Approach for Portfolio Performance Comparison” (Sikalo et al., 2023), this paper investigates a combination approach implementing the AHP to determine the weighted priority of criteria and the PROMETHEE method to identify portfolio models. The minimax model was selected due to its superior performance in measures of stability, predictability, return, and risk. This approach has the potential to provide a comprehensive portfolio evaluation tool, allowing for reconsideration based on market data and investor preferences.

The research namely “Determination of the Most Appropriate Fertilizing Method for Apple Trees Using Multi-Criteria” (Heidarisoltanabadi et al., 2024), this study compared various Multi-Criteria Decision-Making (MCDM) methods to determine the most suitable fertilisation method considering various criteria. The analysis revealed mechanised fertilisation methods, specifically tractor-mounted hole diggers (both offset and fixed centerline types), to be the most efficient. This finding suggests a significant potential for cost reduction through improved operational efficiency.

The previous research entitled “Teacher Education: Design Thinking Approach in Makerspaces to Produce Quality Educational Video Games with a Visual Identity and Improve Design Thinking Skills” (Zaky & Al Mulhim, 2024), this study reveals that utilising design thinking can be makerspaces in video games education for teachers, which can enhance their skills and align with its objectives. Through design thinking it can increase the innovation and quality for achieve the best education practices and provide new experience for students related with video games in educational field.

A study entitled “Analysis of Factors and Solutions to Poor Supply Chain Quality in A Manufacturing Organisation” (Selepe & Makinde, 2024), this paper identify the factors that related into poor quality in suppy chain in manufacturing of steel product. Lack of stock of product in inventory, over lead time, poor supplier, inadequate tools in ERP systems within the company, unclear and inefficient process, and poor strategic decision-making.

The research namely “Resource Allocation of Cooperative Alternatives Using the Analytic Hierarchy Process and Analytic Network Process with Shapley Values” (Huang & Chen, 2024), the result of this study is the combination between AHP, ANP, and Shapley values can be effectively tackle the complex problem, specifically in solve problems for resource allocation and better strategic decision-making.

A study entitled “Research on the Effect of Design Thinking on Enterprise Sustainable Innovation Ability and Team Performance” (Zhang et al., 2024), this study finds that between design thinking implementation in enterprise and team performance were positively related. By utilising design thinking, it can increase the level of team performance, improve internal capabilities, and adapt to the core of business operations in daily working and thinking.

A study entitled “UX Design for an E-commerce Application: A Design Thinking Perspective” (Joselle D. Concepcion & Palaong, 2024), this study reveals that design thinking is useful approach to identify the potential issue and provide the innovative solutions between

user's experience and expectations. The five stages consist of empathize, define, ideate, prototype, and test were conducted to re-develop the e-commerce application

A presentation of some previous research is provided in the following section, with details shown in Table 2.1below.

Table 2.1 Inductive Review

| No | Author | Object | | | | | Method | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **Enterprise** | **Education** | **Medical** | **Agriculture** | **Design Thinking** | **SWOT** | **BMC** | **RCA** | **MCDM** |
| 1 | (Niehaus & Mocan, 2024) | √ | | | | √ | | | | |
| 2 | (Guo et al., 2024) | | √ | | | √ | | | | |
| 3 | (Constain Moreno et al., 2023) | | | √ | | √ | | | | |
| 4 | (Fitriwati et al., 2023) | √ | | | | | √ | √ | | |
| 5 | (Yohana et al., 2023) | √ | | | | | | | √ | |
| 6 | (Abellana, 2021) | √ | | | | | | | √ | |
| 7 | (N. Gupta & Vrat, 2020) | √ | | | | | | | | √ |
| 8 | (Zhao et al., 2023) | | | √ | | | | | | √ |

| No | Author | Object | | | | Method | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Enterprise | Education | Medical | Agriculture | Design Thinking | SWOT | BMC | RCA | MCDM |
| 9 | (Sikalo et al., 2023) | √ | | | | | | | | √ |
| 10 | (Heidarisoltanabadi et al., 2024) | | | | √ | | | | | √ |
| 11 | (Zaky & Al Mulhim, 2024) | | √ | | | √ | | | | |
| 12 | (Selepe & Makinde, 2024) | √ | | | | | | | √ | |
| 13 | (Huang & Chen, 2024) | √ | | | | | | | | √ |
| 14 | (Zhang et al., 2024) | √ | | | | √ | | | | |
| 15 | (Joselle D. Concepcion & Palaong, 2024) | √ | | | | √ | | | | |

It can be observed from previous research that the design thinking methods are widely utilised across various fields to drive innovation, enhance problem-solving, and cater to specific user needs. For instance, in business contexts, design thinking has been leveraged to help companies navigate volatile and complex environments by fostering innovation and sustainable practices. In education, it has been instrumental in developing flipped online teaching methods, leading to improved student engagement and learning outcomes by focusing on

user-centric solutions. Additionally, in software development, design thinking has been employed to create specialized applications for children with autism, resulting in highly usable products that meet the unique needs of this demographic. These studies underscore the flexibility and effectiveness of design thinking in generating creative, human-centered solutions, whether the end goal is a product, service, or educational tool.

## 2.2 Deductive Review

### 2.2.1 Sustainable Business Transformation

EPC Company, a key player in the energy sector, is demonstrably linked to environmental activities. This connection is crucial within this context of climate change and global warming, with factors such as greenhouse gas emissions, increased waste, and reliance on non-renewable energy playing a significant role. As a company within the energy sector, EPC is committed to effectively addressing climate change and its impact towards the environment. The company has publicly declared its support for achieving net-zero emissions by 2060 or sooner, a goal that aligns with a sustainable future for Indonesia (Salim et al., 2023). Currently, efforts are underway to support Contributing to the United Nations' Sustainable Development Goals (SDGs) is our priority. It is achieving a sustainable future with a strong focus on the business sector's pivotal role in environmental sustainability. This approach can create a win-win situation, fostering company growth while addressing the increasing demand for sustainable solutions and facilitating entry into the global market (Smyczek, 2023).

A significant amount of research has already been conducted, highlighting the high failure rate of organisational change, estimated to be around 70% (Burnes, 2011). Studies have identified key factors contributing to the failure of significant organisational change initiatives, including lack of strategy, lack of commitment, lack of resources, and resistance to change (Carlo, 2016). In response to these challenges, the company has established a dedicated team known as the Transformation Management Office (TMO) Division. This division plays a crucial role in supporting the achievement of the company's sustainability objectives and driving the transformation from its current business sector into a sustainable green business sector. Recognising the need for expert guidance in navigating a successful business transformation, the company has hired renowned consultants from a Big3 Consulting Firm. These consultants are actively involved in each phase of the sustainable business transformation journey. Their involvement brings valuable insights and best practices from various industries,

enabling the company to adapt and innovate its operations to meet the evolving demands of the sustainable energy sector.

The global emphasis on sustainable solutions has prompted the company to re-evaluate its business model and explore new approaches to ensure long-term environmental well-being (Torres da Rocha et al., 2022). This transformation towards sustainability presents an opportunity to create new market segmentation and differentiation strategies, catering for the rising demand for eco-friendly products and services among green consumers (Baumgartner & Rauter, 2017). As a consequence, the company is undergoing expansion into two green sectors: green chemicals and green energy. A brief explanation of these new sectors follows:

a Green Chemicals

Green chemicals are defined as eco-friendly or sustainable chemicals produced from biofuels derived from renewable sources. Biofuels themselves are derived from natural materials through various processes like gasification, fermentation, pyrolysis, and anaerobic fermentation (Mahapatra et al., 2021). The increasing demand for green chemicals stems from their reduced environmental impact, causing less harm and damage compared to traditional chemicals. Examples of fuels included in the green chemicals category include bioethanol, green ammonia, biodiesel, biogas, and others.

b Green Energy

Green energy refers to energy generated from renewable sources with minimal harmful emissions, thereby contributing to the reduction of carbon emissions and their potential impact on climate action. Green energy plays a pivotal role in diminishing the dependence on fossil fuels and represents a substantial contribution to the emission of greenhouse gases in the atmosphere (Osman et al., 2023). One form of green energy is bioenergy, also known as biomass, produced from plants, animals, and microorganisms like wood, waste products, and agricultural residues. Bioenergy can be used for power generation, heating, and other energy needs (Helal et al., 2023).

### 2.2.2 Transition Plan

Essential for success is meticulous planning and precise execution transition to a new and higher level (Keshta, 2022). In order to accomplish a successful transition from the present state, it is imperative to implement strategic planning and effective change management processes. It started with comparing the current state to the target state within sustainable business

transformation, included identification and analysis of the current state are crucial. A transition plan serves as a strategic document outlining the roadmap for the implementation phase of internalisation during the sustainable business transformation journey, involving both employees and consultants. The purpose of a transition plan, regardless of the specific aspect it addresses, is to delineate the changes required to achieve the desired objectives (Mudrinich et al., 2015). Such a plan can facilitate seamless integration between consultants and employees, fostering effective communication and collaboration, minimising potential risks, and managing change more effectively and efficiently to ensure a successful outcome. By involving various stakeholders, such as the TMO Division, Board of Directors (BOD), and consultants, the transition plan can also help the company gain a deeper understanding of the current and target states, ultimately enabling the full implementation of sustainable business transformation.

### 2.2.3 Design Thinking

Design thinking is recognised as a successful method for tackling complex problems and generating innovative solutions grounded in human-centred design principles (Rao & Kalyani, 2021). This approach is beneficial for addressing diverse and intricate issues. By fostering a deep understanding of user needs, design thinking enables the development of solutions tailored to specific requirements, ultimately facilitating the achievement of objectives (Suzianti & Arrafah, 2019). Implementing design thinking can improve opportunity identification, capitalisation on opportunities, and the driving of change and innovation (Garbuio et al., 2018). Design thinking is characterised by three critical criteria. When all three criteria are satisfied, the resulting solution is considered ideal. Conversely, the failure to meet any one of these criteria can render the idea highly risky and require significant resources. Figure 2.1 illustrates these three critical elements of design thinking.

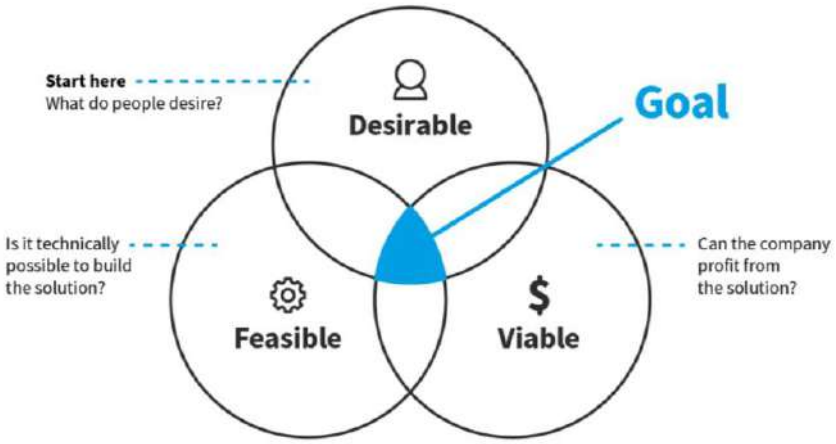


Figure 2.1 Criteria in Design Thinking

As outlined in Figure 2.1 above and detailed by (S. Gupta et al., 2023), successful innovation through design thinking is contingent upon meeting the following three criteria:

a. Desirable

   A deep understanding of user needs and desires is crucial. This understanding is achieved through empathy and a user-centred approach, ensuring that the solutions provide value (Ilyas et al., 2024; Syaflita et al., 2024).

b. Feasible

   It is essential to assess whether the solutions can be implemented realistically and technically. This evaluation considers current resources, capabilities, and available technology to guarantee achievable and practical execution.

c. Viable

   The economic sustainability of the solutions must be evaluated. It involves considering financial support and future maintenance needs. Ultimately, viability ensures that the solutions are profitable and sustainable within the business landscape.

As outlined by (Lo et al., 2019), and based on the Stanford Design School framework Figure 2.2 illustrates five stages are involved in solving a problem using design thinking:

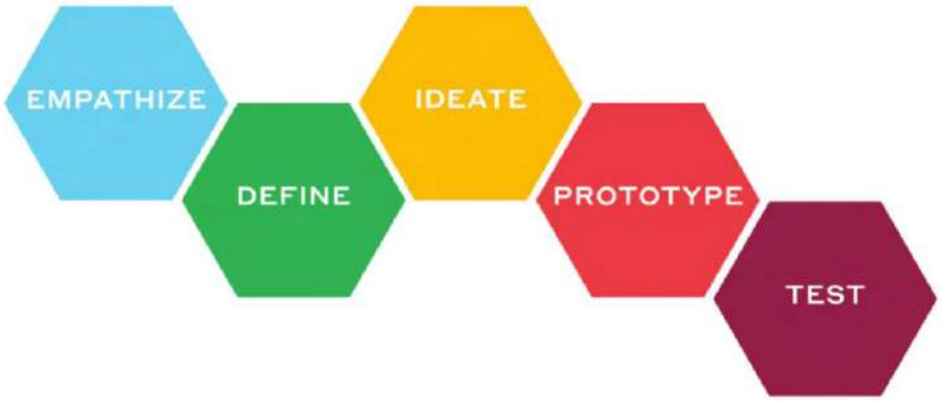


Figure 2.2 Stages in Design Thinking

As illustrated in Figure 2.2 above, the design thinking process can be broken down into five distinct stages.

a. Empathize

This stage focuses on understanding users within the problem-solving context. Techniques such as observation, interviews, and empathy maps are employed to gain insights into user needs and behaviours (Syaflita et al., 2024).

b. Define

The define stage involves analysing the various insights gathered during the empathize stage to define the problem clearly. The initial step involves identifying the user's focus, needs, and critical insights that will enable the generation of high-quality solutions (Sedoc et al., 2020). Next, an assessment of the existing problem was design and conducted the assessment based on both the current and target states, identifying any differences associated with the transition activities. Finally, a Root Cause Analysis (RCA) is carried out for each identified difference, utilising a fishbone diagram as a visualisation tool (Kumah et al., 2024).

c. Ideate

The ideate stage centres on developing potential solutions and identifying the most appropriate option to deliver from the user's perspective, ultimately achieving the desired objectives (Pullum, 2022). In this context, an action plan is generated based on the differences identified during the RCA in the defined stage. Due to resource limitations, it is not feasible to address all action items simultaneously. Therefore, a sequence process is implemented, utilising the Analytic Hierarchy Process (AHP) for prioritise criteria and the PROMETHEE method for sequence action plans.

d. Prototype

The prototype stage involves creating a preliminary solution design to identify potential errors. This stage is a foundational step in the design and development process. It helps in ensuring that the final product is viable, effective, and aligned with the objectives and user needs. It emphasises the importance of this stage in creating a preliminary solution design that allows for necessary adjustments and improvements, ensuring a successful outcome (Ege et al., 2021). In this research, the prototype are present utilising gantt chart.

e. Test

The test stage focuses on gathering user feedback on the prototype to identify the solution that best aligns with user needs and behaviours. This feedback is crucial for ensuring that the solutions meet user expectations and achieve the intended goals (Stevenson & Rijal, 2010). Feedback during this phase is invaluable, as it provides insights into user experience and interaction with the product, enabling further refinement. Once testing and modifications are completed based on initial feedback, the prototype may undergo several iterations. Each iteration aims at improving the prototype's design, performance, and compliance with the desired objectives. This iterative process continues until the prototype meets all predefined criteria, at which point it can progress to the next stage of development.

### 2.2.4 Root Cause Analysis (RCA)

Root Cause Analysis (RCA) is defined as a problem-solving process that utilises a structured approach to identify causal factors (Mahto & Kumar, 2008). It is characterised by a step-by-step methodology for addressing problems, concerns, or differences that have already been identified (Zani & Supriyanto, 2021). By implementing RCA, stakeholders are empowered to gain insights into what went wrong, how errors occurred, and the underlying reasons behind them (Doggett, 2005). The researcher explores the application of various tools to identify the root cause of problems. These tools include but are not limited to, fishbone diagrams, Fault Tree Analysis (FTA), the 5-why method, why-why diagram, and cause-and-effect matrices. To effectively identify the root cause, several key steps must be followed:

1. Data collection: Data relevant to the problem must be gathered
2. Problem identification: The specific problem needs to be clearly defined
3. Cause determination: The root causes of the problem must be identified
4. Improvement action determination: Actions to address the root causes and improve the situation need to be determined

5. Improvement action implementation: The identified improvement actions are then implemented

### 2.2.5 Fishbone Diagram

The fishbone diagram, also known as the Ishikawa diagram, is a tool utilised within RCA to facilitate the analysis of a problem's root cause (Kumah et al., 2024). This visual aid serves to enhance comprehension of the interrelationships among various factors that contribute to a specific problem. A typical fishbone diagram is constructed by placing the problem or the effects of failure at the "head" of the fishbone while the potential causes are branched out along the "body" of the fishbone. An illustrative example of a fishbone diagram is presented in Figure 2.3 below.

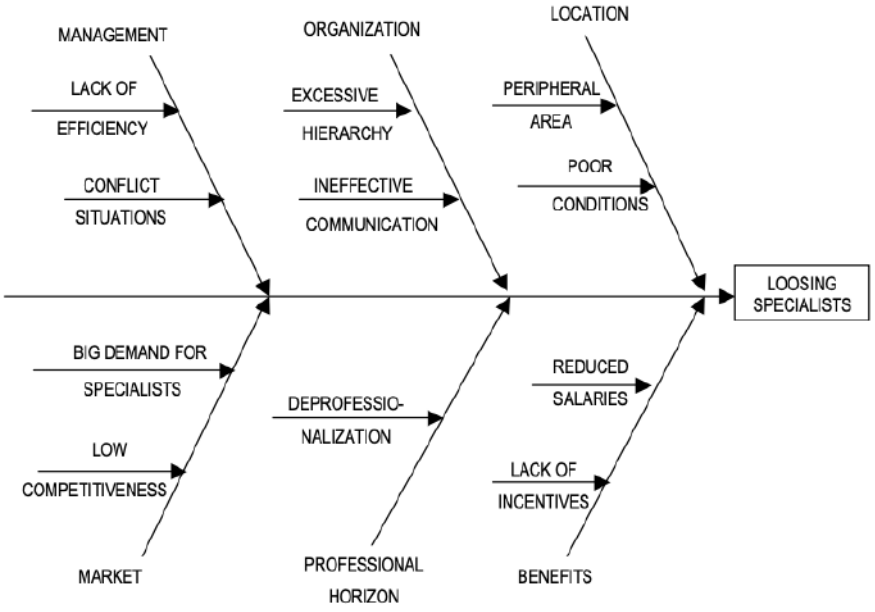


Figure 2.3 Example of Fishbone Diagram
Source: (Ilie & Ciocoiu, 2010)

The fishbone diagram is a tool utilised to identify potential root causes of a problem (Haq & Purba, 2020). This process involves searching for potential causes and effects of the issue, culminating in an analysis conducted through a brainstorming session. The following steps outline the creation of a fishbone diagram:

1. Framework creation: A framework for the fishbone diagram is first created
2. Potential issue identification: Existing potential issues are identified
3. Primary cause identification: Primary causes of the identified issues are identified

4. Primary reason identification and evaluation: Primary reasons behind the identified causes are identified and evaluated
5. Primary cause illustration: The primary causes are then drawn onto the fishbone diagram

### 2.2.6 Analytical Hierarchy Process (AHP)

The Analytical Hierarchy Process (AHP) is a multi-criteria decision-making method developed by Thomas L. Saaty. It is characterised as a decision model that breaks down complex problems with multiple criteria into a hierarchical structure (Satriani et al., 2018). Complex problems are defined as those involving numerous criteria, unclear problem structures, uncertain decision-maker opinions, multiple decision-makers, and inaccurate data (Esen, 2023). The concept of hierarchy has been defined by the Indonesian Dictionary as a sequence of levels or stages of position. Within AHP, hierarchy represents a complex problem, considering both qualitative and quantitative factors structured into multiple levels. These levels typically include the goal at the top level, followed by factors categorised into criteria and subcriteria, and then the various alternatives at the bottom level (Deon et al., 2019). The following sections detail the various stages involved in the AHP problem-solving process:

1. Hierarchical Structure

   This initial stage focuses on identifying the goal and criteria for the decision-making process. The goal represents the objective to be achieved, while the criteria are the factors used to evaluate the alternatives. This stage allows users to clearly define their goals and criteria based on specific needs and preferences. The hierarchical structure is typically constructed with the goal at the top level, followed by the criteria at the middle level, and the alternatives at the bottom level. This structure helps to organise the decision-making process and ensure that all relevant factors are considered (Widowati et al., 2023). An illustrative hierarchical structure in AHP is presented in Figure 2.4 below.

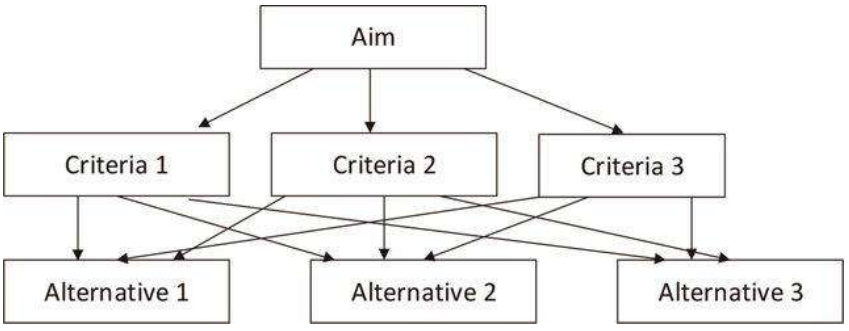


Figure 2.4 Hierarchical Structure

Source: (Saaty, 1990)

2. Create Matrix of Pairwise Comparative Judgments

This stage centres on comparing each criterion with every other criterion to determine their relative importance. A pairwise comparison matrix is utilised to ensure that these comparisons are consistent and logical. By implementing a pairwise comparison matrix, a significant impact is exerted on the priority results. The evaluation results are most easily presented in the form of a pairwise comparisons matrix, which displays the level of importance of several alternatives for each criterion. The rating scale of importance used is based on numerical values according to (Saaty, 1993) as detailed in Table 2.2.

Table 2.2 Comparison Scale

| **Importance** | **Definition** | **Explanation** |
|---|---|---|
| 1 | Equal importance | Two activities contribute equally to the objectives |
| 2 | Weak | - |
| 3 | Moderate importance | Experience and judgment slightly favor one activity over another |
| 4 | Moderate plus | - |
| 5 | Strong importance | Experience and judgment strongly favor one activity over another |
| 6 | Strong plus | - |
| 7 | Very strong or demonstrated importance | An activity is favored very strongly over another; its domincance demonstrated in practice |
| 8 | Very, very strong | - |
| 9 | Exterme importance | The evidence favoring one activity over another is of the highest possible order of affirmation |

An example of a pairwise comparison questionnaire is provided in Table 2.3.

Table 2.3 Pairwise Comparison Questionnaire Example

| C1 | Scale | | | | | | | | | | | | | | | | | C1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| A | | | | | | | | √ | | | | | | | | | | B |
| A | | | | | | | √ | | | | | | | | | | | C |
| A | | | | | | | | √ | | | | | | | | | | D |

3. Priority Weight and Consistency Test

This stage focuses on calculating the results of the pairwise comparisons to determine the importance of each criterion. The data is normalised and then totalled for each indicator. Following this, the eigenvector, multiplication matrix, eigenvalue (λ), consistency index (CI), random index (RI), and consistency ratio (CR) are calculated. Details regarding each calculation within the AHP method are provided below (Wilson & Trisnawarman, 2023).

a. Total weight matrix

The total weight matrix is used to represent the relative importance of each criterion compared to other criteria. The weights within this matrix have been normalised and are then employed to calculate the weight for each criterion.

b. Eigen vector

The eigenvector is obtained by solving the eigenvector equation derived from the total weight matrix.

$$Eigen\ vector = \frac{n}{total\ weight\ of\ overall\ criteria} \tag{2.1}$$

Note: n represents the total number of alternatives used

c. Multiplication matrix

The multiplication matrix is generated by multiplying the total weight matrix by the eigenvector. This process is used to calculate the consistency ratio. The multiplication matrix itself is the product of two matrices, where the number of columns in the first matrix must equal the number of rows in the second matrix.

$$Multiplication\ matrix = \begin{pmatrix} a_{11}b_{11} + \cdots + a_{1n}b_{n1} & \ldots & a_{11}b_{1p} + \cdots + a_{1n}b_{np} \\ \ldots & \ldots & \ldots \\ a_{m1}b_{11} + \cdots + a_{mn}b_{n1} & \ldots & a_{m1}b_{1p} + \cdots + a_{mn}b_{np} \end{pmatrix} \tag{2.2}$$

Note: If A is an $m \times n$ matrix and B is an $n \times p$ matrix, the product of the matrix $C = AB$ (denoted without multiplication sign or a dot) is defined as an $m \times p$ matrix

$$Multiplication\ matrix\ (excel\ formula) = MMULT(array1; array2) \tag{2.3}$$

d. Eigen value ($\lambda$)

The eigen value ($\lambda$) for each criterion is calculated by dividing the multiplication matrix by the corresponding eigen vector.

$$Eigen\ value\ (\lambda) = \frac{multiplication\ matrix\ result\ for\ each\ criteria}{eigen\ vector\ result\ for\ each\ criteria} \quad (2.4)$$

e. $\lambda_{max}$

The maximum eigen value $\lambda_{max}$ is the highest value among the matrix's eigen values ($\lambda$) of a matrix.

$$\lambda_{max} = \frac{total\ weight\ of\ eigen\ value\ on\ overall\ criteria}{n} \quad (2.5)$$

Note: n represent the total number of criteria used

f. Consistency Index (CI)

The consistency index (CI) indicates the consistency level of a decision based on comparisons between pairs of criteria. It is calculated by dividing ($\lambda_{max} - n$) by ($n - 1$).

$$Consistency\ index\ (CI) = \frac{\lambda_{max} - n}{n-1} \quad (2.6)$$

Note: n represents the total number of criteria used

g. Random Index (RI)

The random index (RI) provides the average value of the consistency index with specific values obtained from random pairwise comparison metrics. The table below displays the random index values as outlined in Table 2.4.

Table 2.4 Random Index

| **n** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RI** | 0,00 | 0,00 | 0,58 | 0,90 | 1,12 | 1,24 | 1,32 | 1,41 | 1,45 | 1,49 |

h. Consistency Ratio (CR)

The consistency ratio (CR) measures the degree of deviation from inconsistency for each matrix size. A CR value less than 0,1 is considered consistent. If the CR value is more significant than 0,1, decision-makers may need to adjust their judgments to achieve a more consistent matrix.

$$\lambda_{max} = \frac{CI}{IR} \quad (2.7)$$

### 2.2.7 Preference Ranking Organisation Method for Enrichment Evaluation (PROMETHEE)

The PROMETHEE (Preference Ranking Organisation Method for Enrichment Evaluation) method is a multi-criteria decision-support tool developed by Brans (1982) and further extended in collaboration with Vincke (1985) (Behzadian et al., 2010). It is designed to select the ranking of alternatives based on specific criteria (Ishak et al., 2019). The PROMETHEE method is included within the realm of multi-criteria decision-making (MCDM) for prioritisation, similar to other methods like ELECTRE, AHP, and TOPSIS (Rafi et al., 2017). PROMETHEE is characterised as an outranking method that offers both simplicity and flexibility, aiding decision-makers in the selection process. It allows for the accommodation of both qualitative and quantitative data types (Sałabun et al., 2020). Several benefits are associated with utilising this method, including:

1. Easier understanding and increased effectiveness when applied
2. Capability of analysing data in both quantitative and qualitative forms
3. Provision of six types of preference functions regarding its criteria

The PROMETHEE method offers two ranking calculation types:

1. PROMETHEE I

   This method focuses on partial ranking based on the values of entering flow (representing the weakness of an alternative) and leaving flow (representing the strength of an alternative). The results of PROMETHEE I indicate the high or low values of leaving flow. Higher values of leaving flow signify an excellent alternative, while lower values of entering flow indicate less weakness or therefore better alternatives.
2. PROMETHEE II

   This method provides a complete ranking based on the net flow value, which is obtained by calculating the difference between the leaving flow and entering flow values.

The PROMETHEE method utilises six different types of preference criteria functions, each designed to address specific decision-making scenarios. These functions are illustrated in Figure 2.5.

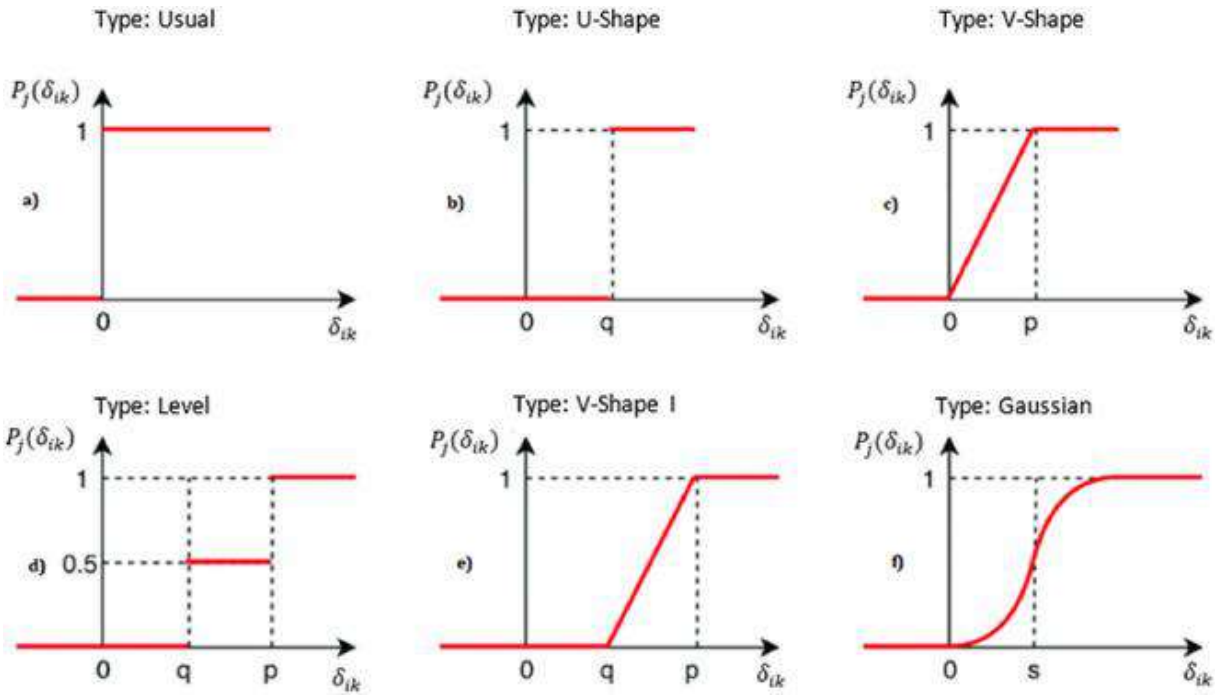


Figure 2.5 Types of Preference
Source: (da Cunha et al., 2022)

Below are the details of preference type in PROMETHEE method are as follow.

1. Usual Criterion

$$H(d) = \begin{cases} 0 \; jika \; d \leq 0 \\ 1 \; jika \; d > 0 \end{cases} \tag{2.8}$$

$H(d) =$ function of the difference in criterion values between alternatives

$d =$ difference between criteria $\{d = f(a) - f(b)\}$

In this type, indifference is assigned if there is no difference or the decision-maker perceives the criteria as equally important. However, if the criteria values differ, a definite preference is established for the alternative with the better value.

2. U-Shape or Quasi Criterion

$$H(d) = \begin{cases} 0 \; jika \; d \leq q \\ 1 \; jika \; d > q \end{cases} \tag{2.9}$$

$H(d) =$ function of the difference in criterion values between alternatives

$d =$ difference between criteria $\{d = f(a) - f(b)\}$

$q =$ must be a constant value

This type of criterion utilises an indifference threshold value denoted by $q$. If the difference in values between two alternatives is less than or equal to $q$, the alternatives are considered indifferent. A significant preference is formed for one alternative when two conditions are met:

1. The difference or value of each alternative for a particular criterion does not exceed the indifference threshold value $q$.
2. The difference in evaluation results for each alternative surpasses the indifference threshold value $q$.

The decision-maker plays a crucial role in determining the value of $q$, as it reflects the significant influence of a criterion (often from an economic perspective). In this case, a stronger preference is obtained if the difference between the two alternatives exceeds the indifference threshold value $q$.

3. V-Shape or Linier Criterion

$$H(d) = \begin{cases} 0\ jika\ d \leq 0 \\ \frac{d}{p} jika\ 0 \leq d \leq p \\ 1\ jika\ d > p \end{cases} \tag{2.10}$$

$H(d) =$ function of the difference in criterion values between alternatives

$d =$ difference between criteria $\{d = f(a) - f(b)\}$

$p =$ tendency above value

This type of criterion employs a linear increase in preference as the difference $d$, between alternatives increases up to a particular preference threshold $p$. When the difference value falls below $p$, the decision-makers preference for one alternative over the other rises proportionally with the increasing value of $d$. However, if the value of $d$ surpasses the preference threshold $p$, an absolute preference is established for one alternative. In applying this criterion with multiple criteria, the decision-maker needs to determine the value of the upper trend, denoted by $p$. Differences in value $d$ exceeding $p$ are considered to provide an absolute preference for one alternative over the others.

4. Level Criterion

$$H(d) = \begin{cases} 0 \; jika \; d \leq q \\ 0{,}5 \; jika \; q < d \leq p \\ 1 \; jika \; d > p \end{cases} \quad (2.11)$$

$H(d) =$ function of the difference in criterion values between alternatives

$d =$ difference between criteria $\{d = f(a) - f(b)\}$

$p =$ tendency above value

$q =$ must be a constant value

This type of criterion utilises both an indifference threshold $q$ and a preference threshold $p$. If the difference in value between alternatives falls below or is equal to $q$, the alternatives are considered indifferent. For differences exceeding the indifference threshold $q$ but remaining less than or equal to the preference threshold $p$ moderate preference is assigned. Typically, a value of 0.5 is used to represent this moderate preference level. Differences exceeding the preference threshold $p$, are categorised as full preference.

5. V-Shape I or Linier Criterion with Indifference

$$H(d) = \begin{cases} 0 \; jika \; d \leq q \\ \frac{d-q}{p-q} jikaq 0 \leq d \leq p \\ 1 \; jika \; d > p \end{cases} \quad (2.12)$$

$H(d) =$ function of the difference in criterion values between alternatives

$d =$ difference between criteria $\{d = f(a) - f(b)\}$

$p =$ tendency above value

$q =$ must be a constant value

This type of criterion incorporates an initial indifference zone denoted by $q$. Following this zone, preference increases linearly until the preference threshold $p$ is reached. Here is a breakdown of the decision-making process based on the difference value $d$:

1. If $d$ is less than or equal to $q$ (indifference zone), the decision-maker is indifferent.
2. If $d$ is greater than $q$ but less than or equal to $p$ (preference increase zone), preference increases linearly with the increasing value of $d$.
3. If $d$ surpasses $p$, full preference is assigned to one alternative.

6. Gaussian Criterion

$$H(d) = \begin{cases} 0 \; jika \; d \leq 0 \\ 1 - e - \frac{d^2}{2a^2} jika \; d > 0 \end{cases} \quad (2.13)$$

$H(d) =$ function of the difference in criterion values between alternatives

$d =$ difference between criteria $\{d = f(a) - f(b)\}$

This type of criterion utilises a continuous preference function that is modelled after the normal distribution in statistics. Preference for one alternative over another increases with the difference in their values, but this increase follows a gaussian curve or standard deviation $\sigma$.

The PROMETHEE method follows a series of steps to evaluate and rank alternatives. These steps are as follows:

1. Criteria determination: The criteria used for evaluation and their corresponding weights are determined
2. Alternative identification: The alternatives to be ranked are identified
3. Preference determination: Preferences for each criterion are established, and preference values are calculated based on paired comparisons among alternatives
4. Flow calculation: Leaving flow and entering flow indices are calculated to assess preference strength
5. Ranking based on net flow: Alternatives are ranked based on their net flow values, with the alternative having the most significant net flow receiving the highest priority (most preferred)

In the PROMETHEE method, there are three types of ranking calculation, as follows:

1. Leaving flow

$$\phi + (a) = \frac{1}{n-1} \sum_{XgA} \delta(a, x) \quad (2.14)$$

$\delta(a, x) =$ preference for value $a$ is better than value $x$

$n =$ amount of alternatives

$\sum_{XgA} =$ alternatives values from the preference table are summed horizontally

Leaving flow, calculated as the sum of preference values directed away from a specific alternative (node a), is considered an essential metric for ranking alternatives in the PROMETHEE method.

2. Entering flow

$$\phi - (a) = \frac{1}{n-1} \sum_{XgA} \delta(a, x) \quad (2.15)$$

$\delta(a, x) =$ preference for value $a$ is better than value $x$

$n =$ amount of alternatives

$\sum_{XgA} =$ alternatives values from the preference table are summed vertically

Entering flow is another of the three calculation types employed in the PROMETHEE method for ranking alternatives. It represents the sum of preference values received by an alternative from all other alternatives. Higher entering flow values signify that an alternative is generally preferred by other alternatives, indicating a favourable position in the ranking.

3. Net flow

$$\phi(a) = (\phi + (a)) - (\phi - (a)) \quad (2.16$$

$(\phi + (a)) =$ leaving flow

$\big(\phi - (a)\big) =$ entering flow

Net flow is the difference between the entering flow and the leaving flow is measured.

Increasing the entering flow value and decreasing the leaving flow value for an alternative improves the likelihood of its selection and suggests a higher priority ranking. In PROMETHEE I, decision-maker ranking is partially based on both entering the flow and leaving flow values. Alternatives with higher entering flow and lower leaving flow tend to be ranked more favourably. Meanwhile, PROMETHEE II employs a more complex ranking approach. It requires calculating the net flow value for each alternative (entering flow minus leaving flow). The alternative with the highest net flow value receives the top ranking.

### 2.2.8 Strategic Planning

A definition of strategy by Chandler perceives it as the determination of an enterprise's fundamental long-term goals and objectives, as well as the formulation of action plans and resource allocation to achieve these goals. Strategic planning is a process that outlines an organisation's strategy choice. It reveals and clarifies future opportunities and threats, and it emphasises the importance of providing a context for decision-making throughout the organisation. Strategic planning involves establishing the process through which a company defines its organisational vision, identifies the strategies necessary to achieve that vision, makes informed resource deployment decisions to carry out the selected strategies, and fosters alignment with the vision and strategic direction at all levels of the organisation (Dlamini et al., 2020). One must recognize that effective strategic planning not only provides an organisation with a clear sense of direction and the necessary actions required for progress, but also equips business processes with the tools needed for success.

A vision statement is forward-looking, outline a long-term objective for the organisation. It reveals what the organisation hopes to achieve and be known for in the future. However, it does not specify the methods for attaining this goal. In contrast, a mission statement defines what the organisation is currently doing (Alam & Alabdulaali, 2015). Strategic planning involves an organisation’s process of defining its strategy and making decisions about resource allocation to pursue this strategy (Alam & Alabdulaali, 2015; Armstrong, 1986). The phrase “The best way to predict the future is to create it” underscores the importance of strategic planning in shaping the future (Alam, 2008; Alam & Alabdulaali, 2015). Strategic planning consist of four key componenets which are organisation’s vision, mission, strategy, and action (Aktan, 2003). The strategic direction of an organisation is shaped by the mission and vision statements, as well as the objectives established, serving as key drivers for the organisation's focus. The significance of strategic planning can be delineated from four perspectives, encompassing environmental scanning, strategy formulation, alignment of objectives with budgets, and the orchestration of strategic planning as a process (Wagner, 2006). Establishing clear objectives is vital for cultivating effective leadership in guiding an organisation. An efficient budgeting process facilitates the translation of plans into actionable projects and programs, allowing organisations to achieve their strategic targets (Sophia & Owuor, 2015). It is important to emphasise that the effective execution of strategic plans plays a crucial role in realizing the goals and objectives of an organisation (Elbanna et al., 2014). Strategic planning

is long-term direction by top management with input from internal and external of a organisation and detail steps that need to be taken to achieve the objective, the vision and mission serve as the foundation that guides all of the organisations's strategic activities in navigate complexities, achieve long-term success, and maintain a competitive edge (Yunus, 2016).

### 2.2.9 Gantt Chart

Gantt charts are widely used in project planning and schedule comparison (Tang et al., 2024). A gantt chart is a visual representation where activities are listed vertically and time is represented horizontally. The start and end times of each activity, along with its duration, are indicated by horizontal bars placed to the right of each activity (Ariasih1 et al., 2024). stakeholders and teams to visualise the timeline and progress of projects. They allow everyone involved in the project to see at a glance which tasks are scheduled to occur at any given time, as well as how each task is related to others. This feature is particularly useful for identifying critical paths, the sequence of dependent activities that determine the minimum project duration. The gantt charts can highlight dependencies between activities, which is essential for effective project scheduling and management. For instance, if Activity B cannot start until activity A is completed, this dependency will be clearly visualised on the gantt chart, ensuring that project planners do not schedule these tasks to overlap.

Another key advantage of gantt charts is their ability to help in resource allocation. By illustrating which tasks are occurring simultaneously, project managers can effectively plan and allocate resources, such as personnel, equipment, and materials to ensure that there are no conflicts or shortages. Updates and modifications are also simpler with gantt charts. As projects progress, it's common for plans to change. The gantt charts can be easily updated to reflect these changes, thus providing an up-to-date overview of the project status and timeline. This flexibility helps the stakeholder to make informed decisions and adjustments as needed. In addition to strategic planning, gantt charts are also applied in various other fields and in any context where time management is crucial. The versatility and clarity of gantt charts makes them an indispensable tool in a wide range of planning and scheduling scenarios. An illustrative example of a gantt chart is presented in Figure 2.6 below.

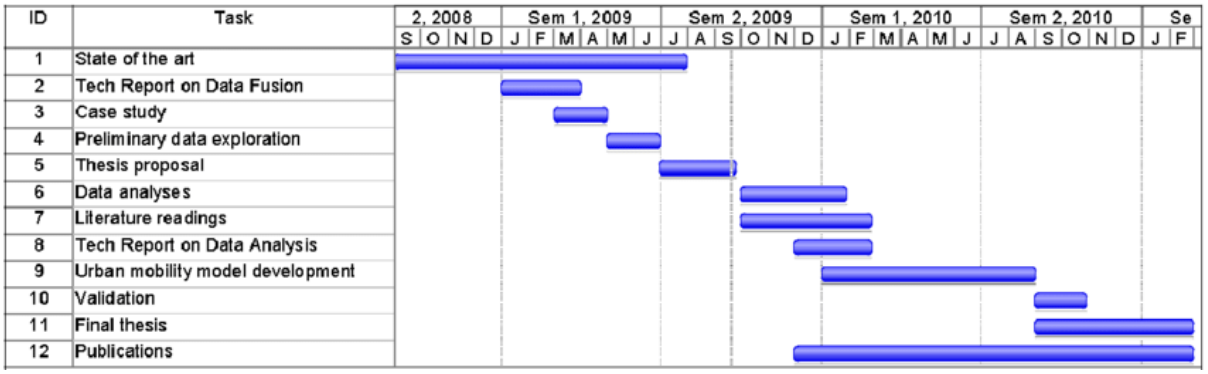


Figure 2.6 Gantt Chart
Source: (Veloso, 2009)

# CHAPTER III
# RESEARCH METHOD

## 3.1 Research Subject

The research problem necessitates the research subjects to be identified and become the main focus of data collection (Nashrullah et al., 2023). In this study, the subjects are an Indonesian EPC Company undergoing a sustainable business transformation, specifically TMO Division, BOD, and consultants.

## 3.2 Research Object

It is recommended that the research objectives be kept brief, clear, and straightforward, defining the expected outcomes to guide the researcher in managing the research (Stratton, 2014). The research object is defined as the development of a strategic plan to address the varying challenges faced during transition activities. This plan, in turn, aims to enhance the company's operations within the green sectors of Indonesia. These approaches are intended to provide insights and develop strategies that will ultimately improve the EPC Company's operations, allowing it to become a leading player in Indonesia's green sectors.

## 3.3 Type Data Collection

Data plays a pivotal role in research findings, as some facts hold knowledge or information applicable to decision-making. Data collection is undertaken, encompassing both primary and secondary sources (Ajayi, 2023). Details regarding the two data types will be explained below.

### 3.3.1 Primary Data

The researcher directly collects primary data, which is tailored to their specific needs. This research utilises several methods for gathering primary data, including observations, interviews, focus group discussions (FGD), and expert judgment.

### 3.3.2 Secondary Data

Existing data, previously collected by an organisation or individual to support primary research, is utilised as secondary data. Sources for this secondary data include books, journal articles, publications, websites, and other resources.

## 3.4 Data Collection Method

This research employs a combination of data collection methods, including observation, study document, interview, FGD, and expert judgment (Ganesha & Aithal, 2022). These methods are combined to strengthen the research findings' quality and validity. They are utilised to ensure the data's authenticity, credibility, and relevance to the research objective. The need for employing several methods is explained as follows:

### 3.4.1 Observation

Data collection is achieved through the observation of stakeholder interactions, technology implementations, and organisational behaviours. Real-time data is gathered, patterns are noted, challenges are identified, and insights are gleaned into how these aspects contribute to achieving objectives. This research utilises observation to gain an understanding of the actual state of sustainable business transformation within the EPC Company, encompassing various stakeholders such as the TMO division, BOD, and consultants.

### 3.4.2 Study Document

Study document analysis is employed in this research as a data collection technique. This method involves gathering and analysing documents in various formats, including written, visual, artistic, and electronic (Nilamsari, 2014). The documents utilized in this study are EPC Company documents, specifically the timeline and employees' readiness related to the sustainable business transformation, which involved the TMO Division, BOD, and Consultants.

### 3.4.3 Interview

In-depth information from stakeholders is obtained by conducting interviews and posing targeted questions. This study employed interviews to gather data and validate the current state of sustainable business transformation, which was used to identify the challenges faced by the company and their preferred methods for addressing them. This interview was also carried out to gain feedback in the testing stage from the experts. Two stages in design thinking was carried out utilising interview with experts, including the Division Head of TMO and the Consultant Leader. The following is a list of questions utilised during the interview sessions, as detailed in Table 3.1.

Table 3.1 Question List

| Stage | Expert | Question |
|---|---|---|
| Empathize | APA | What are EPC companies doing towards sustainability? |
| | | How impactful is it to achieve the objectives with engaging consultants? |
| | | What are the objectives of EPC companies in this new green business sector? |
| | | How are the plans to achieve the objectives? |
| | | What challenges are EPC companies facing at the moment? |
| | | What are your expectations? |
| | SA | What are your experiences in the consulting field? |
| | | Why is engaging consultants so beneficial? |
| | | What are the particular activities focused on? |
| | | What challenges are EPC companies facing at the moment? |
| | | What are your expectations? |
| Test | APA | Is it suitable to use a gantt chart for the prototype stage? |
| | | How flexible is a gantt chart? |
| | | Is there anything else to advise? |
| | SA | What do you think about developing a gantt chart as a prototype i planning? |
| | | Are there any specific areas we should adjust or add? |
| | | Is there anything else to advise? |

### 3.4.4 Focus Group Discussion

A Focus Group Discussion (FGD) is employed as an in-depth interview method conducted within a group of participants sharing similar experiences or backgrounds. This method is intended to directly address the challenges and opportunities faced by stakeholders with decision-making experience in a specific field. The goal is to gain comprehensive insights into expert viewpoints, perspectives, and experiences. In this study, an FGD was conducted to facilitate the design, assessment, and evaluation of a transition plan assessment involving participants from the TMO Division, BOD, and consultants. The following aspects of the transition plan assessment were determined through this research is provided in Table 3.2.

Table 3.2 Aspect in Transition Plan Assessment

| No | Aspects |
|---|---|
| 1 | Impact Center (IC) |
| 2 | Sector |
| 3 | Transition Activities |
| 4 | Current State |

| No | Aspects |
|---|---|
| 5 | Target State |

### 3.4.5 Expert Judgment

Expert judgment is utilized in this research as a data collection process that involves seeking input from individuals with specialised skills, knowledge, and expertise to inform strategic decision-making (Almanasreh et al., 2019). This approach leverages the insights and experiences of these experts to gain a deeper understanding of the issues, challenges, and opportunities that can propel, streamline, and align with the company's long-term objectives. Specifically, this research employed expert judgment to fill the transition plan assessment by BOD, priority weighting of criteria using the AHP method and the sequence of action plans using the PROMETHEE method by the Division Head of TMO. The expert judgments also was carried out to determine the reason from the PROMETHEE sequence result.

## 3.5 Research Flow

A detailed explanation of the research flow is provided in Figure 3.1 below.

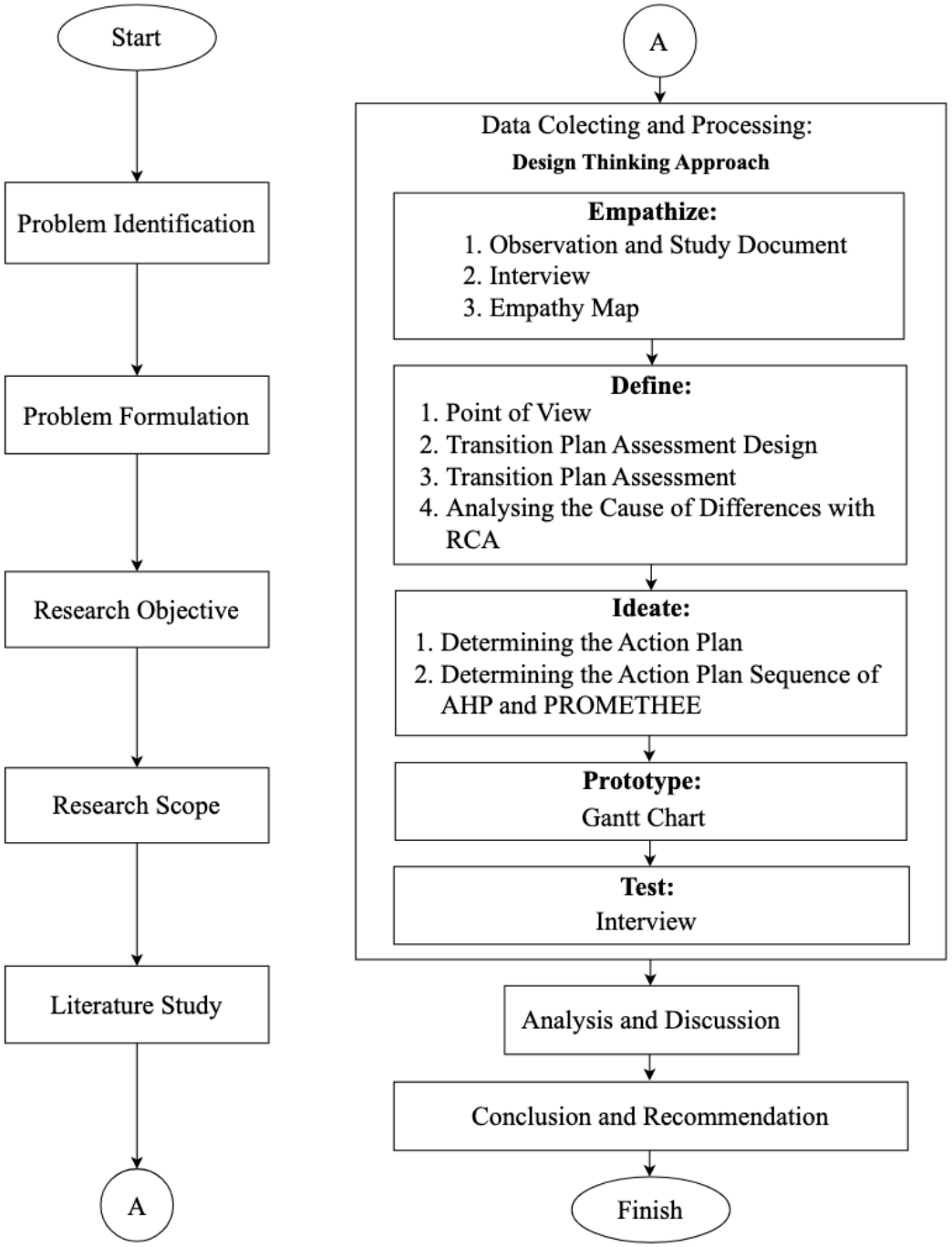


Figure 3.1 Research Flow

### 3.5.1 Problem Identification

Researchers analysed the existing company problem, which formed the foundation and background of this research.

### 3.5.2 Problem Formulation

Following the identification of the existing company problem, a problem statement was formulated. This will be addressed in the results and discussion sections.

### 3.5.3 Research Objective

The research objectives were defined as the aims and specific goals of the research. This stage was crucial for the implementation of various methodologies to achieve them. The research aimed to identify the root causes and propose solutions to address the root causes of differences in transition activities within the sustainable business transformation of the EPC Company.

### 3.5.4 Research Scope

The research scope, encompassing limitations of the research, was determined. Several aspects were considered, including research subject, time, aims, focuses, methods, and analysis. These considerations ensured a focused approach and the achievement of the research objectives.

### 3.5.5 Literature Study

A literature study was conducted to identify supporting data from existing or previous research aligned with this research. These references included books, journal articles, publications, websites, and so on. The review aimed to enhance the researcher's comprehension of the subject and object of this current research.

### 3.5.6 Data Collecting and Processing

Data collection is carried out to gather the necessary data or information for this research. After all the data is obtained in the data collection stage, the next step is data processing to generate outcomes and innovative solutions. In this research, data collection and processing were carried out using five stages in the design thinking approach, including empathize, define, ideate, prototype, and test. The steps of data collecting and processing in this research are as follows:

a. Empathize

   Data collection for the empathize stage employed various methods. These methods included observation, study document, interview, and empathy map. Observation was carried out to closely watch and understand the behaviours and interactions of individuals within the company as they deal with sustainable business transformation. Reviewing study documents

could helps in gaining a deeper understanding of the issue faced by the company. Interview was carried out with two experts, which are Division Head of TMO and Consultant Leader to gather direct insights into their experience, challenges, and perspectives. Empathy map was created to capture what the experts think, feel, say, and do to organise insights and highlight key pain points and needs.

b. Define

Following the data collecting and processing phase, a defined stage was carried out. In this stage, data from the empathize stage was analysed and synthesized to determine the core problems that would be identified, which helped the company solve the problems after the problem had been determined. It involved the researcher's efforts to understand the user's point-of-view table from interview results through empathy maps. The FGD with the TMO Division and Consultants was carried out to define several aspects in designing the transition plan assessment for an in-depth understanding of the existing problem. Afterwards, the transition plan assessment was filled out by BOD through expert judgment, which involved differences in transition activities based on the current state and target state. Then, the researcher sought the root cause of the problems based on each difference using Root Cause Analysis (RCA) and visualised it with a fishbone diagram, which involved Division Head of TMO.

c. Ideate

After the define stage, the ideate stage was carried out to generate as many ideas as possible or innovative solutions from the experts' problems of both the Division Head of TMO and Consultants to solve the problems that have been determined in the define stage. It involved generating innovative solutions called action plans based on the RCA result in the transition plan assessment. This ideate stage was carried out through brainstorming with experts, including TMO Division, BOD, and consultants. Afterwards, various action plans were generated, and the sequence of action plan was determined using criteria priority weighting of AHP and action plan sequence of PROMETHEE. In this stage, the reasons in each criteria was provided that was carried out through expert judgments.

d. Prototype

In the prototype stage, the focus shifted towards turning the conceptual ideas from the ideate stage into tangible representations. It was essential to test the feasibility of the proposed solutions on a smaller scale before full implementation. Prototypes were developed to

visually and interactively represent the action plans devised during the ideate stage. It allowed for early detection of issues, assessment of users' reactions to the prototypes, and understanding the practical implications of the proposed changes. In this research, the sequence of action plans determined in the ideate stage will be created in a visual gantt chart. The gantt charts help map out the timeline for development and testing.

e. Test

Feedback during this phase is invaluable as it provides insights into user experience and interaction with the product, enabling further refinement. In this research, the testing stage was conducted through interviews with two experts, including the Division Head of TMO and a Consultant Leader. The aim was to gather feedback on the prototype.

### 3.5.7 Analysis and Discussion

After data processing, analysis and discussion were conducted to explore the research findings. This stage involved critical analysis and explanation of the research objectives. Combining this stage with the literature review strengthened the research findings and discussion. The analysis focused on five stages of design thinking, including empathize, define, ideate, prototype, and test.

### 3.5.8 Conclusion and Recommendation

Conclusions and recommendations will be presented in the closing part of this study. Conclusions will be drawn to describe the research objective, and recommendations proposed by researchers are intended to be input for company improvement.

# CHAPTER IV
# DATA COLLECTING AND PROCESSING

## 4.1 Empathize

The design thinking process commences with the empathize stage. This stage prioritises the gathering of information crucial for developing suitable solutions. Researchers utilise this stage to achieve a more profound understanding of users. This understanding is achieved through research that explores user needs, habits, and concerns regarding sustainable business transformation. Within this research project, the empathize stage was facilitated through a combination of direct observation, study document, expert interviews, and empathy map which involved Division Head of TMO and Consultants Leader. The purpose of these stage was to acquire current and detailed information pertaining to the company profile, background, and activities within sustainable business transformation.

### 4.1.1 Observation and Study Document

#### 4.1.1.1 Company Profile

Since its establishment in 1973, EPC Company has been established as an integrated Engineering, Procurement, and Construction (EPC), Project Management, and Operation and Maintenance (O&M) company. Solutions and effective services are consistently provided by EPC Company along the energy value chain and within other industrial sectors. Leveraging its competence and experience in the energy sector, EPC Company offers best-in-class EPC and O&M solutions for the energy, oil and gas, petrochemical, infrastructure, and telecommunications sectors, both domestically in Indonesia and overseas. A comprehensive and tailored service is delivered to address the ever-changing demands of the industry. For over four decades, contributions have been made by EPC Company to national development through the provision of integrated and effective solutions for the processing of potential resources. This, in turn, serves to improve the nation's welfare and support its growth trajectory. As a leader in the domestic oil and gas sector, with a focus on both upstream and downstream operations, EPC Company offers solutions and effective services across various energy value chains and other industries.

#### 4.1.1.2 Company Services

The company is responsible for all aspects of a project, from its inception to its completion and ongoing maintenance. It encompasses design, planning and project management, procurement and construction, asset management, and a variety of additional services. The range of company services includes:

1. Engineering Design

   Through collaboration with experienced, creative, and knowledgeable engineers, ideas, concepts, and creations are developed and refined. Reliable, detailed, safe, efficient, and sustainable solutions are provided to address project challenges, guaranteeing that the final project meets or surpasses client expectations through cross-functional collaboration.

2. Planning and Project Management

   High-level coordination and communication are facilitated at all levels to ensure successful project completion. Integrated project management and planning services are offered to optimise project outcomes for each client.

3. Engineering, Procurement, and Construction

   Resources are optimised, including the procurement of raw materials and equipment, to deliver the anticipated project outcome.

4. Asset Management

   Project success is measured not only by successful construction but also by the effective management of all systems and functionalities. Operation and asset maintenance services are provided to efficiently manage and maintain assets in accordance with client needs.

5. Diversified Services

   Services are tailored to various industries, with solutions delivered that meet the demands of modern industry and align with the evolving needs of diverse clientele.

#### 4.1.1.3 Company Industrial Sector

EPC Company's involvement in a wide range of industrial projects translates into a diverse array of services offered within the industrial sector. These services are categorised into four main areas:

1. Upstream

   EPC Company undertakes exploration and initial production activities within the oil and gas industry. It encompasses searching for potential resources underwater or underground, drilling operations, and functioning on both national and international scale.

2. Midstream

   Transportation, storage, and wholesale marketing of crude or refined products are facilitated by EPC Company. Processing, refining, and purification of raw materials are facilitated, along with the transportation and storage processes themselves.

3. Downstream

   Refining of petroleum crude oil, processing and purification of natural gas, marketing, and distribution of products to end users are all handled by EPC Company. The downstream products include basic chemicals, gasoline, and bio-industry products such as petrochemicals and biofuels.

4. Power and Industrial

   Services in the power and industrial sector are also provided by EPC Company, even though this sector is not directly related to the oil and gas industry. This sector encompasses the generation, transmission, and distribution of electric power, as well as the construction and maintenance of industrial facilities and infrastructure.

#### 4.1.1.4 Sustainable Business Transformation

The intense competition within the current upstream, midstream, downstream, power, and industrial sectors is acknowledged. The company's close association with environmental activities, recognised as playing a pivotal role in the energy sector, is particularly noteworthy regarding climate change and global warming issues such as greenhouse gas emissions, increased waste generation, and reliance on non-renewable energy sources. The company's commitment to addressing climate change concerns and its environmental impact is driven by its involvement in the energy sector. This commitment is further emphasised by the company's support for the net zero emissions goal by 2060 or sooner (Salim et al., 2023). This support serves as a declaration towards achieving a sustainable future for Indonesia. A strategic decision to transform into a sustainable business sector was made, reflecting the company's commitment to environmental sustainability. This aligns with global efforts to mitigate climate change and ensure a cleaner, healthier environment for future generations. The company's objective in

transforming into a sustainable business sector is to have sustainable solutions engineered that transform energy and accelerate downstream operations.

The initiation of the sustainable business transformation occurred in September 2022, with a budget of approximately ten billion Indonesian Rupiah allocated to support the transformation process. This initiative was launched not only to minimise the negative environmental impact of the company's operations but also to enhance long-term profitability and competitiveness. To drive the transformation from its current business sector into a sustainable one, a dedicated team known as the Transformation Management Office (TMO) Division was established. Recognising the need for expert guidance to ensure the success of the business transformation, the company engaged professional consultants from Big3 Consulting Firm. These consultants are actively involved in each phase of the sustainable business transformation. Their involvement facilitates the incorporation of valuable insights and best practices from various industries, enabling the company to adapt and innovate its operations to meet the evolving demands of the sustainable energy sector. A visual representation of the sustainable business transformation timeline within the Indonesian EPC company is provided in Figure 4.1.

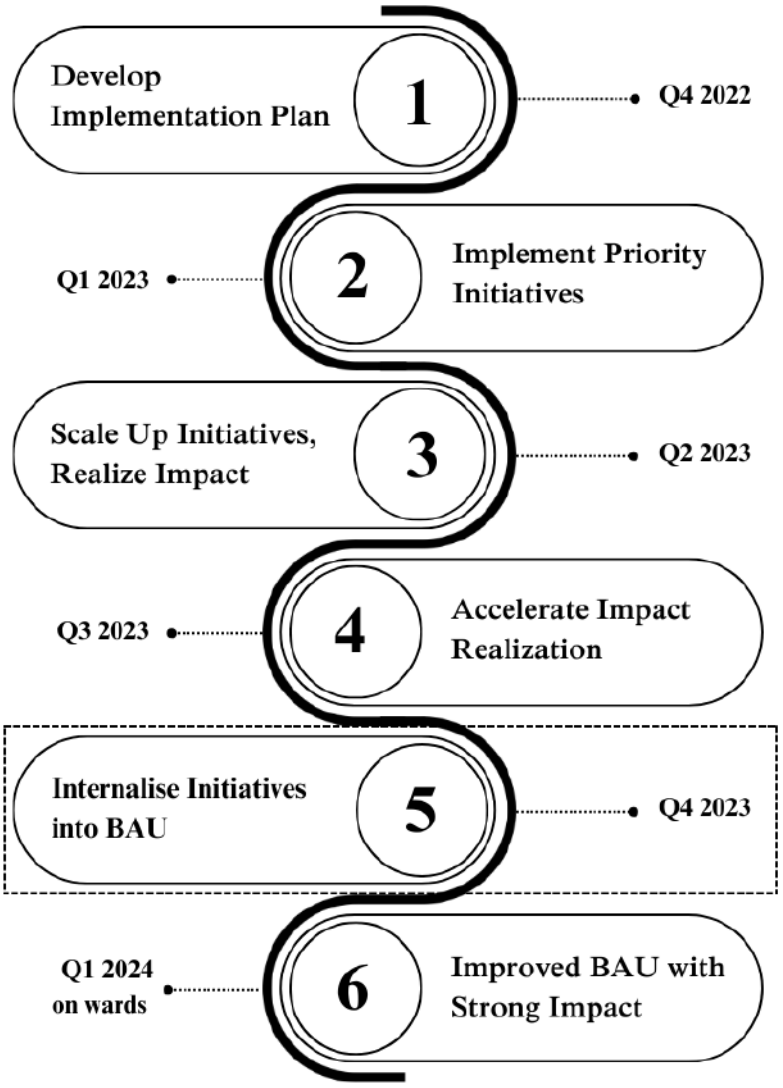


Figure 4.1 Sustainable Business Transformation Timeline

As Figure 4.1 illustrates, the sustainable business transformation within EPC Company was initiated in Q4 2022 and is projected to continue through Q1 2024. The timeline is segmented into six distinct phases, each with specific objectives that contribute to the overall goal of developing sustainable solutions for energy transformation and accelerating downstream operations. A breakdown of the six phases is provided below:

1. Develop Implementation Plan

   The transformation process begins with the development of an implementation plan during Q4 2022. This initial phase involves defining the plan by outlining objectives, milestones, resource allocation, and timelines. Following the plan's definition, the necessary infrastructure to support execution is established. It encompasses building structures,

allocating resources, budgeting, identifying key performance indicators (KPIs), and aligning various stakeholders. This phase is instrumental in enabling the company to monitor progress, conduct evaluations, and ensure the transformation remains on track.

2. Implement Priority Initiatives

   The first quarter of 2023 focuses on the implementation priority initiatives phase. During this phase, key initiatives are prioritised for piloting and achieving quick wins. It allows for testing and validation of initiatives before large-scale implementation. Potential obstacles are identified and addressed, with a focus on refining the effectiveness of initiatives and piloting those deemed essential. By selecting initiatives with significant potential benefits, feedback is gathered from employees to refine further and improve them. The successful implementation of priority initiatives leads to the realisation of quick wins, typically chosen based on their ability to drive change. This phase not only aims to achieve quick wins but also to foster a new company culture that embraces the transformation.

3. Scale Up Initiatives, Realize Impact

   The subsequent phase, occurring in Q2 2023, focuses on scaling up initiatives and realising their impact. Successful pilot initiatives are rolled out after undergoing refinement and iteration as needed to minimise risks and ensure efficiency and effectiveness. This phase allows the company to glean valuable lessons learned from the previous phase. The focus shifts towards implementing change management and communication across various functions to ensure stakeholder alignment regarding the management of scaled-up initiatives, often implemented in smaller groups before broader implementation. An assessment is conducted at the conclusion of this phase to evaluate successes and identify areas requiring improvement.

4. Accelerate Impact Realization

   The accelerated impact realisation phase, taking place in Q3 2023, necessitates a focus on expediting execution plans and initiatives to achieve desired outcomes. In today's fast-paced business environment, maintaining agility and speed is crucial for the company to swiftly realise the benefits of implemented initiatives and drive significant improvements in performance. This phase empowers the company to adapt rapidly to evolving market conditions, surpassing competitors and securing long-term success.

5. Internalise Initiatives into BAU

The internalisation of initiatives into the Business as Usual (BAU) phase, which will occur in Q4 2023, emphasises the integration of successful initiatives into standard business practices. Following the impact realisation achieved in the previous phase, the company focuses on internalising new practices to ensure successful implementation. It involves integrating new approaches, methodologies, and tools associated with initiative outcomes into the company's operating procedures. By doing so, the company fosters continuous improvement, where consultants transfer the necessary skills and abilities to employees, enabling them to adapt new ways of working and thinking to sustain the long-term objectives of sustainable business transformation.

6. Improved BAU with Strong Impact

   Following the internalisation of initiatives into BAU, the company transitions into the improved BAU with a strong impact phase in Q1 2024. During this phase, each initiative is expected to generate a significant amplification impact across various company functions. The improvement of BAU practices demonstrably enhances efficiency, fosters increased cross-functional collaboration between stakeholders, and bolsters continuous improvement efforts by identifying areas requiring attention and implementing changes. It allows the company to maintain agility and adaptability through new ways of working and thinking, ultimately driving the successful completion of the sustainable business transformation.

The internalisation of initiatives into business as usual (BAU) within the EPC Company during Q4 2023 was observed in this research. This crucial phase involved the integration of new approaches and initiatives into the company's standard operating procedures. The integration impacted both consultants and employees. The primary objective of this phase was to ensure that the implemented initiatives became ingrained elements of the company's culture and daily operations. Effective cross-functional collaboration and coordination facilitated the implementation of these initiatives. The TMO Division and consultants played a critical role in driving these changes.

As the sustainable business transformation period neared its end and consultant engagements began to wind down, this phase ensured the effective integration and long-term sustainability of the knowledge and skills acquired from these consultants within the EPC Company. During the transformation period, objectives were defined, and two focus areas were established. A total of eight impact centers were established to facilitate the achievement of these objectives. The focus areas were categorised as external and internal initiatives, with each

of the eight impact centers delineated by their specific responsibilities. A detailed illustration of the objectives, focus areas, and impact centers is provided in Figure 4.2 below.

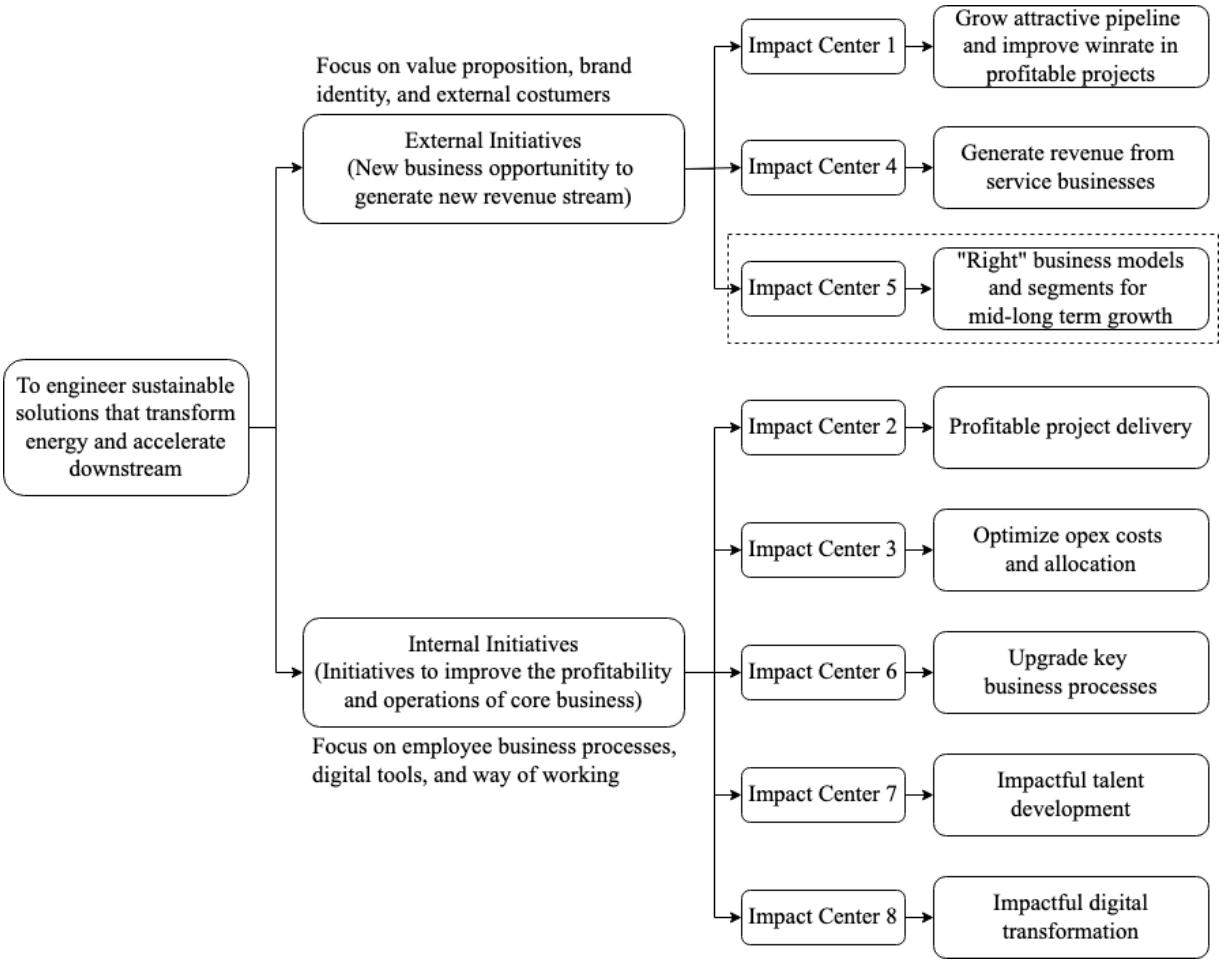


Figure 4.2 Objectives, Focus Area, and Impact Centers

Figure 4.2 above illustrates the objectives of the sustainable business transformation within EPC Company. These objectives include engineering sustainable solutions to transform energy and accelerate downstream operations. This transformation goes beyond simply achieving short-term impact reduction within the company's current business sector. It is designed to achieve long-term sustainability, aligning perfectly with the company's vision and mission. An agile approach is adopted by EPC Company to govern daily operations during the transformation process. This approach emphasises rapid change and flexibility. The sustainable business transformation is divided into two distinct focus areas, which are further broken down into specific impact centers. The delineation of these centers is based on the objectives established for each key focus area. Responsibilities for planning, execution, monitoring, and

driving changes towards sustainable business transformation are then assigned to each focus area. A brief explanation of the focus areas and impact centers is provided below:

1. External Initiatives

   External initiatives are undertaken to generate new revenue streams through the pursuit of novel business opportunities. The successful rollout of these external initiatives is significantly driven by the company's collaboration with consultants. Consultants are utilised to provide fresh perspectives and specialised knowledge, aiding in the comprehension of industry market trends. These initiatives focus on leveraging the company's value proposition, brand identity, and external customer base by venturing beyond its core business sector. This strategy is employed to expand revenue streams, enhance market visibility, and solidify the company's competitive position. By prioritising its value proposition and brand identity, the company can be differentiated from competitors and attract external customers, ultimately leading to growth and increased profitability. The successful execution of external initiatives can result in market expansion and position EPC Company as a leader in this new business landscape.

   a. Impact Center 1 – Grow Attractive Pipeline and Improve Win Rate in Profitable Projects

      The primary objective of Impact Center 1 (IC 1) is to enhance the sales pipeline and increase the successful rate of profitable projects within the company. This team has identified and pursued high-value deals, leveraging the company's strengths to cultivate new business opportunities and spearhead revenue growth. Effective communication, collaboration, and coordination among various stakeholders are ensured by this team, keeping the company ahead of competitors within the industry.

   b. Impact Center 4 – Generate Revenue from Service Businesses

      Impact Center 4 (IC 4) focuses on utilising the company's capability to generate revenue. This team actively seeks opportunities to develop valuable customer service offerings that translate into sustainable revenue streams. Building customer trust through strategic partnerships is facilitated to encourage repeat business. Service businesses provide the company with a path towards more stable and increased revenue streams.

   c. Impact Center 5 – “Right” Business Models and Segments for Mid-long Term Growth

      The identification of the most effective and profitable business models and segments for new business opportunities that align with company objectives is undertaken by Impact Center 5 (IC 5). A comprehensive analysis of business models and market segments is

conducted by the company, employing tools such as SWOT analysis, market trend evaluations, and competitive analysis. This analysis informs decision-making that fosters increased company profits. Beyond revenue generation, IC 5 also strives to contribute to positive social and environmental outcomes.

2. Internal Initiatives

   Internal initiatives are entirely managed by company employees and focus on enhancing the operations and profitability of the core business. These initiatives prioritise employee business processes, the implementation of digital tools, and the adoption of new ways of working. Employee engagement in addressing internal issues is facilitated, fostering a culture of ownership and accountability. Additionally, agile methodologies are implemented to empower employees to adapt to evolving market conditions. Investments are made in upskilling and knowledge development for employees, alongside the introduction of new tools and the necessary infrastructure to support objective achievement. Through internal initiatives, the company seeks to optimise operations, increase productivity, reduce costs, bolster profits, and ultimately contribute to the long-term success of the sustainable business transformation. A breakdown of the internal impact centers is provided below:

   a. Impact Center 2 – Profitable Project Delivery

      Impact Center 2 (IC 2) focuses on the successful execution of projects, from initiation to completion. Cost minimisation and revenue maximisation are key priorities. Adaptation and innovation are fostered by the company in the face of rapid industry competition to maintain project budgets, reputation, and relationships with stakeholders. Effective planning, resource allocation, budget management, and adherence to execution timelines are crucial for achieving these objectives.

   b. Impact Center 3 – Optimize Opex Costs and Allocation

      Operational expenses (OPEX) and their allocation within the company are optimised by Impact Center 3 (IC 3). This initiative aims to reduce unnecessary expenditures, enhance efficiency, and optimise resource utilisation. Cost savings targets are sought, financial performance is improved, and a competitive edge is gained within the industry through the efforts of this team. Areas for cost reduction are identified, costs are optimised, and effective resource allocation is ensured.

   c. Impact Center 6 – Upgrade Key Business Processes

The optimisation of core business processes, leading to enhanced operational efficiency and industry competitiveness, is undertaken by Impact Center 6 (IC 6). This initiative focuses on identifying areas with significant impact on overall performance and addressing these issues. New tools are implemented, workflows are redefined, and responsibilities and roles are clarified by IC 6, empowering the company to reduce costs, increase productivity and process efficiency, and adapt to necessary changes. This approach allows the company to stay ahead of the competition within the industry.

d. Impact Center 7 – Impactful Talent Development

   Employee growth and skill and knowledge development are fostered through Impact Center 7 (IC 7). Keeping pace with industry changes is crucial in today's fast-paced business environment. The benefits of IC 7 extend beyond employees, contributing to the organisation's development and overall performance. Talent potential is unlocked by the company, further progressing its journey towards successful sustainable business transformation.

e. Impact Center 8 – Impactful Digital Transformation

   The objective of Impact Center 8 (IC 8) is to leverage digital technology implementation to improve efficiency and optimise business processes. Digital transformation encompasses not only the adoption of new technologies but also the adaptation of daily operations to maintain a competitive edge. A culture of agility, innovation, and continuous learning is fostered by this initiative, enabling the company to adapt to new ways of working and ensure long-term sustainability.

This research focuses on Impact Center 5: "Right" business models and segments for mid-long-term growth. The objective of this focus is to identify the most profitable and effective business models within the industry. Partnerships with consultants are established to gain new ideas, perspectives, and expertise. These partnerships allow consultant expertise and resource allocation to be leveraged by the company. Consultants with green sector transformation expertise can expedite the company's expansion into new business areas. Their role involves assisting the company in driving the transformation towards achieving the objectives within Impact Center 5. The internalisation of skills, knowledge, and capabilities is necessary for both consultants and employees to drive innovation, growth, and profitability within Impact Center 5.

#### 4.1.1.5 Green Business

The company itself is shifting its core business operations towards a long-term sustainable business sector. The ongoing sustainable business transformation is driven by primary objectives such as engineering solutions to promote energy transformation and accelerate downstream operations, ultimately leading the company to adopt a green business model. A particular focus is placed on identifying the "Right" business models and segments for mid-long-term growth. It is crucial for driving the company's successful green business transformation and necessitates a clearly defined strategy for evolution and objective achievement.

The establishment of Impact Center 5 (IC 5) is motivated by the objective of positioning EPC Company as a leader within Indonesia's green sectors. The transformation strategy should clearly outline the rationale behind the shift and the methods employed to achieve it. By undertaking this transformation, the company not only contributes to a sustainable future but also benefits from increased profitability and a strengthened competitive edge in the industry. For the transformation, the company is segmented into specific sectors and sub-sectors requiring focused attention. A detailed illustration of these sectors is provided in Figure 4.3 below.

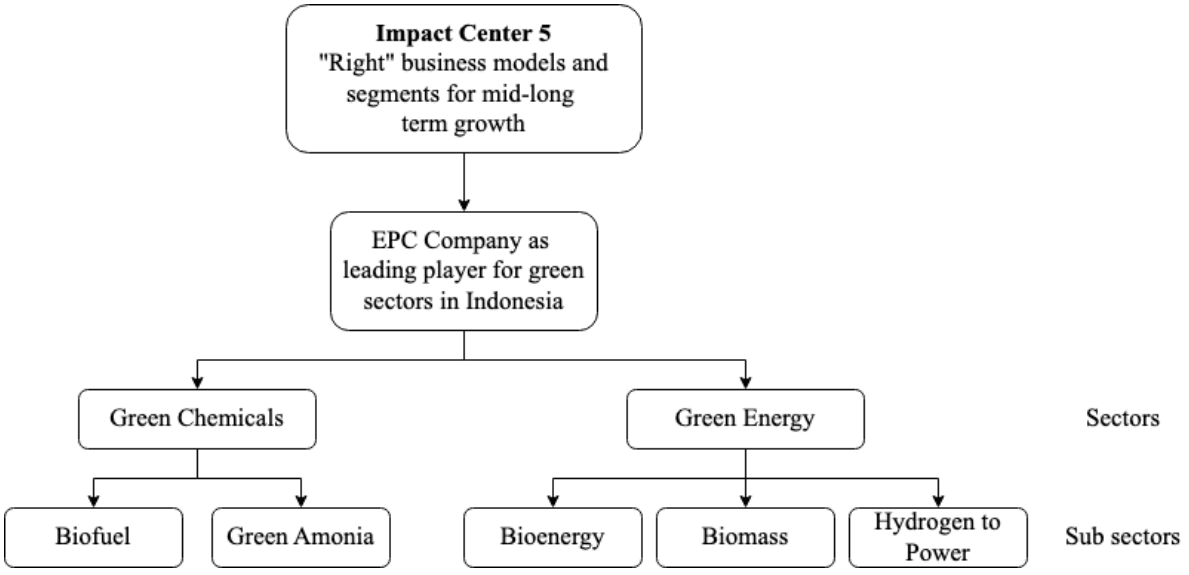


Figure 4.3 Green Business

Figure 4.3 illustrates the objectives of focusing on "Right" business models and segments for mid-long-term growth. These objectives are revealed as establishing EPC Company as a prominent player within Indonesia's green sectors. The company's strategic direction is

prioritised to maximise the growing demand for sustainable solutions and minimise environmental impact. Leveraging the company's existing capabilities is crucial for driving innovation and development within these green business areas. This approach allows the company to be established with a strong market presence, aligning with the global movement towards sustainability and meeting local regulations and consumer demands for green projects and services. Consultants with specialised expertise in green business are heavily involved from the outset of the company's sustainable business transformation. For transformation, the company is divided into two primary sectors, included green chemicals and green energy. Consultants are deployed to support each of these sectors. A brief explanation of the focus areas and impact centers is provided below:

1. Green Chemicals

   Dominating the Asia Pacific region with the largest revenue share of 35% in 2022, green chemicals are produced from renewable energy sources. These chemicals are manufactured using environmentally friendly materials and methods, such as fermentation, green synthesis, biocatalysis, and solvent-free processes. This approach results in a reduction in environmental impact by lowering greenhouse gas emissions and minimising toxic waste generation. Sustainability in chemical production is enhanced, and significant environmental impact is mitigated through this focus on green chemicals, ultimately contributing to a future characterised by environmental sustainability. Green chemicals aim to achieve sustainability at the molecular level, allowing for their application across various industries, particularly the energy sector (Anastas & Eghbali, 2010). EPC Company is transitioning from its core business in oil and gas, derived from decomposed plant and animal matter, towards utilising renewable resources. This transformation into green chemicals is intended to replace fossil fuels as a revenue stream and contribute to a more environmentally responsible future. Two sub-sectors within green chemicals are chosen for focused transformation:

   a. Biofuel

      Biofuels, produced from plants or animals, are primarily used as substitutes for fossil fuels to generate energy. Their utilisation leads to a reduction in greenhouse gas emissions released into the atmosphere. Agricultural waste, sugarcane, algae, corn, and soybean are processed through fermentation, transesterification, and gasification to serve as organic sources for biofuel generation. These processes generate renewable energy in the form of biogas, bioethanol, and biodiesel, serving as alternative fuels for vehicles and power

generation. Biodegradability and lower pollution levels minimise the environmental impact of biofuels. Additionally, the organic matter required for biofuel production is readily available.

b. Green Amonia

Green ammonia, produced from non-hydrocarbon raw materials, boasts zero carbon emissions during production. One green production process involves the reaction of hydrogen, generated through water electrolysis, with nitrogen extracted from the air. Green ammonia serves primarily as a feedstock for other fuel production, such as methanol, hydrogen, and power generation. A future sustainable environment and expanded market opportunities within the green chemicals sector are targeted through the utilisation of green ammonia. Energy-based thorium, abundant in Indonesia (particularly in Bangka Belitung, West Kalimantan, and West Sulawesi, with reserves estimated between 210,000 and 270,000 tons), is employed for green ammonia production.

2. Green Energy

Green energy, produced from renewable sources like wind, solar, geothermal, and hydro through natural or technological processes, boasts minimal environmental impact. These renewable sources are naturally replenished and readily available for use. Renewable energy sources are abundant and considered the most environmentally friendly option available (Pinghal & Yadav, 2020). The focus is on reducing greenhouse gas emissions, promoting energy efficiency, and increasing the share of renewable energy within the energy mix by 2050. Transitioning from fossil fuels to green energy significantly contributes to creating a sustainable environment for future generations. EPC Company intends to concentrate on utilising and producing energy from renewable sources. Two sub-sectors within green energy are chosen for transformation:

a. Biomass

Biomass, referring to organic material derived from plants and animals, is used as a fuel source. Examples of biomass include wood, agricultural residues, animal waste, and other organic matter. Biomass can be converted into various energy forms, such as heat, electricity, or biofuels, through processes like combustion, gasification, or biochemical conversion. Additionally, biofuels can be derived from biomass through various processes. Biomass is optimised and managed to minimise the environmental impact of

waste disposal and contribute to the reduction of greenhouse gas emissions and dependence on non-renewable resources.

b. Bioenergy

Bioenergy, defined as energy obtained from organic materials like microorganisms, plants, and animals, is produced. This category encompasses solid biomass, biogas, and liquid biofuels. Production of these bioenergy sources is achieved through various processes, including combustion, gasification, anaerobic digestion, fermentation, and transesterification. The responsible and sustainable utilisation of bioenergy offers a clear environmental benefit in the reduction of greenhouse gas emissions.

#### 4.1.1.6 Transition Activities

The company was contracted to facilitate a successful sustainable business transformation. Consultants provided specialised skills in the green business sectors to drive the strategic objective and ensure a smooth transition. These specialised skills granted the consultants full responsibility for specific activities known as transition activities. Transition activities were crucial for ensuring the successful execution of the sustainable business transformation, fostering collaboration between consultants and internal employees. These activities encompassed various tasks, such as managing daily operations, identifying and analysing potential issues, and monitoring and evaluating the transformation's progress. Transition activities played a key role in embedding sustainability principles within the core of the business operations. By focusing on these key activities, companies can achieve successful integration of sustainability into their operations and emerge as leading players in Indonesia's green business sector. To achieve its objectives, the company prioritised two sectors, included green chemicals and green energy. A brief explanation of the key activities within each sector is provided below:

1. Green Chemicals

a. Business case framework development

The development of a business case framework for the green chemicals sector was undertaken. This framework established a structure and guidelines for creating comprehensive business cases. Through the implementation of this framework, consistency, well-structured presentations, and ease of understanding were ensured for stakeholders at all levels. Key components and stages for building a strong business case

were defined by this framework development process. This approach empowered the company to communicate its value proposition and justification more effectively.

b. Business case development

The development of a business case for the green chemicals sector was undertaken. This case provided a framework for structured thinking, identifying strong opportunities and facilitating realistic planning. The process involved identifying and analysing the current state, existing challenges, and potential opportunities. The business case defined objectives, required costs, potential benefits, risks, financial projections, and execution plans. By developing the business case, a clear understanding of execution, resource and cost allocation, and timeline tracking was established to achieve successful objectives.

c. Off taker analysis

An analysis of potential customers interested in purchasing green chemicals sector outcomes was conducted. This analysis involved the identification and evaluation of these potential off-takers. Information on new potential clients was gathered, and their willingness to engage in the green chemicals sector was assessed. Market demand, market trends, client needs, preferences and new opportunities sought to be understood through this analysis. These insights were then leveraged to define effective sales and marketing strategies tailored to reach each potential customer. Additionally, the competitive landscape was evaluated, with market share and potential gaps being identified. This analysis further facilitated the company's understanding of the needs and preferences of each potential client. These insights served as the foundation for developing sales and marketing strategies aimed at driving successful growth and achieving the objectives of the green chemicals sector.

d. Market research

In-depth market research was undertaken to gain a comprehensive understanding of market dynamics and new opportunities within the green chemicals sector. Data about market trends, growth, size, share, competitors, and potential markets were collected and analysed. This analysis enabled the company to identify potential challenges from various perspectives, including technology gaps, market changes, and government regulations. The insights gleaned from market research were crucial in enhancing the company's position within the competitive green market industry.

e. Partnership shortlisting and outreach

The process of identifying the most promising partners for the green chemicals sector was undertaken. These potential partners were then shortlisted based on a thorough assessment of their objectives, capabilities, and abilities. Following the shortlisting process, an outreach phase was initiated. This outreach phase involved introducing the company, discussing potential responsibilities, and negotiating partnership terms. Building trust and maintaining and strengthening relationships with partners were all facilitated by this approach.

f. Pitch deck and report development

A pitch deck and report were developed for the green chemicals sector. These deliverables were created to track the progress of key performance indicators (KPI) and communicate the vision, strategy, and performance to relevant stakeholders. The pitch deck was designed to be particularly captivating for potential partners and clients. Market opportunities, value propositions in unique and competitive, and the company's overall value proposition were highlighted. Detailed references, transparent milestones, strategic initiatives, decisions made, and financial performance were provided in the report for stakeholder consumption. Both the pitch deck and report were carefully aligned to ensure coherent communication within partnerships. This approach facilitated effective stakeholder engagement in support of the sustainable business transformation objectives.

g. Pre-FS and FS execution

An analysis and assessment of the viability and potential impact of successful implementation initiatives within the green chemicals sector were conducted. The Pre-FS stage involved preliminary assessments to identify viability and potential issues and evaluate overall feasibility. This process facilitated the narrowing down of options and set the groundwork for further analysis. Detailed and in-depth analyses were then conducted during the FS stage to provide a clear understanding of feasibility, address potential challenges, and propose risk mitigation strategies. Both the Pre-FS and FS studies played a pivotal role in securing investment, ensuring sustainability, and guiding successful decision-making. These contributions were crucial to achieving the company's objectives.

2. Green Energy

a. Research on additional ad-hoc request

   Research was conducted on additional ad-hoc requests in the green energy sector. These requests originated from clients or stakeholders and fell outside the original project scope due to unforeseen circumstances such as urgent stakeholder demands, unexpected market opportunities, or sudden government regulatory changes. This research was crucial for ensuring successful project initiatives, maintaining relationships with various stakeholders, and unlocking new opportunities. Activities involved identifying potential requests, formulating research questions, collecting and analysing data, assessing impacts, defining strategies, creating reports, and developing master decks.

b. Market and subsector assessment

   An evaluation of the green energy sector market and subsectors was undertaken to understand industry dynamics and identify potential growth opportunities. It involved analysing market trends, size, growth potential, market share, competitive landscape, customer behaviour, and regulatory policies. Following this assessment, valuable insights were gleaned regarding market demands and feasible outcomes, serving as a foundation for informed decision-making. It enabled the company to effectively and efficiently chart its path forward. Additionally, the most promising market opportunities, including niche markets or emerging trends, were identified, allowing the company to position itself to capitalise on growth opportunities within the green sector.

c. Business case development

   The development of a business case for the green energy sector was undertaken. This case provided a framework for structured thinking, identifying strong opportunities and facilitating realistic planning. The process involved identifying and analysing the current state, existing challenges, and potential opportunities. The business case defined objectives, required costs, potential benefits, risks, financial projections, and execution plans. By developing the business case, a clear understanding of execution, resource and cost allocation, and timeline tracking was established to achieve successful objectives.

d. Pitch deck and report development

   The development of a pitch deck and report for the green energy sector was undertaken. These deliverables focused on tracking key performance indicators (KPIs) and

communicating the company's vision, strategy, and performance to relevant stakeholders. The pitch deck was designed to be captivating for potential partners and clients, highlighting market opportunities, value propositions (unique and competitive), and the company's overall value proposition. The report provided detailed references, transparent milestones, strategic initiatives, decisions made, and financial performance for stakeholder consumption. Both the pitch deck and report were carefully aligned to ensure coherent communication within partnerships, effectively involving stakeholders in support of the sustainable business transformation objectives.

e. Pre-FS and FS Execution

The pre-FS and FS studies for the green energy sector were executed. These studies involved analysing and assessing the viability and potential impact of successful implementation initiatives. The Pre-FS stage involved the execution of preliminary assessments to identify viability and potential issues and evaluate overall feasibility, ultimately narrowing down options and setting the groundwork for further analysis. The FS stage involved conducting more detailed and in-depth analyses to provide a clear understanding of feasibility, address potential challenges, and propose risk mitigation strategies. Both the Pre-FS and FS studies played a pivotal role in securing investment, ensuring sustainability, and guiding successful decision-making. These contributions were crucial to achieving the company's objectives.

### 4.1.2 Interview

In order to obtain a more comprehensive insight into the challenges and necessary improvements, interviews were conducted with two subject experts. These interviews yielded valuable perspectives on the existing issues and the essential nature of enhancements. The interviewed experts included the Division Head of TMO and the Consultant Leader, both of whom offered crucial insights into the process of transformation. The interviews conducted with APA, the Division Head of TMO, and SA, the Consultant Leader, provided valuable insights into the EPC company's sustainability transformation. Both experts express that in Q4 2023 the company still quite distant from the objective in transition into BAU (Business as Usual), which need to addres the issue for the successful implementation objective.

### 4.1.3 Empathy Map

The design thinking approach utilises empathy mapping as a method within the empathize stage. This method is employed to gain an understanding of experts' needs and identify the problems they encounter. Following the completion of interviews, the results were compiled into an empathy map to facilitate comprehension. Figure 4.4 presents the empathy map created from the interview results.

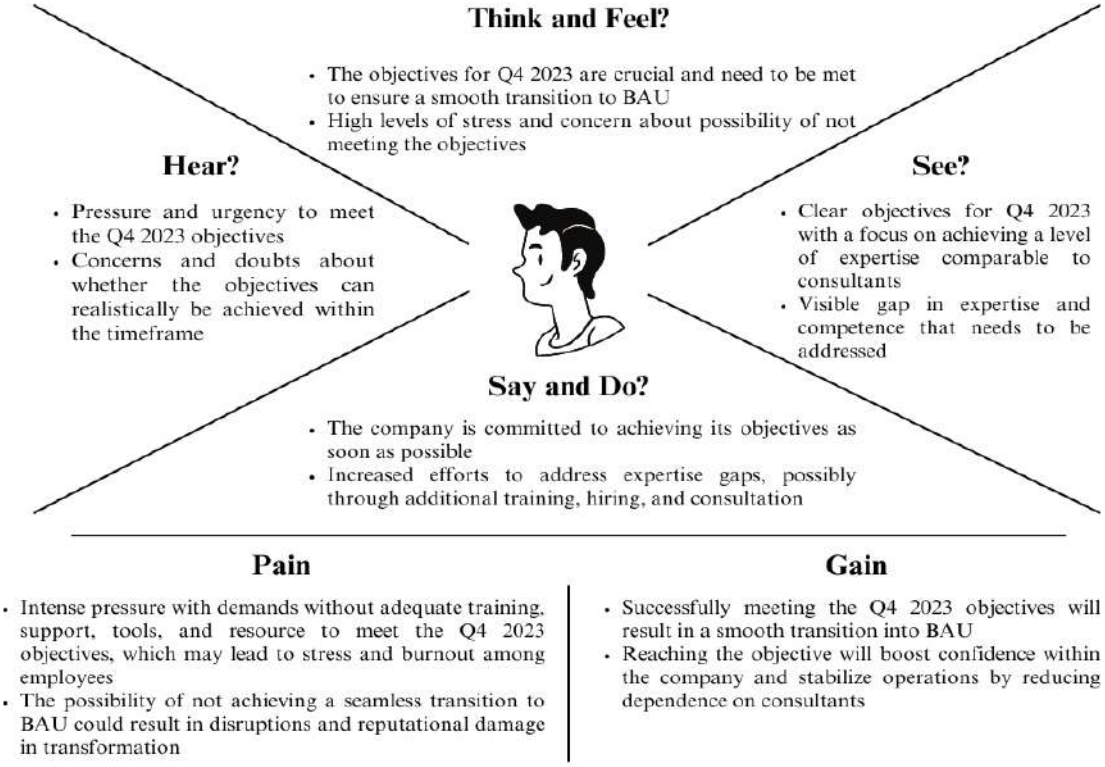


Figure 4.4 Empathy Map

The following provides brief explanations of the sections within the empathy map presented in Figure 4.4.

1. See

   This section centers on experts' experiences and perceptions. Interview results relevant to this section include:

   - Clear objectives for Q4 2023 with a focus on achieving a level of expertise comparable to consultants
   - Visible gap in expertise and competence that needs to be addressed

2. Hear

   This section focuses on experts' auditory experiences. Interview results relevant to this section include:

- Pressure and urgency to meet the Q4 2023 objectives
- Concerns and doubts about whether the objectives can realistically be achieved within the timeframe

3. Think and Feel

   This section explores experts' thoughts and emotions. Interview results relevant to this section include:

   - The objectives for Q4 2023 are crucial and need to be met to ensure a smooth transition to BAU
   - High levels of stress and concern about possibility of not meeting the objectives

4. Say and Do

   This section examines experts' verbal and physical actions. Interview results relevant to this section include:

   - The company is committed to achieving its objectives as soon as possible
   - Increased efforts to address expertise gaps, possibly through additional training, hiring, and consultation

5. Pain

   This section highlights experts' challenges and difficulties. Interview results relevant to this section include:

   - Intense pressure with demands without adequate training, support, tools, and resource to meet the Q4 2023 objectives, which may lead to stress and burnout among employees
   - The possibility of not achieving a seamless transition to BAU could result in disruptions and reputational damage in transformation

6. Gain

   This section focuses on experts' positive experiences and benefits. Interview results relevant to this section include:

   - Successfully meeting the Q4 2023 objectives will result in a smooth transition into BAU
   - Reaching the objective will boost confidence within the company and stabilize operations by reducing dependence on consultants

### 4.2 Define

Following the empathize stage, the define stage was conducted. This stage serves to define the core problem based on the information gathered. In this research, the define stage utilised point-

of-view table to make it easier in determine the core problem from the empathize stage. After the problem has determined, FGD was carried out with two experts, including the TMO Division and consultants to designing transition plan assessment. The assessment was filled by BOD to gather in-depth comprehensive insight regarding the existing problem in the company, which is differences on transition activities involved consultants and employees. Afterwards, RCA was carried out in this research to analyse the root cause of problems each differences in transition plan assessment.

### 4.2.1 Point of View

Afterwards, defining problem based on the point-of-view from direct observation and interview results in empathize stage. Below are shown the Table 4.1 for point of view from expert's perspective.

Table 4.1 Point of View

| User | Needs | Insight |
|---|---|---|
| Division Head of TMO | - Achieve the objectives for Q4 2023<br>- Bridge the expertise gap between the company and consultants<br>- Ensure a smooth transition to BAU | - There is a significant gap in expertise that needs to be addressed urgently to meet the set objectives<br>- The leader feels pressure and anxiety about the potential failure to transition smoothly to BAU |
| Consultant Leader | - Effective collaboration with the company to address expertise gaps<br>- Support in meeting the company's Q4 2023 objectives<br>- Assistance in ensuring a seamless transition to BAU | - The focus has been on starting new business sectors, and there's a need to shift focus towards closing the expertise gap<br>- The consultant sees the urgency in achieving a smooth transition and aligning the company's expertise with that of consultants |

### 4.2.2 Transition Plan Assessment Design

Based on the empathize stage, the expert's problem in transformation is needed a smooth and successful transition into BAU, the TMO Division and Consultants was carried out FDGs to define the several aspects in transition plan assessment. The transition plan aspects were adopted from the gap analysis assessment framework outlined (Jindrák et al., 2014). The following table details the specific aspects of the transition plan in the EPC Company as detailed in Table 4.2.

Table 4.2 Transition Plan Aspect
Source: (Jindrák et al., 2014)

| No | Aspects |
|---|---|
| 1 | Impact Center (IC) |
| 2 | Sector |
| 3 | Transition Activities |
| 4 | Current State |
| 5 | Target State |
| 6 | Differences |

Table 4.2 above lists five aspects that will be assessed in the transition plan for the EPC Company. These aspects are impact center, sector, transition activities, current state, and target state. The following explanations describe each aspect of the transition plan:

1. Impact Center (IC)

   The Impact Center (IC) is a strategic team that played a significant role in ensuring the successful implementation of the sustainable business transformation project.

2. Sector

   The company placed a specific focus on long-term sustainable business sectors in order to establish itself as a leading player in Indonesia's green sectors, such as green chemicals and green energy.

3. Transition Activities

   Crucial activities which drive a successful objectives sustainable business transformation..

4. Current State

   The current performance level of the EPC Company.

5. Target State

   The target state is defined as the desired future state with specific objectives and goals to be achieved.

6. Differences

   The difference is the existing gaps between the current state and the target state that utilise to identify the needed areas for improvement and address with alternative solutions to achieve the sustainable business transformation objectives.

### 4.2.3 Transition Plan Assessment

After the transition plan assessment has been designed through FGD with TMO Division and Consultants, it will be reviewed and validate by the BOD. The assessment was carried out through expert judgment with BOD to gather in-depth comprehensive insight regarding the existing problem in the company. Through the transition plan assessment by assessing current state and target state based on transition activities, the problem was found out that there are differences in each transition activities involves consultants and employees. The detail of differences on each transition activities are shown in ***Error! Not a valid bookmark self-reference.*** below

Table 4.3 Transition Plan Assessment

| IC | Sector | Transition Activities | Current State | Target State | Difference |
|---|---|---|---|---|---|
| IC5 | Green Chemicals | Business case framework development | • Consultants define objectives, key questions and strategic decisions | • Employees define objectives, key questions and strategic decisions | Employees needs to transition from relying on consultants to independently defining objectives, key questions, strategic decisions, KPI metrics, establish framework, and collaboration across functions for business case framework development |
| | | | • Consultants define KPI metrics and employees define key stakeholders | • Employees define KPI metrics and key stakeholders | |
| | | | • Consultants help in framing the framework | • Employees establish a standardized framework | |
| | | | • Consultants as expertise in green chemicals sector | • Employees have expertise in green chemicals sector | |
| | | | • Consultants helping employees to collaborate by high-level instruction | • Employees collaborate cross-function without consultant's instruction | |
| IC5 | Green Chemicals and Green Energy | Business case development | • Consultants help employees identify objective and new opportunities | • Employees identify objective and new opportunities | Employees needs to move from receiving consultant's assistance to independently in identify objectives and opportunities, analysis and summarise findings, develop structure, and presenting |
| | | | • Consultants gathering, analysing, and summarise findings | • Employees gathering, analysing, and summarise findings | |

| IC | Sector | Transition Activities | Current State | Target State | Difference |
|---|---|---|---|---|---|
| | | | • Consultants still instruct to employees in structure development<br>• Consultants helping employees to collaborate by high-level instruction<br>• Employees only observe and consultant conduct presentation | • Employees develop comprehensive and well-structure<br>• Employees collaborate cross-function without consultant's instruction<br>• Employees present to related stakeholders | business case opportunities to stakeholders |
| IC5 | Green Chemicals | Off taker analysis | • Consultants help employees to analyse financial performance and growth projections of potential buyers by instruction<br>• Consultants conduct evaluate reputation, credibility, compliance, and commitment<br>• Employees identify key stakeholders<br>• Consultants analyse potential market and competitors | • Employees analyse financial performance and growth projections of potential buyers without consultant's instructions<br>• Employees evaluate reputation and credibility, compliance, and commitment<br>• Employees identify require key stakeholders<br>• Employees analyse potential market and competitors | Employees needs to take full control of consultants' role in financial performance analysis, evaluating reputation and compliance, market potential analysis, and evaluating legal regulations for off taker analysis |

| IC | Sector | Transition Activities | Current State | Target State | Difference |
|---|---|---|---|---|---|
| | | | • Consultants help in evaluate legal and regulations by provide high-level instructions | Employees evaluate legal and regulations without consultant's instructions | |
| IC5 | Green Chemicals | Market research | • Consultants define potential market, including market trends, needs, preference, and behavior<br>• Consultants collect and analyse in new market expanding<br>• Consultants create strategic decisions in new market expanding<br>• Consultants manage time and resources with limited budget and time constraints<br>• Consultants engage others stakeholders | • Employees define potential market, including market trends, needs, preference, and behavior<br>• Employees collect and analyse in new market expanding<br>• Employees create strategic decisions in new market expanding<br>• Employees manage time and resources with limited budget and time constraints<br>• Employees engage others stakeholders to collaborate | Employees needs to transition from relying on consultants in defining potential market, making strategic decisions, managing time and resources, and engage stakeholders for market research |
| IC5 | Green Chemicals | Partnership shortlisting and outreach | • Consultans help in define and evaluate criteria for potential partners by providing instruction | • Employees define and evaluate critera for potential partners without consultant’s instruction | Employees needs to fully take over consultants' role in defining and evaluating criteria, identify, analysing, negotiating, and |

| IC | Sector | Transition Activities | Current State | Target State | Difference |
|---|---|---|---|---|---|
| | | | • Employees search and consultants identify potential partners<br>• Consultans analysing and shorlisting potential partners<br>• Consultans build and maintain communication<br>• Consultans help employees in negotiate and initial agreement | • Employees search and identify potential partners<br>• Employees analysing and shorlisting potential partners<br>• Employees build and maintain communication<br>• Employees negotiate and initial agreement | maintain good relationship with potential partners |
| IC5 | Green Chemicals and Green Energy | Pitch deck and report development | • Employees collects the necessary information<br>• Consultants create story lining and structuring<br>• Consultants create design and visualisation for pitch deck<br>• Consultants develop outline and structure for report<br>• Consultants conduct review and refinement | • Employees collects the necessary information<br>• Employees create story lining and structuring<br>• Employees create design and visualisation for pitch deck<br>• Employees develop outline and structure for report<br>• Employees conduct review and refinement | Employees needs to full take over consultants' responsibility in creating story lining, structuring, designing, visualising, reviewing, refining for pitch deck and report development |

| IC | Sector | Transition Activities | Current State | Target State | Difference |
|---|---|---|---|---|---|
| IC5 | Green Chemicals and Green Energy | Pre-FS and FS execution | • Consultants estimate cost and profitability and develop financial models<br>• Consultants conduct exploration and refine resources<br>• Consultants analyse market and risk management<br>• Employees assess social and environmental impacts<br>• Consultants making strategic decision making | • Employees estimate cost and profitability and develop financial models<br>• Employees conduct exploration and refine resources<br>• Employees analyse market and risk management<br>• Employees assess social and environmental impacts<br>• Employees define strategic decision | Employees needs to take over consultant's role in estimation, profitability analysis, refine resources, market analysis, and strategic decision-making |
| IC5 | Green Energy | Research on additional ad-hoc requests | • Consultants framing research questions<br>• Consultants understand specific details and scope<br>• Consultants gathering and analysing related information<br>• Consultants engage and gain experts opinion and helped by employees | • Employees framing research questions<br>• Employees understand specific details and scope<br>• Employees gathering and analysing related information<br>• Employees engage and gain experts opinion | Employees needs to transition from relying on consultants assistance to handle framing research questions and research scope, gathering and analysing, and reporting in ad-hoc request |

| IC | Sector | Transition Activities | Current State | Target State | Difference |
|---|---|---|---|---|---|
| | | | • Consultants compile, summarise, and create reports helped by employees | • Employees compile, summarise, and create reports | |
| IC5 | Green Energy | Market and subsector assessment | • Consultants help employees to collects and analysing market size, growth trends, and key players<br>• Consultants identify industry trends and regulation<br>• Consultants analysing economic and financial performance<br>• Consultants identify market opportunities<br>• Consultants develop strategic recommendation helped by employees | • Employees collects and analysing market size, growth trends, and key players<br>• Employees identify industry trends and regulation<br>• Employees analysing economic and financial performance<br>• Employees identify market opportunities<br>• Employees develop strategic recommendation | Employees needs to take over the consultant's responsibility for collecting, identifying, analysing market and subsector research, and making strategic recommendation |

4.2.4 Identifying the Cause of Differences with RCA

RCA method was carried out with fishbone diagram to address the problem in differences the transition activities that involved consultants and employees based on current state and target state. The researcher found that there are nine differences that was assess through transition plan

assessment through FGD with TMO Division, BOD, and Consultants, which those has significant impact towards achieving the sustainable business transformation within the company. RCA method was carried out as problem analysis utilising fishbone diagram as visualising tools. The following are the differences table based on transition activities regarding the possible causes in differences The differences in transition activities are shown in Table 4.4.

Table 4.4 Differences

| Sector | Code | Differences |
|---|---|---|
| Green Chemicals | A | Employees needs to transition from relying on consultants to independently defining objectives, key questions, strategic decisions, KPI metrics, establish framework, and collaboration across functions for business case framework development. |
| Green Chemicals and Green Energy | B | Employees needs to move from receiving consultant's assistance to independently in identify objectives and opportunities, analysis and summarise findings, develop structure, and presenting business case opportunities to stakeholders. |
| Green Chemicals | C | Employees needs to take full control of consultants' role in financial performance analysis, evaluating reputation and compliance, market potential analysis, and evaluating legal regulations for off taker analysis. |
| Green Chemicals | D | Employees needs to transition from relying on consultants in defining potential market, making strategic decisions, managing time and resources, and engage stakeholders for market research. |
| Green Chemicals | E | Employees needs to fully take over consultants' role in defining and evaluating criteria, identify, analysing, negotiating, and maintain good relationship with potential partners. |
| Green Chemicals and Green Energy | F | Employees needs to full take over consultants' responsibility in creating story lining, structuring, designing, visualising, reviewing, refining for pitch deck and report development. |
| Green Chemicals and Green Energy | G | Employees needs to take over consultant's role in estimation, profitability analysis, refine resources, market analysis, and strategic decision-making. |
| Green Energy | H | Employees needs to transition from relying on consultants assistance to handle framing research questions and research scope, gathering and analysing, and reporting in ad-hoc request. |
| Green Energy | I | Employees needs to take over the consultant's responsibility for collecting, identifying, analysing market and subsector research, and making strategic recommendation. |

The following are the fishbone diagram each differences based on transition activities regarding the possible causes in differences:

**a. Green Chemical - Differences in Business Case Framework Development**

The fishbone diagram of transition activity in business case framework development for green chemicals is shown in Figure 4.5 below.

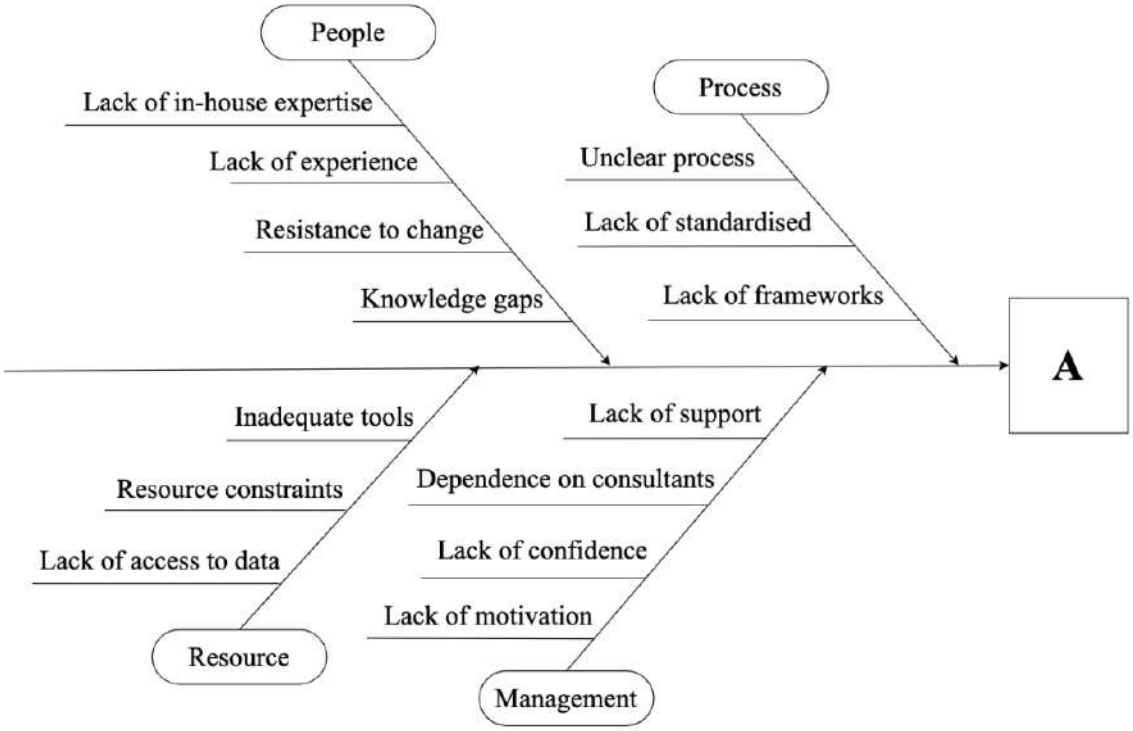


Figure 4.5 Fishbone Diagram Differences in Busines Case Framework Development

Based on the fishbone diagram in Figure 4.5 above, it was found that there are four factors that affect employees themselves, causing them to rely on consultants in business case framework development for green chemicals, which are people, process, resources, and motivation. Possible causes related to people factors include lack of in-house expertise and experience, resistance to change, and knowledge gaps. Process factors could include unclear processes, lack of standardisation, or missing frameworks. Resource factors might involve inadequate tools, resource constraints, or limited data access. Motivational factors could include a lack of support, dependence on consultants, or a deficit in confidence.

**b. Green Chemical and Green Energy - Differences in Business Case Development**

The fishbone diagram of transition activity in business case development for green chemicals is shown in Figure 4.6 below.

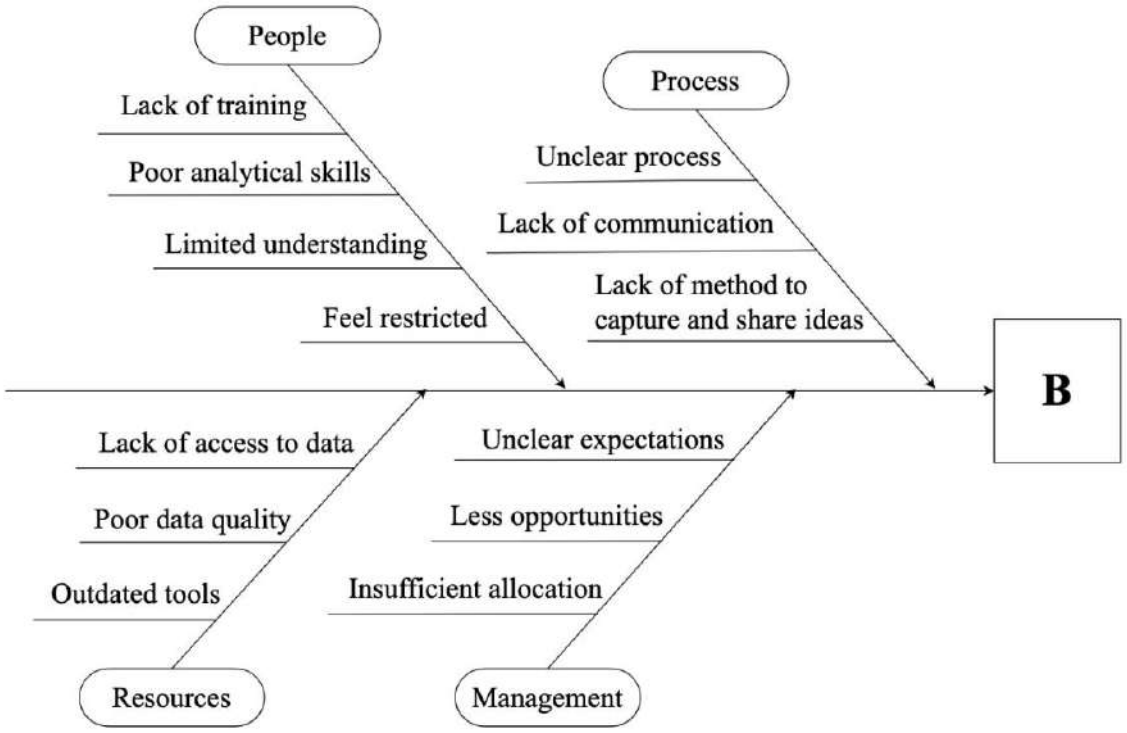


Figure 4.6 Fishbone Diagram Differences in Busines Case Development

Based on the fishbone diagram in Figure 4.6 above, it was found that there are four factors that affect employees themselves, causing them to still receive consultants' assistance in business case development for green chemicals, which are people, process, technology, and management. Possible causes identified within the people category include lack of training, poor analytical skills, limited understanding of the subject matter, and feelings of restriction. Process-related causes might encompass unclear processes, inadequate communication, and the absence of a method for capturing and sharing ideas. Technology factors could involve limited data access, poor data quality, and outdated tools. Management factors might include a lack of clearly defined expectations, limited opportunities for growth, and insufficient resource allocation.

**c. Green Chemical - Differences in Off Taker Analysis**

The fishbone diagram of transition activity in off taker analysis for green chemicals is shown in Figure 4.7 below.

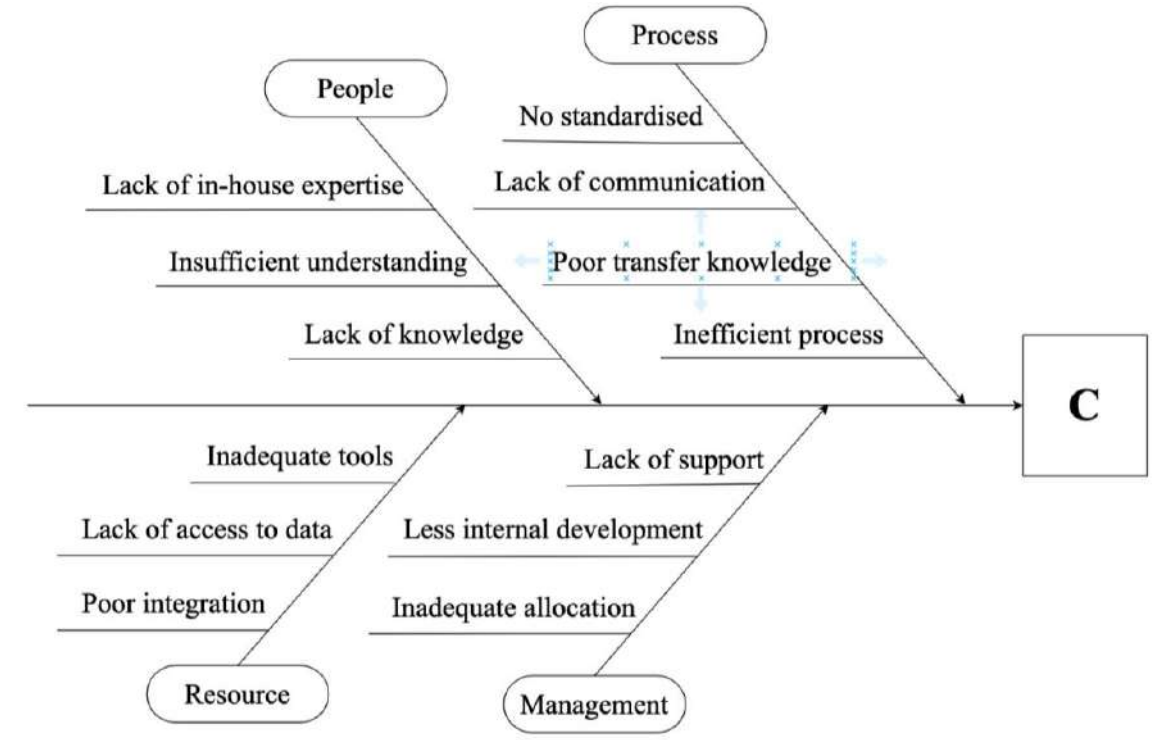


Figure 4.7 Fishbone Diagram Differences in Off Taker Analysis

Based on the fishbone diagram in Figure 4.7 above, it was found that there are four factors that affect employees themselves, causing them to need to take full control of consultants' role in off-taker analysis for green chemicals, which are people, process, communication, and management. Possible causes related to people factors include a lack of in-house expertise, insufficient understanding of the process, and knowledge gaps. Process factors could involve a lack of standardisation, limited data access, and continued dependence on consultants. Communication factors might encompass unclear expectations and inadequate information sharing. Management factors could include a lack of support for employee development, limited opportunities for internal skill-building, and insufficient resource allocation.

**d. Green Chemical - Differences in Market Research**

The fishbone diagram of transition activity in market research for green chemicals is shown in Figure 4.8 below.

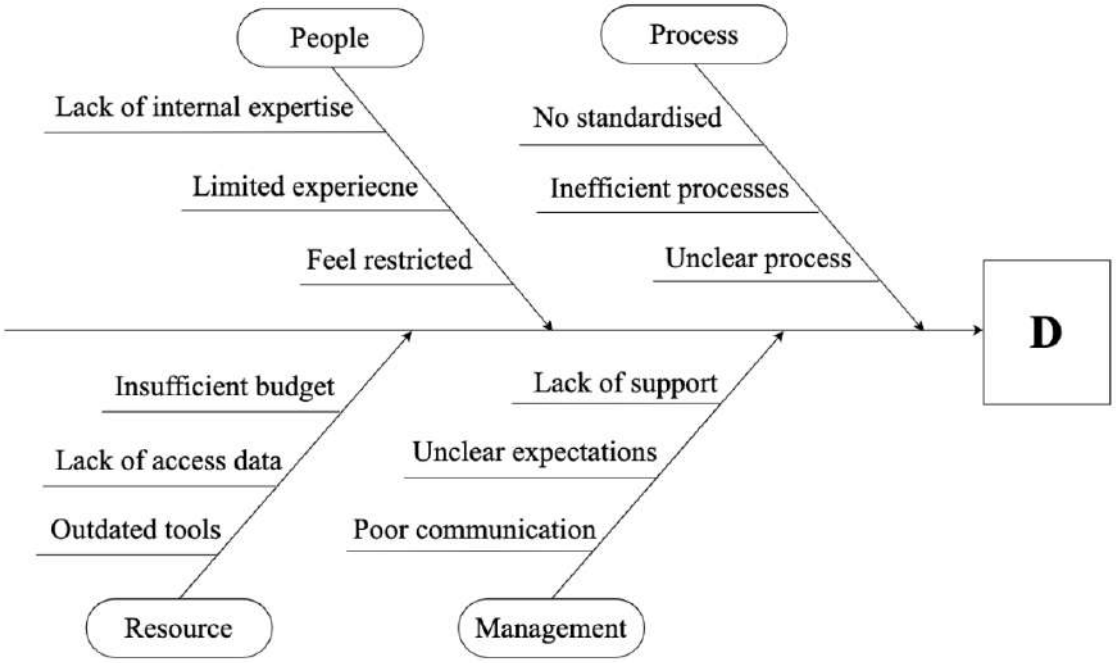


Figure 4.8 Fishbone Diagram Differences in Market Research

Based on the fishbone diagram in Figure 4.8 above, it was found that there are four factors that affect employees themselves, causing them to rely on consultants in market research for green chemicals, which are people, process, resource, and management. Possible causes related to people factors include a lack of internal expertise, limited experience in market research, and feelings of restriction. Process-related causes might encompass a lack of standardisation, inefficient market research processes, and inadequate collaboration among employees. Resource factors could involve insufficient budget allocation, limited data access, and outdated tools for market research. Management factors might include a lack of support for employees, unclear expectations regarding market research activities, and poor communication.

**e. Green Chemical - Differences in Partnership Shortlisting and Outreach**

The fishbone diagram of transition activity in partnership shortlisting and outreach for green chemicals is shown in Figure 4.9 below.

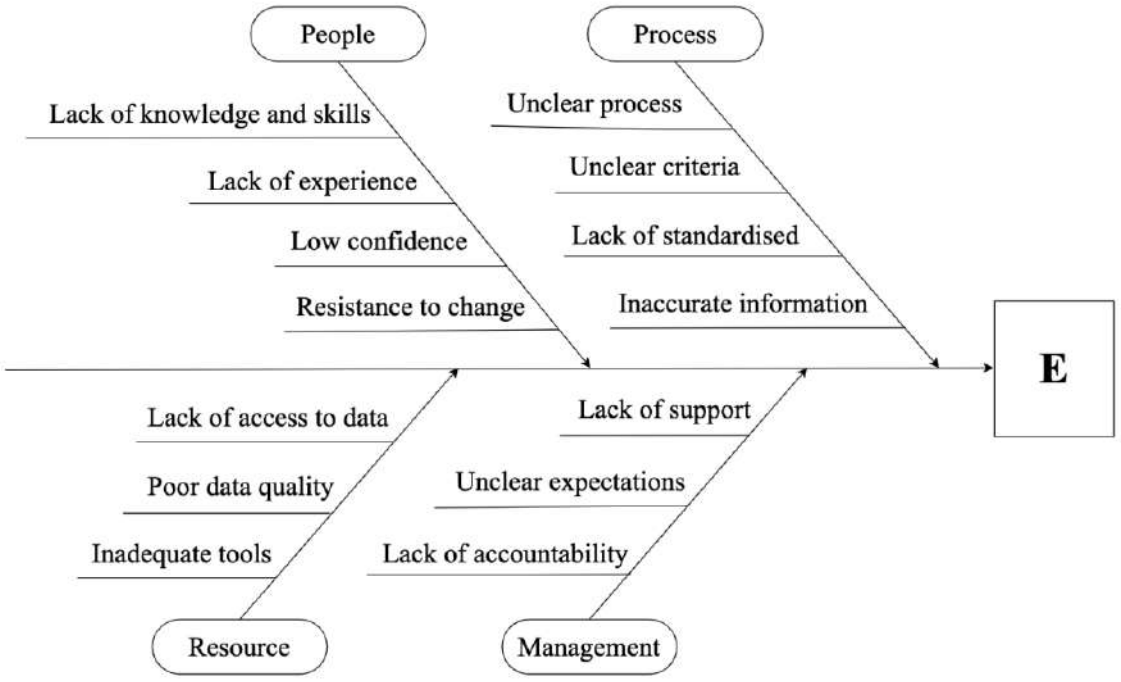


Figure 4.9 Fishbone Diagram Differences in Partnership Shortlisting and Outreach

Based on the fishbone diagram in Figure 4.9 above, it was found that there are four factors that affect employees themselves, causing them to take over consultants' role in partnership shortlisting and outreach for green chemicals, which are people, process, materials, and management. Possible causes related to people factors include a lack of knowledge and skills in partner selection and outreach, limited experience, poor communication abilities, and resistance to change. Process-related causes might encompass unclear criteria for shortlisting and outreach, a lack of standardisation in the process, and insufficient data collection for informed decision-making. Material factors could involve limited access to data, inaccurate information used for partner selection, and inadequate tools to conduct effective outreach. Management factors might include a lack of support for employees taking on this new responsibility, unclear expectations regarding the process, and a lack of accountability mechanisms.

**f. Green Chemical and Green Energy - Differences in Pitch Deck Development and Report Development**

The fishbone diagram of transition activity in pitch deck and report development for green chemicals is shown in Figure 4.10 below.

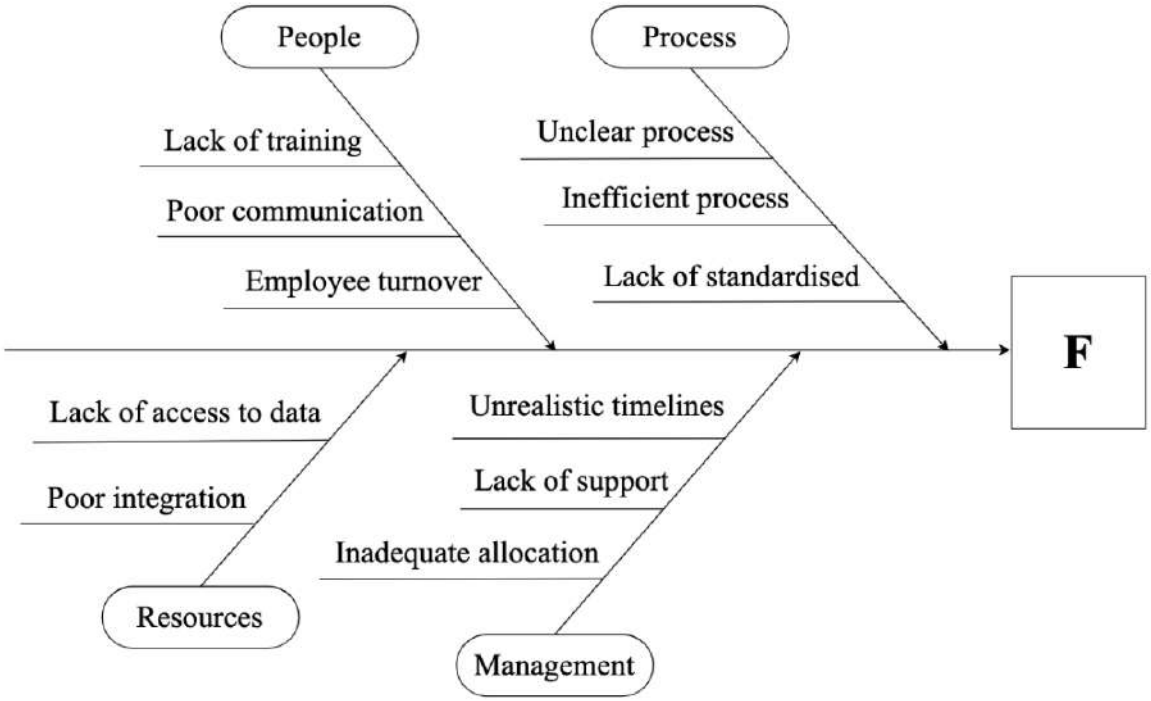


Figure 4.10 Fishbone Diagram Differences in Pitch Deck Development and Report Development

Based on the fishbone diagram in Figure 4.10 above, it was found that there are four factors that affect employees themselves, causing them to take over consultants' responsibility in pitch deck and report development for green chemicals, which are people, process, materials, and management. Possible causes related to people factors include a lack of training, poor communication, and employee turnover. Process factors could involve inefficient processes and a lack of standardisation. Material factors could include a lack of access to data and poor integration. Management factors might include unrealistic timelines, a lack of support, and inadequate resource allocation.

**g. Green Chemical and Green Energy - Differences in Pre-FS and FS execution**

The fishbone diagram of transition activity in Pre-FS and FS execution for green chemicals is shown in Figure 4.11 below.

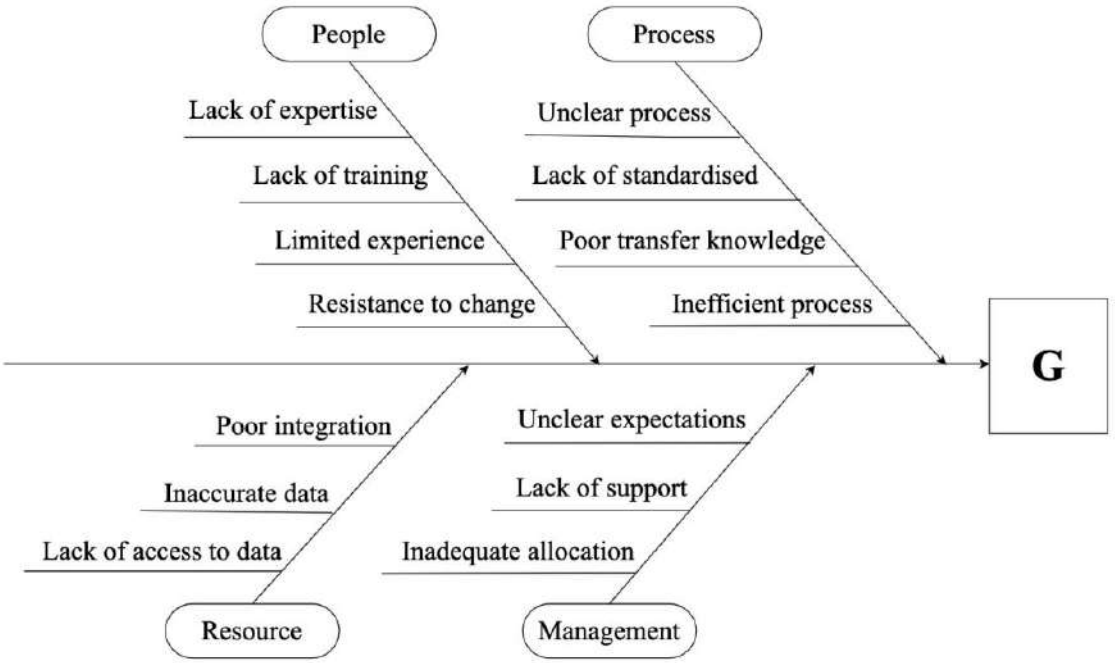


Figure 4.11 Fishbone Diagram Differences in Pre-FS and FS Execution

Based on the fishbone diagram in Figure 4.11 above, it was found that there are four factors that affect employees themselves, causing them to take over consultants' role in Pre-FS and FS execution for green chemicals, which are people, process, materials, and management. Possible causes related to people factors include a lack of training, limited experience, and low confidence. Process factors could include poor transfer of knowledge and inefficient communication. Material factors could include inaccurate data and lack of access to data. Management factors might include unclear expectations, a lack of support, and poor internal development.

**h. Green Energy - Differences in Research on Additional Ad-hoc Requests**

The fishbone diagram of transition activity in research on additional ad-hoc requests for green energy is shown in Figure 4.12 below.

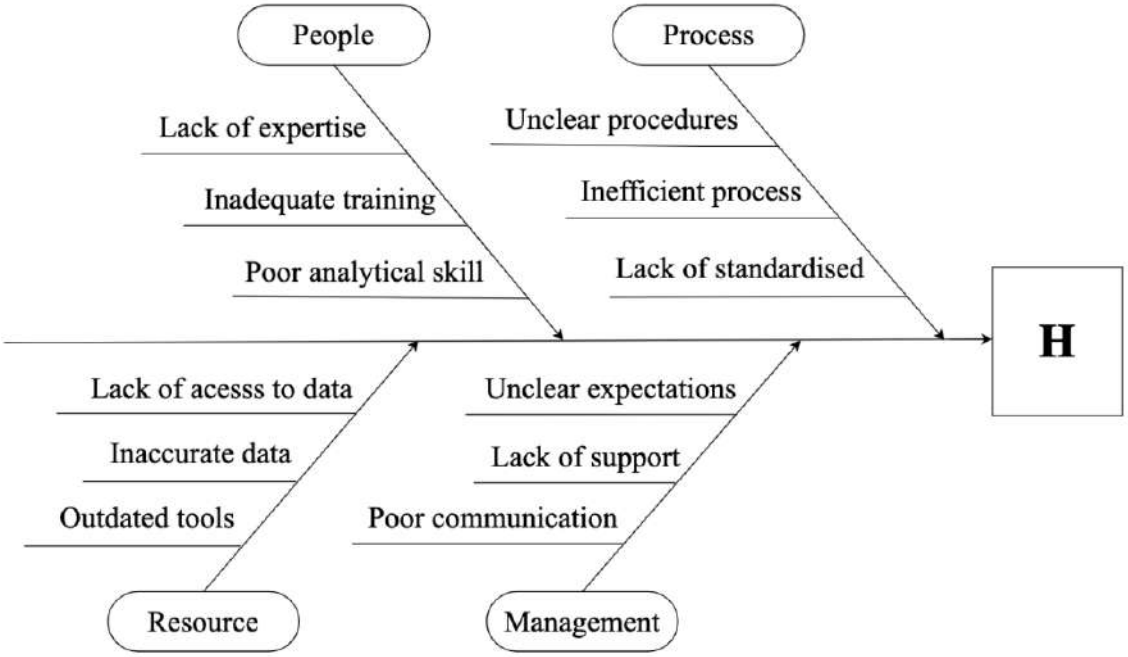


Figure 4.12 Fishbone Diagram Differences in Research on Additional Ad-hoc Requests

Based on the fishbone diagram in Figure 4.12 above, it was found that there are four factors that affect employees themselves, causing them to rely on consultants in research on additional ad-hoc requests for green energy, which are people, process, materials, and management. Possible causes related to people factors include a lack of expertise, inadequate training, and poor communication. Process-related causes might encompass inefficient processes and unclear procedures. Material factors could involve a lack of resources, inaccurate data, and outdated tools. Management factors might include unclear expectations, a lack of support, and poor planning.

**i. Green Energy - Differences in Market and Subsector Assessment**

The fishbone diagram of transition activity in market and subsector assessment for green energy is shown in Figure 4.13 below.

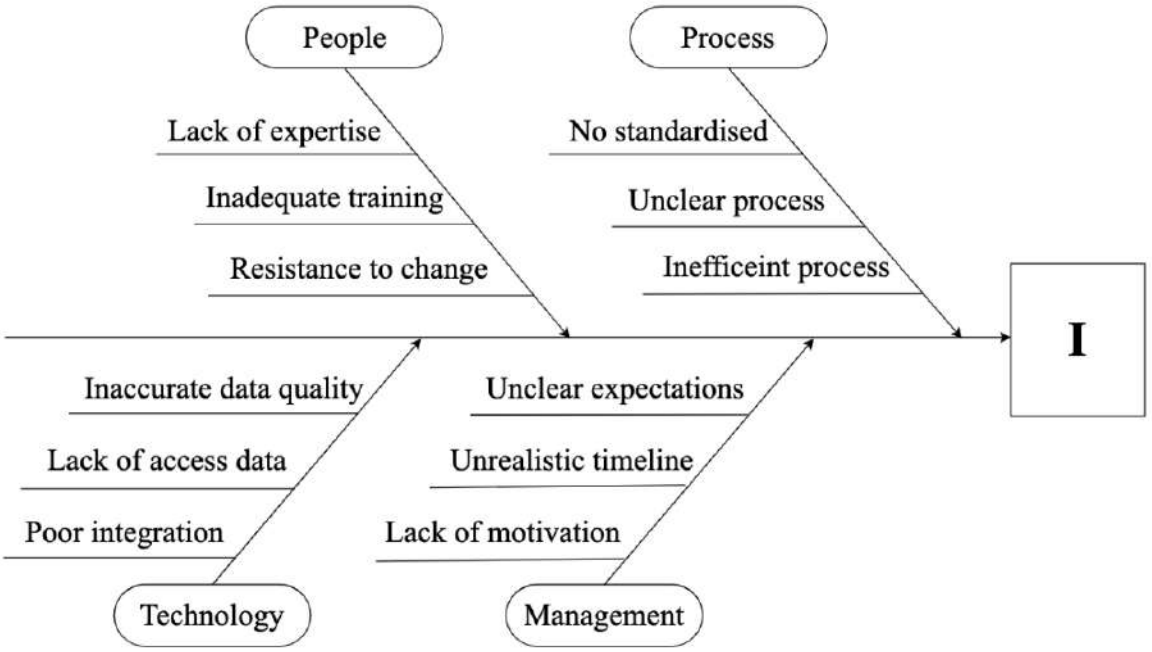


Figure 4.13 Fishbone Diagram Differences in Market and Subsector Assessment

Based on the fishbone diagram in Figure 4.13 above, it was found that there are four factors that affect employees themselves, causing them to rely on consultants in market and subsector assessment for green energy, which are people, process, technology, and management. Possible causes related to people factors include a lack of expertise, inadequate training, and resistance to change. Process-related causes might encompass include unclear processes and no standardisation. Technology factors could involve technology include incompatible data and lack of access to data. Management factors might include unclear expectations and unrealistic timelines.

## 4.3 Ideate

Following the definition and in-depth understanding of the existing problems within the EPC Company, the next stage involves ideation. This stage facilitates the generation of innovative solutions by leveraging the expertise of both Division Head of TMO and Consultant Leader. The identified problem centers on differences between consultants and employees regarding transition activities, as revealed by the analysis of current and target states. Addressing these differences in transition activities between consultants and employees is crucial to ensure a

seamless integration within the sustainable business transformation process.

### 4.3.1 Determining Action Plan

After the analysing and visualising the causes in differences through fishbone diagram, the researchers formulate a comprehensive action plan and activities for strategic planning to address the differences in transition activities. The detail of action plan on transition activities are shown in **Error! Not a valid bookmark self-reference.** below.

Table 4.5 Action Plan in Transition Plan Assessment

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| IC5 | Green Chemicals | Business case framework development | • Consultants define objectives, key questions and strategic decisions<br>• Consultants define KPI metrics and employees define key stakeholders<br>• Consultants help in | • Employees define objectives, key questions and strategic decisions<br>• Employees define KPI metrics and key stakeholders<br>• Employees establish a standardise | Employees needs to transition from relying on consultants to independently defining objectives, key questions, strategic decisions, KPI metrics, establish framework, | **People:** Lack of in-house expertise and experience, resistance to change, knowledge gaps<br>**Process:** Unclear process, lack of standardised and frameworks | 1. Internal training and capacity development in business case framework development<br>2. Collaborative processes and structures | - Conduct training sessions on business strategy and framework development<br>- Conduct workshops to practice defining KPIs and strategic questions<br>- Set up regular review session (weekly) to ensure understanding and application<br>- Implement tools and platforms for project management |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | framing the framework<br>• Consultants as expertise in green chemicals sector<br>• Consultants helping employees to collaborate by high-level instruction | d framework<br>• Employees have expertise in green chemicals sector<br>• Employees collaborate cross-function without consultant's instruction | and collaboration across functions for business case framework development | **Resource:** Inadequate tools, resource constraints, lack of access to data<br>**Management:** Lack of support, dependence on consultants, lack of confidence and motivation | development in business case framework development | and communication (ex. microsoft project)<br>- Develop and apply standard procedures for defining objectives, measuring KPIs, and making strategic decisions<br>- Form cross-functional teams to collaboratively formulate and evaluate business case frameworks |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| IC5 | Green Chemicals and Green Energy | Business case development | • Consultants help employees identify objective and new opportunities<br>• Consultants gathering, analysing, and summarise findings<br>• Consultants still instruct to employees in structure development | • Employees identify objective and new opportunities<br>• Employees gathering, analysing, and summarise findings<br>• Employees develop comprehensive and well-structure | Employees needs to move from receiving consultant's assistance to independently in objectives and opportunities, analysis and summarise findings, develop structure, and presenting business case opportunities to stakeholders | **People:** Lack of training and understanding, poor analytical skills, feel restricted<br>**Process:** Unclear process, lack of communication and method to capture and share ideas<br>**Resource:** Lack of access data, poor data quality, outdated tools<br>**Management:** Unclear expectations, less opportunities, insufficient allocation | 1. Process and tool development in business case development<br>2. Training and skill development in business case development | - Develop guidelines ( identify objectives and opportunities, analysing and summarizing findings, develop structure, presenting business case opportunities) and template for business case document<br>- Develop centralized repository (e.g Microsoft sharepoint)<br>- Tool integration (e.g power BI and google sheets)<br>- Conduct relevant training (business analysis such as identify objective and opportunities, analyse and summarise findings, |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | develop structure, present findings)<br>- Conduct workshops for problem solving and critical thinking, communication and stakeholder engagement, data interpretation<br>- Set up regular feedback and monitor performance metrics (weekly) |
| IC5 | Green Chemicals | Off taker analysis | • Consultants help employees to analyse financial performance and growth projections of potential buyers by instruction | • Employees analyse financial performance and growth projections of potential buyers without consultant's instruction | Employees needs to take full control of consultants' role in financial performance analysis, evaluating reputation and compliance, | **People:** Lack of in-house expertise and knowledge, insufficient understanding<br><br>**Process:** No lack of communication, poor transfer knowledge, | 1. Processes and control systems implementation in off taker analysis | - Establish SOP for financial analysss, reputation evaluation, compliance<br>- Implement tools and software to help as database in selecting the potential off taker (e.g. CRM systems, BI, DBMS) |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | • Consultants conduct evaluate reputation, credibility, compliance, and commitment<br>• Employees identify key stakeholders<br>• Consultants analyse potential market and competitors<br>• Consultants help in evaluate legal and regulations by provide high-level instructions | • Employees evaluate reputation and credibility, compliance, and commitment<br>• Employees identify require key stakeholders<br>• Employees analyse potential market and competitors<br>• Employees evaluate legal and regulations without consultant's instructions | market potential analysis, nd evaluating legal regulations for off taker analysis | inefficient process<br><br>**Resource:** Inadequate tools, lack of access to data, poor integration<br><br>**Management:** Lack of support, less internal development, inadequate allocation | 2. Internal capability building in off taker analysis | - Conduct training on financial performance analysis, market potential analysis<br>- Conduct workshops on legal and regulatory evaluation<br>- Set up regular review meetings to discuss findings and improvements (weekly) |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| IC5 | Green Chemicals | Market research | • Consultants define potential market, including market trends, needs, preference, and behavior<br>• Consultants collect and analyse in new market expanding<br>• Consultants create strategic decisions in new market expanding<br>• Consultants manage time and resources with limited budget and | • Employees define potential market, including market trends, needs, preference, and behavior<br>• Employees collect and analyse in new market expanding<br>• Employees create strategic decisions in new market expanding<br>• Employees manage time and resources with limited budget and | Employees needs to transition from relying on consultants in defining potential market, making strategic decisions, managing time and resources, and engage stakeholders for market research | **People:** Lack of internal expertise, limited experience, feel restricted<br><br>**Process:** No standardised, inefficient processes, unclear process<br><br>**Resource:** Insufficient budget, lack of access data, outdated tools<br><br>**Management:** Lack of support, unclear expectations, poor communication | 1. Advanced analytical systems and tools in market research<br>2. Internal training and capacity building in market research | - Integrate market analysis and project management software for efficient data collection and reporting (e.g Microsoft Project)<br>- Develop guidelines and templates<br>- Regularly evaluate and update tools and systems to ensure they meet business needs<br>- Conduct training for market analysis, resource management<br>- Conduct workshop for decision-making, timeline development<br>- Establish internal market research and strategy teams<br>- Set up regular feedback and |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | time constraints<br>• Consultants engage others stakeholders | time constraints<br>• Employees engage others stakeholders to collaborate | | | | monitor performance (weekly) |
| IC5 | Green Chemicals | Partnership shortlisting and outreach | • Consultans help in define and evaluate criteria for potential partners by providing instruction<br>• Employees search and consultants identify potential partners<br>• Consultans analysing and shorlisting | • Employees define and evaluate critera for potential partners without consultant's instruction<br>• Employees search and identify potential partners<br>• Employees analysing and shorlisting | Employees needs to fully take over consultants' role in defining and evaluating criteria, identify, analyssng, negotiating, and maintain good relationship with potential partners | **People:** Lack of knowledge and skills, lack of experience, low confidence, resistance to change<br>**Process:** Unclear process and criteria, lack of standardised, inaccurate information<br>**Resource:** Lack of access to data, poor | 1. Decision support system in partnership shortlisting and outreach | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation guidance, and relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | potential partners<br>• Consultans build and maintain communication<br>• Consultans help employees in negotiate and initial agreement | potential partners<br>• Employees build and maintain communication<br>• Employees negotiate and initial agreement | | data quality, 2. inadequate tools<br><br>**Management:** Lack of support and accountability, unclear expectations | Training and development in partnership shortlisting and outreach | - Conduct training for negotiation and communication skills, identifying and analysing potential partner needs<br>- Set up regular feedback and monitor performance metrics (weekly) |
| IC5 | Green Chemicals and Green Energy | Pitch deck and report development | • Employees collects the necessary information<br>• Consultants create story lining and structuring<br>• Consultants create design and visualisation for pitch deck | • Employees collects the necessary information<br>• Employees create story lining and structuring<br>• Employees create design and visualisation for pitch deck | Employees needs to full take over consultants' responsibility in creating story lining, structuring, designing, visualising, reviewing, refining for pitch deck and report | **People:** Lack 1. of training, poor communication, employee turnover<br><br>**Process:** Unclear process, inefficient process, lack of standardised | Process and tools in pitch deck development and report development | - Develop a pitchdeck and report development guide for story lining, structuring, designing, visualising<br>- Implement tools graphic design software, data visualisation tools, and document management systems to support |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | • Consultants develop outline and structure for report<br>• Consultants conduct review and refinement | • Employees develop outline and structure for report<br>• Employees conduct review and refinement | development | **Resource:** Lack of access to data, poor integration<br><br>**Management:** Unrealistic timelines, lack of support, inadequate resource allocation | 2. Training and skill development program in pitch deck development and report development | the creation and management of pitch decks and reports<br>- Conduct workshops on creating effective pitch decks and reports<br>- Conduct training sessions on design principles and software (e.g., Adobe Illustrator, PowerPoint)<br>- Conduct regular feedback sessions and monitor performance with stakeholders (weekly) |
| IC5 | Green Chemicals and Green Energy | Pre-FS and FS execution | • Consultants estimate cost and profitability and develop financial models | • Employees estimate cost and profitability and develop financial models | Employees needs to take consultant's role in estimation, profitability | **People:** Lack of expertise and training, limited experience, | 1. Training and competency development in pre-FS and FS execution | - Conduct training focused on market analysis, estimation, profitability analysis, and resource refinement |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | • Consultants conduct exploration and refine resources<br>• Consultants analyse market and risk management<br>• Employees assess social and environmental impacts<br>• Consultants making strategic decision making | • Employees conduct exploration and refine resources<br>• Employees analyse market and risk management<br>• Employees assess social and environmental impacts<br>• Employees define strategic decision | analysis, refine resources, market analysis, and strategic decision-making | resistance to change<br><br>**Process:** Unclear process, lack of standardised, poor transfer knowledge, inefficient process<br><br>**Resource:** Poor integration, inaccurate data, lack of access data to data<br><br>**Management:** Unclear expectations, lack of support, inadequate allocation | 2. Decision support systems and analytical tools implementation in pre-FS and FS execution | - Conduct wokrshops session on strategic decision<br>- Assign employees to real projects with guidance from experienced mentors to apply their skills practically (on-the-job training)<br>- Encourage obtaining relevant industry certifications (e.g. CGCP)<br>- Create a centralized repository for storing all relevant document and templates<br>- Implement collaborative tools to facilicate knowledge sharing (e.g. project management, communication |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | platforms, document collaboration, knowledge management) |
| IC5 | Green Energy | Research on additional ad-hoc requests | • Consultants framing research questions<br>• Consultants understand specific details and scope<br>• Consultants gathering and analysing related information<br>• Consultants engage and gain experts opinion and helped by employees<br>• Consultants compile, | • Employees framing research questions<br>• Employees understand specific details and scope<br>• Employees gathering and analysing related information<br>• Employees engage and gain experts opinion<br>• Employees compile, | Employees needs to transition from relying on consultants assistance to handle framing research questions and research scope, gathering and analysing, and reporting in ad-hoc request | **People:** Lack of expertise, inadequate training, poor analytical skill<br><br>**Process:** Unclear procedures, inefficient process, lack of standardised<br><br>**Resource:** Lack of access to data, inaccurate data, outdated tools<br><br>**Management:** Unclear expectations, lack of support, | 1. Internal support systems implementation in research on additional ad-hoc request<br>2. Internal competency development in research on additional ad-hoc request | - Integrate database for research management, data analysis, and report generation (e.g microsoft sharepoint.<br>- Develop standard procedures for managing ad-hoc request<br>- Conduct training on research methodologies, data analysis techniques, and reporting skills which can be led by internal experts or external trainers<br>- Set up regular review sessions (weekly) |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | summarise, and create reports helped by employees | summarise, and create reports | | poor communicatio n | | |
| IC5 | Green Energy | Market and subsector assessment | • Consultants help employees to collects and analysing market size, growth trends, and key players<br>• Consultants identify industry trends and regulation<br>• Consultants analysing economic and financial performance | • Employees collects and analysng market size, growth trends, and key players<br>• Employees identify industry trends and regulation<br>• Employees analysing economic and financial performanc e | Employees needs to take over the consultant's responsibilit y for collecting, identifying, analysing market and subsector research, and making strategic recommend ation | **People:** Lack of expertise, inadequate training, resistance to change<br>**Process:** No standardised, unclear process, inefficient process<br>**Resource:** Inaccurate data quality, lack of access data, poor integration<br>**Management:** Unclear | 1. Training and capacity building in market and subsector assessment<br>2. Progress integration and support systems in market and subsector assessment | - Conduct training on research techniques (methodologies,data collection, tools), strategic analysis (SWOT, PESTLE), and report writing<br>- On-the-job training<br>- Set up regular feedback and monitor performance based on KPI (weekly)<br>- Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, |

| IC | Sector | Transition Activities | Current State | Target State | Differences | Causes | Action Plan | Activities |
|---|---|---|---|---|---|---|---|---|
| | | | • Consultants identify market opportunities<br>• Consultants develop strategic recommendation helped by employees | • Employees identify market opportunities<br>• Employees develop strategic recommendation | | expectations, unrealistic timeline, lack of motivation | | negotiation guidance, and relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner |

### 4.3.2 Determining the Sequence of Action Plan

After the action plan has been determining using fishbone diagram for each differences in transition activities involved consultants and employees based on current state and target state. In this research method, the AHP and PROMETHEE calculation as Multicriteria Decision Making (MCDM) was Division Head of TMO during three months from 28 August 2023 to 28 November 2023 in the EPC Company. It is performed to determine the sequence weight of each category and action plans through judgments by Division Head of TMO. The following are the AHP and PROMETHEE calculation in the research method.

#### 4.3.2.1. Analytical Hierarchy Process (AHP) for Criteria

a. Criteria Data

The criteria in this research was obtained by direct observation and judgments by experts by Division Head of TMO during three months from 28 August 2023 to 28 November 2023 in the EPC Company. The criteria that affecting in differences based on transition activities, which are impact, urgency, and cost. The criteria data are shown in Table 4.6.

Table 4.6 Criteria

| Code | Criteria |
|---|---|
| C1 | Urgency |
| C2 | Impact |
| C3 | Cost |

b. Hierarchical Structure

In this research, the hierarchical structure consist of objectives and criteria. These criteria were obtained by the researcher through direct observation. Below are the hierarchical structure can be seen in Figure 4.14 below.

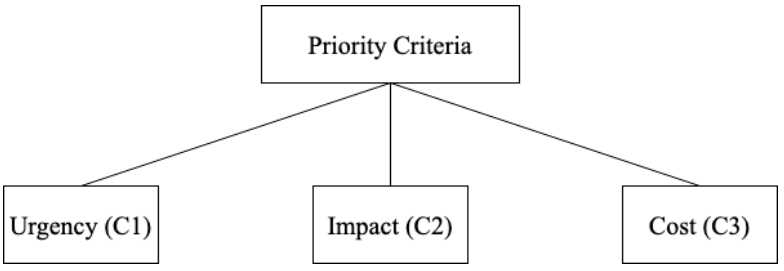


Figure 4.14 Hierarchical Structure

c. Create Matrix of Pairwise Comparative Judgments

Criteria are assessed through pairwise comparisons with various problems, a scale of 1 to 9 is the best scale in expressing opinions (Saaty, 2008). The criteria will be weighted based on the weighting scale shown in Table 2.2. The AHP questionnaire is used to assign weights to criteria by comparing one criterion with another then will be transformed into pairwise comparison matrix. The results of the questionnaire will be transformed into pairwise comparison matrix are shown in Table 4.7.

Table 4.7 Pairwise Comparison Matrix of Criteria

| Criteria | C1 | C2 | C3 |
|---|---|---|---|
| **C1** | 1 | 3 | 5 |
| **C2** | 1/3 | 1 | 3 |
| **C3** | 1/5 | 1/3 | 1 |
| **Total** | 1,53 | 4,33 | 9 |

According to Table 4.7 above, the C2 (impact) is moderate importance than C1 (urgency), C3 (cost) is strongly importance than C1 (urgency), and C3 (cost) is moderate importance than C2 (impact).

d. Priority Weight and Consistency Test

After the pairwise comparison, then determining the priority weight utilising software Ms. Excel. The logic consistency is aims that pairwise comparisons are consistent, reliable, and relevant in decision-making. The data is consistent if it has a consistency Ratio (CR) is ≤ 0,1. Based on Table 2.2 of the weighting and consistency test on the paired comparison between three criteria using a random index value of 0,58. The priority weight and consistency ratio for criteria are shown in Table 4.8.

Table 4.8 Priority Weight and Consistency Ratio

| Criteria | Eugen Vector | Consistency Ratio | Rank |
|---|---|---|---|
| **C1 (Urgency)** | 0,63 | | 1 |
| **C2 (Impact)** | 0,26 | 0,03 | 2 |
| **C3 (Cost)** | 0,10 | | 3 |

Based on Table 4.8Table 4.*8* above, it can be concluded that the highest weight of criteria is C1 (urgency). It is due to urgency activity come with significant risks if not address

successfully might lead in loss opportunities and end in failure. The urgency is tightly related into.

transition activities that involves both of consultants and employees, which employees needs immediate take over fully consultant's role to avoid the fraud and hinder the sustainable business transformation progress in achieveing the objectives.

4.3.2.2. Preference Ranking Organisation Method for Enrichment Evaluation (PROMETHEE) (PROMETHEE) for Action Plan

a. Action Plan Data

The data used in this research is the action plan in seamless integration within the sustainable business transformation process.

4.3.3 Determining Action Plan

After the analysing and visualising the causes in differences through fishbone diagram, the researchers formulate a comprehensive action plan and activities for strategic planning to address the differences in transition activities. The detail of action plan on transition activities are shown in **Error! Not a valid bookmark self-reference.** below.

Table 4.5 above. The action plan that was determine to address the differences challenges were consist of eighteen action plan represented from A1 to I2. The alternatives data are shown in Table 4.9.

Table 4.9 Action Plan Data

| No | Sector | Code | Action Plan | Activities |
|---|---|---|---|---|
| 1 | Green Chemicals | A1 | Internal training and capacity development in business case framework development | - Conduct training sessions on business strategy and framework development<br>- Conduct workshops to practice defining KPIs and strategic questions<br>- Set up regular review session (weekly) to ensure understanding and application |

| No | Sector | Code | Action Plan | Activities |
|---|---|---|---|---|
| 2 | Green Chemicals | A2 | Collaborative processes and structures development in business case framework development | - Implement tools and platforms for project management and communication (ex. microsoft project)<br>- Develop and apply standard procedures for defining objectives, measuring KPIs, and making strategic decisions<br>- Form cross-functional teams to collaboratively formulate and evaluate business case frameworks |
| 3 | Green Chemicals and Green Energy | B1 | Training and skill development in business case development | - Develop guidelines (identify objectives and opportunities, analysing and summarizing findings, develop structure, presenting business case opportunities) and template for business case document<br>- Develop centralized repository (e.g Microsoft sharepoint)<br>- Tool integration (e.g power BI and google sheets) |
| 4 | Green Chemicals and Green Energy | B2 | Process and tool development in business case development | - Conduct relevant training (business analysis such as identify objective and opportunities, analyse and summarise findings, develop structure, present findings)<br>- Conduct workshops for problem solving and critical thinking, communication and stakeholder engagement, data interpretation)<br>- Set up regular feedback and monitor performance metrics (weekly) |
| 5 | Green Chemicals | C1 | Internal capability building in off taker analysis | - Establish SOP for financial analysss, reputation evaluation, compliance<br>- Implement tools and software to help as database in selecting the potential off taker (e.g. CRM systems, BI, DBMS) |

| No | Sector | Code | Action Plan | Activities |
|---|---|---|---|---|
| 6 | Green Chemicals | C2 | Processes and control systems implementation in off taker analysis | - Conduct training on financial performance analysis, market potential analysis<br>- Conduct workshops on legal and regulatory evaluation<br>- Set up regular review meetings to discuss findings and improvements (weekly) |
| 7 | Green Chemicals | D1 | Internal training and capacity building in market research | - Integrate market analysis and project management software for efficient data collection and reporting (e.g Microsoft Project)<br>- Develop guidelines and templates<br>- Regularly evaluate and update tools and systems to ensure they meet business needs |
| 8 | Green Chemicals | D2 | Advanced analytical systems and tools in market research | - Conduct training for market analysis, resource management<br>- Conduct workshop for decision-making, timeline development<br>- Establish internal market research and strategy teams<br>- Set up regular feedback and monitor performance (weekly) |
| 9 | Green Chemicals | E1 | Training and development in partnership shortlisting and outreach | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation guidance, and relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner |
| 10 | Green Chemicals | E2 | Decision support system in partnership shortlisting and outreach | - Conduct training for negotiation and communication skills, identifying and analysing potential partner needs<br>- Set up regular feedback and monitor performance metrics (weekly) |

| No | Sector | Code | Action Plan | Activities |
|---|---|---|---|---|
| 11 | Green Chemicals and Green Energy | F1 | Training and skill development program in pitch deck development and report development | - Develop a pitchdeck and report development guide for story lining, structuring, designing, visualising<br>- Implement tools graphic design software, data visualisation tools, and document management systems to support the creation and management of pitch decks and reports |
| 12 | Green Chemicals and Green Energy | F2 | Process and tools in pitch deck development and report development | - Conduct workshops on creating effective pitch decks and reports<br>- Conduct training sessions on design principles and software (e.g., Adobe Illustrator, PowerPoint)<br>- Conduct regular feedback sessions and monitor performance with stakeholders (weekly) |
| 13 | Green Chemicals and Green Energy | G1 | Training and competency development in pre-FS and FS execution | - Conduct training focused on market analysis, estimation , profitability analysis, and resource refinement<br>- Conduct wokrshops session on strategic decisions<br>- Assign employees to real projects with guidance from experienced mentors to apply their skills practically (on-the-job training)<br>- Encourage obtaining relevant industry certifications (e.g. CGCP) |
| 14 | Green Chemicals and Green Energy | G2 | Decision support systems and analytical tools implementation in pre-FS and FS execution | - Create a centralized repository for storing all relevant document and templates<br>- Implement collaborative tools to facilicate knowledge sharing (e.g. project management, communication platforms, document collaboration, knowledge management) |
| 15 | Green Energy | H1 | Internal competency development in research on additional ad-hoc request | - Integrate database for research management, data analysis, and report generation (e.g microsoft sharepoint)<br>- Develop standard procedures for managing ad-hoc request |

| No | Sector | Code | Action Plan | Activities |
|---|---|---|---|---|
| 16 | Green Energy | H2 | Internal support systems implementation in research on additional ad-hoc request | - Conduct training on research methodologies, data analysis techniques, and reporting skills which can be led by internal experts or external trainers<br>- Set up regular review sessions (weekly) |
| 17 | Green Energy | I1 | Training and capacity building in market and subsector assessment. | - Conduct training on research techniques (methodologies,data collection, tools), strategic analysis (SWOT, PESTLE), and report writing<br>- On-the-job training<br>- Set up regular feedback and monitor performance based on KPI (weekly) |
| 18 | Green Energy | I2 | Progress integration and support systems in market and subsector assessment | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation guidance, and relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner |

b. Determining the Weight Value of the Criteria for Action Plan

In this research, the determining in weight value of the criteria for action plan based on expert judgments with rate scale 1 to 9 shown in Table 2.2 by experts by Division Head of TMO, which comprehend understanding regarding to address the differences in transition activities within the sustainable business transformation in the EPCcompany. The weight value of the criteria for alternatives are shown in Table 4.10.

Table 4.10 Weight Value of the Criteria for Action Plan

| Criteria | Weight | Action Plan |
|---|---|---|

| | | A1 | A2 | B1 | B2 | C1 | C2 | D1 | D2 | E1 | E2 | F1 | F2 | G1 | G2 | H1 | H2 | I1 | I2 | Preference Types |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 0,633 | 5 | 5 | 3 | 4 | 4 | 4 | 5 | 5 | 3 | 4 | 3 | 5 | 4 | 3 | 4 | 5 | 4 | 3 | 1 |
| C2 | 0,260 | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 3 | 5 | 5 | 4 | 3 | 1 |
| C3 | 0,106 | 5 | 2 | 5 | 4 | 3 | 5 | 4 | 5 | 3 | 3 | 4 | 5 | 5 | 3 | 4 | 5 | 3 | 3 | 1 |

c. Calculating Preference Values Between Action Plan

At this stage, a comparison is made between different alternatives to highlight the distinct values and criteria. The calculation of preference values for criteria against action plan to get the differences in the value is done as follows.

$$d(a,b) = f(a) - f(b)$$

Where the value $d$ above represents the difference between action plan $a$ and $b$ at each criterion that shows how much worse or better between action plan. Then, the calculation of preference values using the formula as follows is done.

$$P(a,b) = F(d(a,b))$$

Where the value above $P$ as a function $d(a,b)$ indicates the preference for alternative $a$ and $b$ at each criterion. There are six preference type functions in PROMETHEE, the usual type was used in this research as the preference type, which is if $d \leq 0$, then $P(d) = 0$ and if $d > 0$, then $P(d) = 1$. The following is the calculation of the preference value of the criteria and the preference function of the criteria in Table 4.11.

Table 4.11 Criteria Preference Values for Action Plan

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | **C1** | **C2** | **C3** |
| (A1,A2) | x | 0 | 0 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (A1,B1) | x | 2 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (A1,B2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (A1,C1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,C2) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (A1,D1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (A1,D2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (A1,E1) | x | 2 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,E2) | x | 1 | 0 | -3 |
| | (P(x) | 1 | 0 | 0 |
| (A1,F1) | x | 2 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (A1,F2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (A1,G1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (A1,G2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,H1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (A1,H2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (A1,I1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,I2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A2,A1) | x | 0 | 0 | -3 |
| | (P(x) | 0 | 0 | 0 |

d. Calculating Preference Index Criteria

The calculation of the preference index criteria is performed by summing up the total values in each row of function $P(x)$ for each paired comparison of alternatives and then multiplying the result by the weights of the criteria obtained earlier using the Analytical Hierarchy Process (AHP) method. The following is the preference index criteria calculation are shown as follows.

$$Preference\ Index(a,b) = \sum_{i=1}^{n} P(a,b)\ x\ W \quad (4.1)$$

Where the values $a, b$ represent each paired comparison of alternatives, $n$ is the number of criteria used, $P(x)$ is the preference function value calculated earlier. As the example, the following is the preference index criteria calculation for alternatives (A1, A2) are shown as follows.

$$Preference\ Index(A1,A2) = 0{,}10\ X\ (0+0+1)$$
$$Preference\ Index(A1,A2) = 0{,}10$$

The following is the calculation of preference index criteria in Table 4.12, Table 4.13, and Table 4.14.

Table 4.12 Criteria Weight Calculation Values with Preference Functions

| **Alternatives** | **Criterion** | | | |
|---|---|---|---|---|
| | **C1** | **C2** | **C3** | **Total** |
| (A1,A2) | 0 | 0 | 0,10 | **0,10** |
| (A1, B1) | 0,63 | 0,26 | 0 | **0,89** |
| (A1, B2) | 0,63 | 0,2 | 0,10 | **1,00** |
| (A1, C1) | 0,63 | 0,26 | 0,10 | **1,00** |
| (A1, C2) | 0,63 | 0 | 0 | **0,63** |
| (A1, D1) | 0 | 0 | 0,10 | **0,10** |
| (A1, D2) | 0 | 0 | 0 | **0,00** |
| (A1, E1) | 0,63 | 0,26 | 0,10 | **1,00** |
| (A1, E2) | 0,63 | 0 | 0 | **0,63** |
| (A1, F1) | 0,63 | 0,26 | 0,10 | **1,00** |
| (A1, F2) | 0 | 0 | 0 | **0,00** |
| (A1, G1) | 0,63 | 0,26 | 0 | **0,89** |
| (A1, G2) | 0,63 | 0,26 | 0,10 | **1,00** |
| (A1, H1) | 0,63 | 0 | 0,10 | **0,74** |
| (A1, H2) | 0 | 0 | 0 | **0,00** |
| (A1, I1) | 0,63 | 0,26 | 0,10 | **1,00** |

| Alternatives | Criterion | | | |
|---|---|---|---|---|
| | **C1** | **C2** | **C3** | **Total** |
| (A1, I2) | 0,63 | 0,26 | 0,10 | **1,00** |
| (A2, A1) | 0 | 0 | 0 | **0,00** |

Table 4.13 Preference Index Values

| Alternatives | Total | Alternatives | Total |
|---|---|---|---|
| (A1,A2) | 0,10 | (A1, F1) | 1,00 |
| (A1, B1) | 0,89 | (A1, F2) | 0,00 |
| (A1, B2) | 1,00 | (A1, G1) | 0,89 |
| (A1, C1) | 1,00 | (A1, G2) | 1,00 |
| (A1, C2) | 0,63 | (A1, H1) | 0,74 |
| (A1, D1) | 0,10 | (A1, H2) | 0,00 |
| (A1, D2) | 0,00 | (A1, I1) | 1,00 |
| (A1, E1) | 1,00 | (A1, I2) | 1,00 |
| (A1, E2) | 0,63 | (A2, A1) | 0,00 |

Table 4.14 Preference Values Multicriteria

| | A1 | A2 | B1 | B2 | C1 | C2 | D1 | D2 | E1 | E2 | F1 | F2 | G1 | G2 | H1 | H2 | I1 | I2 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A1** | | 0,11 | 0,89 | 1,00 | 1,00 | 0,63 | 0,11 | 0,00 | 1,00 | 0,63 | 1,00 | 0,00 | 0,89 | 1,00 | 0,74 | 0,00 | 1,00 | 1,00 | **11,01** |
| **A2** | 0,00 | | 0,89 | 0,89 | 0,89 | 0,63 | 0,00 | 0,00 | 0,89 | 0,63 | 0,89 | 0,00 | 0,89 | 0,89 | 0,63 | 0,00 | 0,89 | 0,89 | **9,94** |
| **B1** | 0,00 | 0,11 | | 0,11 | 0,11 | 0,00 | 0,11 | 0,00 | 0,11 | 0,11 | 0,11 | 0,00 | 0,00 | 0,37 | 0,11 | 0,00 | 0,11 | 0,37 | **1,69** |
| **B2** | 0,00 | 0,11 | 0,63 | | 0,11 | 0,00 | 0,00 | 0,00 | 0,74 | 0,11 | 0,63 | 0,00 | 0,00 | 1,00 | 0,00 | 0,00 | 0,11 | 1,00 | **4,43** |
| **C1** | 0,00 | 0,11 | 0,00 | 0,00 | | 0,00 | 0,00 | 0,00 | 0,63 | 0,00 | 0,63 | 0,00 | 0,00 | 1,00 | 0,00 | 0,00 | 0,11 | 1,00 | **4,11** |
| **C2** | 0,00 | 0,11 | 0,89 | 0,37 | 0,37 | | 0,11 | 0,00 | 1,00 | 0,11 | 1,00 | 0,00 | 0,26 | 1,00 | 0,11 | 0,00 | 0,37 | 1,00 | **6,68** |
| **D1** | 0,00 | 0,11 | 0,89 | 0,89 | 1,00 | 0,63 | | 0,00 | 1,00 | 0,74 | 0,89 | 0,00 | 0,89 | 1,00 | 0,63 | 0,00 | 1,00 | 1,00 | **10,69** |
| **D2** | 0,00 | 0,11 | 0,89 | 1,00 | 1,00 | 0,63 | 0,11 | | 1,00 | 0,74 | 1,00 | 0,00 | 0,89 | 1,00 | 0,74 | 0,00 | 1,00 | 1,00 | **11,11** |
| **E1** | 0,00 | 0,11 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | | 0,00 | 0,00 | 0,00 | 0,00 | 0,26 | 0,00 | 0,00 | 0,00 | 0,26 | **0,63** |
| **E2** | 0,00 | 0,11 | 0,89 | 0,26 | 0,26 | 0,00 | 0,00 | 0,00 | 0,89 | | 0,89 | 0,00 | 0,26 | 0,89 | 0,00 | 0,00 | 0,26 | 0,89 | **5,62** |
| **F1** | 0,00 | 0,11 | 0,00 | 0,00 | 0,11 | 0,00 | 0,00 | 0,00 | 0,11 | 0,11 | | 0,00 | 0,00 | 0,37 | 0,00 | 0,00 | 0,11 | 0,37 | **1,26** |
| **F2** | 0,00 | 0,11 | 0,89 | 1,00 | 1,00 | 0,63 | 0,11 | 0,00 | 1,00 | 0,74 | 1,00 | | 0,89 | 1,00 | 0,74 | 0,00 | 1,00 | 1,00 | **11,11** |
| **G1** | 0,00 | 0,11 | 0,63 | 0,11 | 0,11 | 0,00 | 0,11 | 0,00 | 0,74 | 0,11 | 0,74 | 0,00 | | 1,00 | 0,11 | 0,00 | 0,11 | 1,00 | **4,85** |
| **G2** | 0,00 | 0,11 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | | 0,00 | 0,00 | 0,00 | 0,00 | **0,11** |
| **H1** | 0,00 | 0,11 | 0,89 | 0,26 | 0,37 | 0,00 | 0,00 | 0,00 | 1,00 | 0,11 | 0,89 | 0,00 | 0,26 | 1,00 | | 0,00 | 0,37 | 1,00 | **6,25** |
| **H2** | 0,00 | 0,11 | 0,89 | 1,00 | 1,00 | 0,63 | 0,11 | 0,00 | 1,00 | 0,74 | 1,00 | 0,00 | 0,89 | 1,00 | 0,74 | | 1,00 | 1,00 | **11,11** |
| **I1** | 0,00 | 0,11 | 0,63 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,63 | 0,00 | 0,63 | 0,00 | 0,00 | 0,89 | 0,00 | 0,00 | | 0,89 | **3,79** |
| **I2** | 0,00 | 0,11 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | | **0,11** |
| **Total** | **0,00** | **1,80** | **10,6** | **6,89** | **7,31** | **3,80** | **0,74** | **0,00** | **11,75** | **4,86** | **11,32** | **0,00** | **6,14** | **13,67** | **4,54** | **0,00** | **7,42** | **13,67** | |

e. Calculating Leaving Flow, Entering Flow, and Net Flow

In this stage, the calulcation of leaving flow, entering flow, and net flow was carried out based on the results of calculation the preference index that was performed earlier. The following is the leaving flow calculation are shown as follows.

$$\phi + (a) = \frac{1}{n-1}\sum_{XgA} \delta(a, x) \quad (4.2)$$

As the example, the following is the leaving flow calculation for action plan A1 are shown as follows:

$$Leaving\ Flow\ (A1) = \frac{1}{18-1}\sum (11{,}01)$$

$$Leaving\ Flow\ (A1) = 0{,}65$$

The following is the entering flow calculation are shown as follows.

$$\phi - (a) = \frac{1}{n-1}\sum_{XgA} \delta(a, x) \quad (4.3)$$

As the example, the following is the entering flow calculation for action plan A1 are shown as follows.

$$Entering\ Flow\ (A1) = \frac{1}{18-1}\sum (0)$$

$$Entering\ Flow\ (A1) = 0$$

After obtaining the values of leaving flow and entering flow, the calculation of net flow was be carried out to obtain the priority ranking of action plan. Net flow can be calculated based on the difference values between the leaving flow and entering flow. The following of the net flow calculation is as follows.

$$\phi(a) = (\phi + (a)) - (\phi - (a)) \quad (4.4)$$

As the example, the following is the net flow calculation for action plan A1 are shown as follows.

$$Net\ Flow\ (A1) = (\phi + (A1)) - (\phi - (A1))$$
$$Net\ Flow\ (A1) = (0{,}65) - (0)$$
$$Net\ Flow\ (A1) = 0{,}65$$

Hence, the result of leaving flow, entering flow, and net flow for each action plan that represented as ranking results as shown in Table 4.15.

Table 4.15 Sequence Results

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| Green Chemicals | Market Research | D2 | Internal training and capacity building in market research | - Conduct training for market analysis, resource management<br>- Conduct workshop for decision-making, timeline development<br>- Establish internal market research and strategy teams<br>- Set up regular feedback and monitor performance (weekly) | 0,654 | 0,000 | 0,654 | 1 |
| Green Chemicals and Green Energy | Pitch Deck Development and Report Development | F2 | Training and skill development program in pitch deck development | - Conduct workshops on creating effective pitch decks and reports<br>- Conduct training sessions on design principles and software | 0,654 | 0,000 | 0,654 | 2 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| | | | and report development | (e.g., Adobe Illustrator, PowerPoint)<br>- Conduct regular feedback sessions and monitor performance with stakeholders (weekly) | | | | |
| Green Energy | Research on Additional Ad-hoc Requests | H2 | Internal competency development in research on additional ad-hoc request | - Conduct training on research methodologies, data analysis techniques, and reporting skills which can be led by internal experts or external trainers<br>- Set up regular review sessions (weekly) | 0,654 | 0,000 | 0,654 | 3 |
| Green Chemicals | Business Case Framework Development | A1 | Internal training and capacity development in business case framework development | - Conduct training sessions on business strategy and framework development<br>- Conduct workshops to practice defining KPIs and strategic questions<br>- Set up regular review session (weekly) to ensure understanding and application | 0,647 | 0,000 | 0,647 | 4 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| Green Chemicals | Market Research | D1 | Advanced analytical systems and tools in market research | - Integrate market analysis and project management software for efficient data collection and reporting (e.g Microsoft Project)<br>- Develop guidelines and templates<br>- Regularly evaluate and update tools and systems to ensure they meet business needs | 0,629 | 0,044 | 0,585 | 5 |
| Green Chemicals | Business Case Framework Development | A2 | Collaborative processes and structures development in business case framework development | - Implement tools and platforms for project management and communication (ex. microsoft project)<br>- Develop and apply standard procedures for defining objectives, measuring KPIs, and making strategic decisions<br>- Form cross-functional teams to collaboratively formulate and evaluate | 0,585 | 0,106 | 0,479 | 6 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| | | | | business case frameworks | | | | |
| Green Chemicals | Off Taker Analysis | C2 | Internal capability building in off taker analysis | - Conduct training on financial performance analysis, market potential analysis<br>- Conduct workshops on legal and regulatory evaluation<br>- Set up regular review meetings to discuss findings and improvements (weekly) | 0,393 | 0,224 | 0,169 | 7 |
| Green Energy | Research on Additional Ad-hoc Requests | H1 | Internal support systems implementation in research on additional ad-hoc request | - Integrate database for research management, data analysis, and report generation (e.g microsoft sharepoint)<br>- Develop standard procedures for managing ad-hoc request | 0,368 | 0,267 | 0,101 | 8 |
| Green Chemicals | Partnership Shortlisting and Outreach | E2 | Training and development in partnership shortlisting and outreach | - Conduct training for negotiation and communication skills, identifying and analysing potential partner needs | 0,330 | 0,286 | 0,044 | 9 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| | | | | - Set up regular feedback and monitor performance metrics (weekly) | | | | |
| Green Chemicals | Pre-FS and FS execution | G1 | Training and competency development in pre-FS and FS execution | - Conduct training focused on market analysis, estimation , profitability analysis, and resource refinement<br>- Conduct wokrshops session on strategic decisions<br>- Assign employees to real projects with guidance from experienced mentors to apply their skills practically (on-the-job training)<br>- Encourage obtaining relevant industry certifications (e.g. CGCP) | 0,286 | 0,361 | -0,076 | 10 |
| Green Chemicals and Green Energy | Business Case Development | B2 | Training and skill development in | - Conduct relevant training (business analysis such as identify objective and | 0,261 | 0,405 | -0,145 | 11 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| | | | business case development | opportunities, analyse and summarise findings, develop structure, present findings)<br>- Conduct workshops for problem solving and critical thinking, communication and stakeholder engagement, data interpretation)<br>- Set up regular feedback and monitor performance metrics (weekly) | | | | |
| Green Chemicals | Off Taker Analysis | C1 | Processes and control systems implementation in off taker analysis | - Establish SOP for financial analysss, reputation evaluation, compliance<br>- Implement tools and software to help as database in selecting the potential off taker (e.g. CRM systems, BI, DBMS) | 0,242 | 0,430 | -0,188 | 12 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| Green Energy | Market and Subsector Assessment | I1 | Training and capacity building in market and subsector assessment | - Conduct training on research techniques (methodologies,data collection, tools), strategic analysis (SWOT, PESTLE), and report writing<br>- On-the-job training<br>- Set up regular feedback and monitor performance based on KPI (weekly) | 0,223 | 0,436 | -0,213 | 13 |
| Green Chemicals and Green Energy | Business Case Development | B1 | Process and tool development in business case development | - Develop guidelines ( identify objectives and opportunities, analysing and summarizing findings, develop structure, presenting business case opportunities) and template for business case document<br>- Develop centralized repository (e.g Microsoft sharepoint)<br>- Tool integration (e.g power BI and google sheets) | 0,099 | 0,622 | -0,523 | 14 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| Green Chemicals and Green Energy | Pitch Deck Development and Report Development | F1 | Process and Tools in pitch deck development and report development | - Develop a pitchdeck and report development guide for story lining, structuring, designing, visualising<br>- Implement tools graphic design software, data visualisation tools, and document management systems to support the creation and management of pitch decks and reports | 0,074 | 0,666 | -0,592 | 15 |
| Green Chemicals | Partnership Shortlisting and Outreach | E1 | Decision support system in partnership shortlisting and outreach | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation guidance, and relationship management<br>- Create guideline and templates in chelicst | 0,037 | 0,691 | -0,654 | 16 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| | | | | the shortlisting and outreach potential partner | | | | |
| Green Chemicals | Pre-FS and FS execution | G2 | Decision support systems and analytical tools implementation in pre-FS and FS execution | - Create a centralized repository for storing all relevant document and templates<br>- Implement collaborative tools to facilicate knowledge sharing (e.g. project management, communication platforms, document collaboration, knowledge management) | 0,006 | 0,804 | -0,789 | 17 |
| Green Energy | Market and Subsector Assessment | I2 | Progress integration and support systems in market and subsector assessment | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation guidance, and | 0,006 | 0,804 | -0,798 | 18 |

| Sectors | Transition Activities | Code | Action Plan | Activity | Leaving Flow | Entering Flow | Net Flow | Rank |
|---|---|---|---|---|---|---|---|---|
| | | | | relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner | | | | |

Based on the sequence results presented in Table 4.15.above, it is observed that the action plan possessing the highest net value is positioned first in the sequence, followed by the second action plan in the subsequent position, and so on. Consequently, the validity of the sequence weight is contingent upon its support by the reasoning for each criterion, which was gathered through brainstorming sessions with the two experts, such as Division Head of TMO and Consultans Leader. The following table is presented to exemplify the urgency, impact, and cost reasons associated with the sequence results in Table 4.16.

Table 4.16 Urgency, Impact, and Cost

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| Green Chemicals | Market Research | D2 | Internal training and capacity building in market research | - Conduct training for market analysis, resource management<br>- Conduct workshop for decision-making, timeline development | 1 | Foundational skills necessary for the effective strong execution of other plans in greem chemicals, due | - Establishes a strong foundation for informed decision-making and strategic planning<br>- Improves ability to analyse and | 35.973.344 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | | - Establish internal market research and strategy teams<br>- Set up regular feedback and monitor performance (weekly) | | to we are still lack of resource in this field | interpret market data effectively<br>- Enhances internal expertise<br>- Reduces dependency on external consultants | |
| Green Chemicals and Green Energy | Pitch Deck Development and Report Development | F2 | Training and skill development program in pitch deck development and report development | - Conduct workshops on creating effective pitch decks and reports<br>- Conduct training sessions on design principles and software (e.g., Adobe Illustrator, PowerPoint)<br>- Conduct regular feedback sessions and monitor performance with stakeholders (weekly) | 2 | Crucial for securing investments and partnerships, which directly impacts the business's ability to grow in wining rate of project proposal | - Enhances ability to attract investors and partners<br>- Directly impacts business growth through improved presentations<br>- Increases chances of securing funding and strategic partnerships | 47.999.376 |
| Green Energy | Research on Additional | H2 | Internal competency developme | - Conduct training on research methodologies, data analysis techniques, | 3 | Critical for informed decision-making and | - Improves research quality and data-driven decision-making capabilities | 16.222.212 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | Ad-hoc Requests | | nt in research on additional ad-hoc request | and reporting skills which can be led by internal experts or external trainers<br>- Set up regular review sessions (weekly) | | data-driven strategies by clients needs, which related into research in gaining more profit | - Enhances accuracy and reliability of research outputs<br>- Strengthens internal skills for better data analysis and interpretation | |
| Green Chemicals | Business Case Framework Development | A1 | Internal training and capacity development in business case framework development | - Conduct training sessions on business strategy and framework development<br>- Conduct workshops to practice defining KPIs and strategic questions<br>- Set up regular review session (weekly) to ensure understanding and application | 4 | Directly influences for strategic planning and aligning with business objectives before decide to expand into another sector | - Strengthens strategic thinking and innovation<br>- Enhances ability to develop and implement business strategies<br>- Increases competitive edge in the market | 28.988.514 |
| Green Chemicals | Market Research | D1 | Advanced analytical systems and tools in market research | - Integrate market analysis and project management software for efficient data collection and reporting (e.g Microsoft Project) | 5 | Streamlines operations, improves efficiency, and ensures accurate data | - Enhances efficiency and accuracy in data collection and reporting<br>- Supports better decision-making | 20.055.792 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | | - Develop guidelines and templates<br>- Regularly evaluate and update tools and systems to ensure they meet business needs | | for decision-making | through reliable data<br>- Streamlines operations<br>- Reduces errors in manual work | |
| Green Chemicals | Business Case Framework Development | A2 | Collaborative processes and structures development in business case framework development | - Implement tools and platforms for project management and communication (ex. Microsoft project)<br>- Develop and apply standard procedures for defining objectives, measuring KPIs, and making strategic decisions<br>- Form cross-functional teams to collaboratively formulate and evaluate business case frameworks | 6 | Facilitates better collaboration and strategic alignment across the organisation effectively | - Promotes effective teamwork and aligned strategic decision-making<br>- Enhances communication and collaboration across departments<br>- Facilitates timely and well-informed decision-making | Rp 28.470.000 |
| Green Chemicals | Off Taker Analysis | C2 | Internal capability building in | - Conduct training on financial performance | 7 | Necessary for compliance and | - Ensures informed financial and | 84.666.667 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | off taker analysis | analysis, market potential analysis<br>- Conduct workshops on legal and regulatory evaluation<br>- Set up regular review meetings to discuss findings and improvements (weekly) | | financial health assessment | regulatory decisions<br>- Enhances compliance with legal and regulatory requirements<br>- Improves market potential analysis, leading to better business opportunities | |
| Green Energy | Research on Additional Ad-hoc Requests | H1 | Implement internal support systems in research on additional ad-hoc request | - Integrate database for research management, data analysis, and report generation (e.g microsoft sharepoint)<br>- Develop standard procedures for managing ad-hoc request | 8 | Supports continuous improvement and efficient management of research processes | - Facilitates efficient management of research tasks and ad-hoc requests<br>- Improves overall productivity<br>- Enhances research management through better tools and procedures | Rp 11.275.000 |
| Green Chemicals | Partnership Shortlisting and Outreach | E2 | Training and development in partnershi | - Conduct training for negotiation and communication skills, identifying and analysing | 9 | Important for critical interpersonal in successful wth external | - Improves negotiation and communication skill | 26.535.000 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | p shortlisting and outreach | potential partner needs<br>- Set up regular feedback and monitor performance metrics (weekly) | | collaboration and partnerships | - Enhances ability to manage and mitigate risks<br>- Supports successful business interactions and conflict resolution | |
| Green Chemicals | Pre-FS and FS execution | G1 | Training and competency development in pre-FS and FS execution | - Conduct training focused on market analysis, estimation , profitability analysis, and resource refinement<br>- Conduct workshops session on strategic decisions<br>- Assign employees to real projects with guidance from experienced mentors to apply their skills practically (on-the-job training)<br>- Encourage obtaining relevant industry certifications (e.g. CGCP) | 10 | Ensures employees can apply their skills in real-world scenarios, enhancing their effectiveness | - Boosts practical application of skills<br>- Encourages professional certifications, leading to higher competency<br>- Enhances effectiveness and confidence in real-world scenarios | 184.250.000 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| Green Chemicals and Green Energy | Business Case Development | B2 | Training and skill development in business case development | - Conduct relevant training (business analysis such as identify objective and opportunities, analyse and summarise findings, develop structure, present findings)<br>- Conduct workshops for problem solving and critical thinking, communication and stakeholder engagement, data interpretation)<br>- Set up regular feedback and monitor performance metrics (weekly) | 11 | Critical thinking and stakeholder workshops are valuable for strategic planning but can follow initial capability building | - Enhances problem-solving and stakeholder communication skills<br>- Supports more effective strategic planning and executionImproves ability to handle complex business challenges | 103.730.000 |
| Green Chemicals | Off Taker Analysis | C1 | Processes and control systems implementation in off taker analysis | - Establish SOP for financial analysss, reputation evaluation, compliance<br>- Implement tools and software to help as database in selecting | 12 | Financial analysis and risk management are important but rely on foundational skills and | - Strengthens financial and risk management processes<br>- Ensures better control and evaluation of business activities | 143.675.003 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | | the potential off taker (e.g. CRM systems, BI, DBMS) | | systems being in place first | - Enhances ability to manage and mitigate financial and reputational risks | |
| Green Energy | Market and Subsector Assessment | I1 | Training and capacity building in market and subsector assessment | - Conduct training on research techniques (methodologies,data collection, tools), strategic analysis (SWOT, PESTLE), and report writing<br>- On-the-job training<br>- Set up regular feedback and monitor performance based on KPI (weekly) | 13 | Improves performance over time through advanced research techniques and feedback mechanisms | - Enhances research capabilities and strategic analysis<br>- Leads to more effective performance tracking and improvement<br>- Strengthens ability to conduct thorough and accurate research | 93.681.667 |
| Green Chemicals and Green Energy | Business Case Development | B1 | Process and tool development in business case development | - Conduct relevant training (business analysis such as identify objective and opportunities, analyse and summarise findings, develop structure, present findings) | 14 | Critical thinking and stakeholder workshops are valuable for strategic planning but can follow initial capability building | - Enhances problem-solving and stakeholder communication skills<br>- Supports more effective strategic planning and executionImproves ability to handle | 21.115.000 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | | - Conduct workshops for problem solving and critical thinking, communication and stakeholder engagement, data interpretation)<br>- Set up regular feedback and monitor performance metrics (weekly) | | | complex business challenges | |
| Green Chemicals and Green Energy | Pitch Deck Development and Report Development | F1 | Process and tools un pitch deck and report development | - Develop a pitchdeck and report development guide for story lining, structuring, designing, visualising<br>- Implement tools graphic design software, data visualisation tools, and document management systems to support the creation and management of pitch decks and reports | 15 | Useful for producing high-quality presentations and reports but less critical initially | - Enhances quality and effectiveness of presentations and reports<br>- Supports business communications and proposals<br>- Improves ability to visually communicate business ideas and strategies | 45.163.335 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| Green Energy | Market and Subsector Assessment | E1 | Decision support system in partnership shortlisting and outreach | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation guidance, and relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner | 16 | Ongoing tasks that can be addressed progressively, but less immediate impact compared to other actions | - Ensures continuous improvement and alignment in market research and strategic planning processes<br>- Supports standardized operational procedures<br>- Enhances cross-functional collaboration and strategic alignment | 41.295.004 |
| Green Chemicals and Green Energy | Business Case Development | G2 | Decision support systems and analytical tools in pre-FS and FS execution | - Develop guidelines ( identify objectives and opportunities, analysing and summarizing findings, develop structure, presenting business case opportunities) and | 17 | Beneficial for organizing and standardizing processes but less critical than immediate training needs | - Standardizes processes and integrates tools<br>- Improves consistency and accessibility of information<br>- Enhances organisation and retrieval of | Rp 14.282.501 |

| Sector | Transition Activities | Code | Action Plan | Activity | Rank | Urgency | Impact | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|
| | | | | template for business case document<br>- Develop centralized repository (e.g Microsoft sharepoint)<br>- Tool integration (e.g power BI and google sheets) | | | important business data | |
| Green Chemicals | Pre-FS and FS execution | I1 | Progress integration and support systems in market and subsector assessment | - Integrate market analysis and project management software (Microsoft Project and Power BI)<br>- Develop guideline and template in data collecting, identify and analysing, strategic-making recommendation<br>- Set up regular evaluate performance metrics | 18 | Enhances strategic planning through better data management and decision support systems, but can be prioritized later | - Supports informed strategic planning and data management<br>- Enhances ability to analyse and make strategic decisions<br>- Improves organisation and accessibility of important business documents | 16.086.667 |

## 4.4 Prototype

Following the generation of innovative solutions to address EPC Company problems, prototyping is undertaken in the subsequent stage. This stage is deemed crucial as it enables the development of a gantt chart, serving as the strategic planning tool for each action plan. The gantt chart is constructed by defining specific activities obtained from the innovative solutions. Each action plan is sequenced through gantt chart visualisation based on sequence in the preceding stage through the application of AHP and PROMETHEE methodologies. These methodologies offer a structured approach to decision-making, guaranteeing sequencing of the most critical and impactful actions based on the reason in Table 4.15. A detailed gantt chart of the action plan is provided in Figure 4.15 below.

| No | Action Plan | Duration | Start | Finish | Q1 2023 | | | Q1 2024 | | | Q2 2024 | | | Q3 2024 | | | Q4 2024 | | | Q1 2025 | | | Q2 2025 | | | Q3 2025 | | | Work (hour) | Cost (Rp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Oct | Nov | Dec | Jan | Feb | Mar | Apri | May | June | July | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apri | May | June | July | Aug | Sep | | |
| 1 | Internal training and capacity building in market research | 45 days | Mon 11/6/23 | Fri 1/5/24 | | | | | | | | | | | | | | | | | | | | | | | | | 148 | 35.973.344 |
| 2 | Training and skill development program in pitch deck development and report development | 15 days | Mon 1/8/24 | Fri 1/26/24 | | | | | | | | | | | | | | | | | | | | | | | | | 126 | 47.999.376 |
| 3 | Internal competency development in research on additional ad-hoc request | 15 days | Mon 1/29/24 | Fri 2/16/24 | | | | | | | | | | | | | | | | | | | | | | | | | 46 | 16.222.212 |
| 4 | Internal training and capacity development in business case framework development | 15 days | Mon 2/19/24 | Fri 3/8/24 | | | | | | | | | | | | | | | | | | | | | | | | | 81 | 28.988.514 |
| 5 | Advanced analytical systems and tools in market research | 20 days | Mon 3/11/24 | Fri 4/5/24 | | | | | | | | | | | | | | | | | | | | | | | | | 99 | 20.055.792 |
| 6 | Collaborative processes and structures development in business case framework development | 11 days | Mon 4/8/24 | Mon 4/22/24 | | | | | | | | | | | | | | | | | | | | | | | | | 49 | 28.470.000 |
| 7 | Internal capability building in off taker analysis | 18 days | Wed 4/24/24 | Fri 5/17/24 | | | | | | | | | | | | | | | | | | | | | | | | | 84 | 84.666.667 |
| 8 | Internal support systems implementation in research on additional ad-hoc request | 20 days | Mon 5/20/24 | Fri 6/14/24 | | | | | | | | | | | | | | | | | | | | | | | | | 55 | 11.275.000 |
| 9 | Employee training and development in partnership shortlisting and outreach | 15 days | Mon 6/17/24 | Fri 7/5/24 | | | | | | | | | | | | | | | | | | | | | | | | | 36 | 26.535.000 |
| 10 | Training and competency development in pre-FS and FS execution | 60 days | Mon 7/8/24 | Fri 9/27/24 | | | | | | | | | | | | | | | | | | | | | | | | | 210 | 152.775.000 |
| 11 | Training and capacity building in market and subsector assessment | 45 days | Mon 9/30/24 | Fri 11/29/24 | | | | | | | | | | | | | | | | | | | | | | | | | 138 | 103.730.000 |
| 12 | Processes and control systems implementation in off taker analysis | 40 days | Mon 12/2/24 | Fri 1/24/25 | | | | | | | | | | | | | | | | | | | | | | | | | 125 | 143.675.003 |
| 13 | Training and skill development in business case development | 35 days | Mon 1/27/25 | Fri 3/14/25 | | | | | | | | | | | | | | | | | | | | | | | | | 149 | 93.681.667 |
| 14 | Decision support systems and analytical tools implementation in pre-FS and FS execution | 29 days | Mon 3/17/25 | Thu 4/24/25 | | | | | | | | | | | | | | | | | | | | | | | | | 103 | 21.115.000 |
| 15 | Process and tool development in business case development | 28 days | Fri 4/25/25 | Tue 6/3/25 | | | | | | | | | | | | | | | | | | | | | | | | | 126 | 45.163.335 |
| 16 | Process and Tools in pitch deck development and report development | 21 days | Wed 6/4/25 | Wed 7/2/25 | | | | | | | | | | | | | | | | | | | | | | | | | 99 | 41.295.004 |
| 17 | Decision support system in partnership shortlisting and outreach | 13 days | Thu 7/3/25 | Mon 7/21/25 | | | | | | | | | | | | | | | | | | | | | | | | | 39 | 14.282.501 |
| 18 | Progress integration and support systems in market and subsector assessment | 19 days | Tue 7/22/25 | Fri 8/15/25 | | | | | | | | | | | | | | | | | | | | | | | | | 76 | 14.282.501 |
| Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1.789 | 930.185.916 |

Figure 4.15 Gantt Chart

The Figure 4.15 above is presented as a gantt chart. This chart visually presents the action plan's schedule and action plan activity progress, spanning from Q1 2023 to Q3 2025. It also illustrate the start and end times of the action plan activity, highlighting any overlaps or dependencies, estimated work hours, and cost in Indonesian Rupiah.

## 4.5 Test

Following the prototype stage, the testing stage was conducted. This phase involved a rigorous evaluation of the prototypes under various conditions, allowing for a comprehensive understanding of how the prototypes were performed in real-world scenarios. After the prototype with the gantt chart was developed, in the interview sessions conducted for the research, two experts including Division Head of the TMO and Consultant Leader to provided valuable feedback on the developed gantt chart for strategic planning. Both experts concurred on the positive value of feedback loops and adaptive strategies to ensure continuous improvement throughout the strategic planning process.

# CHAPTER V
# DISCUSSION

## 5.1 Identify the Differences Analysis

The research conducted by (Niehaus & Mocan, 2024) revealed that the design thinking can be effectively leveraged by organisations to adapt and innovate within challenging environment. Successful business innovation and adaptation within the green business sector can be achieved through the strategic planning with design thinking. A through understanding of the users was sought through design thinking approach (Ilyas et al., 2024). The empathize stage is focused on gathering information about the needs and challenges of users, which serves as a foundation (Syaflita et al., 2024). Observation, study document, interview, and empathy map were used during this stage. Observation and study document were carried out in the TMO Division, specifically related to sustainable business transformation to acquire various information, such as company profile, company service, company industrial sector, sustainable business transformation, green business, and transition activities.

Interviews with the Division Head of TMO and the Consultant Leader were conducted to acquire a more comprehensive understanding of the challenges, required improvements, and their perspectives on the transformation. The Division Head of TMO plays a pivotal role in driving sustainable business transformation within the company. Her authority include collecting employee feedback on the challenges, progress, and accomplishments within the transformation. Additionally, the Consultant Leader is involved in collecting feedback from consulting team members and the BOD. Their input has been essential for shaping the approach towards sustainable transformation. Interviews with APA and SA from a Big3 Consulting Firm offered valuable insights into the company's journey. The insights gleaned from these discussions enlightened the challenge and underscored the imperative nature of strategic improvements. Their contributions shed light on the nuanced process of enacting significant organisational change, specifically towards sustainable business transformation in green business sector among employees, consultants, and BOD.

APA's insights from her pivotal role as Division Head of the TMO, were particularly enlightening. She articulated a profound understanding of sustainability's critical role within the company, emphasising the necessity of weaving sustainable practices seamlessly throughout the continuous entirety of transformation journey. This encompasses everything from initial planning phases to business as usual improvement. Division Head of the TMO proudly

referenced the company's lofty aspiration of achieving net-zero emissions by the year 2060 or sooner, a goal supported by a substantial investment and the establishment of a dedicated team under her stewardship. Central to the company's strategic approach has been the engagement with the Big3 Consulting Firms, whose unparalleled expertise has not only shaped the company's direction but has also been a catalyst for innovation. The company's strategy and innovation have been significantly shaped by their expertise. However, despite the company's target to attain a similar level of expertise and knowledge as the consultants by Q4 2023, it is still far from reaching this target, indicating existing gaps that need to be addressed for a seamless transition into Business as Usual (BAU).

In parallel, SA shared similar concerns, also expressed concerns regarding the company's focus from Q2 2022 to Q3 2023. During this period, the company and consultants primarily concentrated on entering new green business sectors in green chemicals and green energy with the consultants' support, neglecting adequate consideration of the company's own expertise and competence. The objective for Q4 2023 is to reach a level of expertise and competence comparable to that of the consultants. However, the reality is that the company is still quite distant from achieving this objective for a seamless transition into BAU. Both experts concurred that addressing the challenges in Q4 2024 is imperative for the successful implementation and attainment of a seamless transition into BAU. Both Division Head of the TMO and Consultant Leader concurred on the paramount importance of addressing these highlighted challenges for the company to successfully advance its sustainability business transformation. Their shared viewpoint underscores the complexity of organisational transformation and the critical need for a well-thought-out strategy that encompasses skills development, clear communication, and a commitment to change management.

An empathy approach was used by the researcher during the interview by listening carefully, noting experts reactions, and paying attention to the expressions and feelings that emerged during the interview. After obtaining the results of the empathy map components and gaining important insights into the experts needs and expectations of the application, the empathy map, which consists of five components, was created (Ulita et al., 2024). The first section, "See," centers on experts' direct experiences and perceptions, highlighting clear objectives for Q4 2023 with a focus on achieving a level of expertise comparable to consultants and visible gap in expertise and competence that needs to be addressed. Then followed by "Hear," which focuses on pressure and urgency to meet the Q4 2023 objectives, concerns and

doubts about whether the objectives can realistically be achieved within the timeframe. Moving to "Think and Feel," this section focuses on the objectives for Q4 2023 are crucial and need to be met to ensure a smooth transition to BAU, high levels of stress and concern about possibility of not meeting the objectives. In the "Say and Do" section, the focus is on the company is committed to achieving its objectives as soon as possible, increased efforts to address expertise gaps, possibly through additional training, hiring, and consultation. The "Pain" section, the focus in on intense pressure with demands without adequate training, support, tools, and resource to meet the Q4 2023 objectives, which may lead to stress and burnout among employees, the possibility of not achieving a seamless transition to BAU could result in disruptions and reputational damage in transformation. And the "Gain" section highlights successful meeting the Q4 2023 objectives will result in a smooth transition into BAU, reaching the objective will boost confidence within the company and stabilize operations by reducing dependence on consultants. Overall, in this empathize stage of design thinking for sustainable business transformation revealed key differences that the company have not reach the objective target for Q4 2023. An empathy map was created from experts' experiences, feedback, emotions, actions, challenges, and benefits, showing the crucial to tackling the unachieved the objective in Q4 2023 for seamless transition into BAU.

After the empathize was conducted, it is followed by define stage. Based on all data through empathize stage, the researcher focuses on to define the main issue based on the information gathered. In this define stage utilised point-of-view table to make it easier in determine the core problem from the empathize stage (Ilyas et al., 2024). The Division Head of TMO is currently faced with the challenging of meeting the company's objectives for Q4 2023. There is a noticeable expertise gap between the internal team and the hired consultants, which poses a significant obstacle to achieving the set goals and ensuring a seamless transition to BAU. The Division Head of TMO is feeling the weight of this challenge and is concerned about the potential repercussions of failing to bridge this gap, as it could disrupt the transition process and impact the company's performance.

Meanwhile, the Consultant Leader has the responsibility of fostering effective collaboration between their team and the company to tackle these expertise differences. Initially, the consultants focused on exploring and initiating new business sectors. However, the Consultant Leader now realizes the urgent need to shift the focus towards closing the emerging expertise gap. The successful completion of this transition and meeting the Q4 2023 objectives

hinges on aligning the company's expertise with that of the consultants. This realignment is essential to ensure a smooth transition to BAU and achieving the established goals. Both the Division Head and the Consultant Leader are acutely aware of the urgency of the situation. The Division Head is worried about the potential adverse effects of the expertise gap on the company's performance and the transition process, while the Consultant Leader recognises the necessity to redirect efforts from new business development to addressing these critical expertise issues. This shared understanding underscores the need for concerted and cooperative endeavors to bridge the expertise gap, ensuring that both parties can effectively achieve the Q4 2023 objectives and facilitate a seamless transition to BAU operations.

Based on the empathize stage, the expert's problem in transformation is needed a smooth and successful transition from consultants to employees was indicated by the completion of transition activities by employees themselves, without requiring consultant assistance as outlined in objective for Q4 2023. However until the beginning of Q4 2023, the company still have not yet at the same level position as consultants. In address the issue in Q4 2023, the assessment was deemed necessary well-known as transition plan assessment. After the problem has determined, FGD was carried out with two experts, including the TMO Division and Consultants to designing transition plan assessment. The purpose of the transition plan, regardless of the aspect, was to detail the changes required to achieve the objective (Mudrinich et al., 2015). The transition plan was utilised to identify improvement areas, evaluate current activities, facilitated seamless integration for consultants and employees, enhancing effective communication and collaboration. It can minimised potential risks, allowed for more effective and efficient change management, and ultimately contributed to achieving successful objectives.

The aspects of the transition plan, adopted from a gap analysis framework were shown in Table 4.2, included impact center, sector, transition activities, current state, target state, and differences (Jindrák et al., 2014). First aspect, Impact Center (IC) were responsible for identifying and prioritising metrics to track transformation progress, adjusting resources and timelines, communicating proactively with stakeholders to ensure alignment towards the same goals, identifying and defining areas for improvement and growth. They were able to effectively define objectives, deadlines, track and monitor transformation progress, and resolve problems quickly. This research will focus on IC 5: "Right" business models and segments for mid-long term growth. Here, identification of the right business and market segments will be undertaken

to achieve successful increases in profit and competitiveness within the industry. A partnership with consultants was established by the company to gain new ideas, perspectives, and leverage their expertise and resource allocation. The consultants' expertise in the green sector can accelerate successful transformation into new business areas. The consultants were tasked with assisting the company in driving the transformation to meet the objectives of Impact Center 5. Additionally, the company aimed to internalise and leverage the skills, knowledge, and capabilities between consultants and employees. This aimed to drive innovation, growth, and profitability within Impact Center 5.

Second aspect, sectors were identified as crucial factors in defining the scope of the implemented transformation. An analysis of each sector was then conducted to identify growth potential and strategies to address challenges. Based on the FGD with experts focusing on IC5, a strategic direction was formulated for the company. This direction prioritised increasing demand for sustainable products and services, minimising environmental impact, establishing a strong market presence, aligning with global sustainability trends, and meeting local regulatory and consumer demands for green projects and services within the industry. Two sectors were subsequently identified by the company, such as green chemicals and green energy. Green chemicals are defined as chemicals produced from renewable energy sources. Environmentally friendly materials and methods, such as fermentation, green synthesis, biocatalysis, and solvent-free processes, are utilised in their production. Green chemicals are considered crucial for addressing the issue of climate change by minimising the use and production of hazardous materials (Chen, 2014). Green energy is defined as energy derived from renewable energy sources through natural or technological processes. This process aims to achieve a reduction in the negative impact on the environment. Renewable sources, such as wind, solar, geothermal, and hydro, are utilized. These renewable energy sources are considered to be plentiful and undoubtedly the most eco-friendly energy sources available on Earth (Pinghal & Yadav, 2020).

Third aspect, transition activities were considered crucial for the successful integration of sustainability into the core of business operations. By implementing them, company can effectively integrate sustainability and position themselves as leading players in green business sectors such as green chemicals and green energy in Indonesia. Fourth aspect, current state as the current company level. The transition plan facilitates the identification of this current condition before risk mitigation strategies are defined by the company. By identifying the

current state, stakeholders are enabled to monitor areas requiring improvement. Identification of the actual and specific issues is crucial, allowing for the development of a strategic action plan that propels the company towards its objectives. Additionally, identifying the current state assists the company in monitoring and tracking transformation progress to ensure alignment with its objectives. Fifth aspect, target state refers to the achievement anticipated after the completion of each activity. It aligns with stakeholders regarding the long-term specific objectives for sustainable business transformation. The target state details the objectives and desired outcomes, providing clear guidance to focus on the transformation strategy plan. And sixth aspect, differences were the gaps between current and target state. If the company comprehends the understanding of the differences in condition and develops the right strategic plan, it can bring the company to be a successful company as a leader in the green sector in Indonesia after the transformation is ended. The EPC Company needs to focus on bridging the differences within the transformation to ensure the smoothness and seamlessness of the internalisation differences in transition activities between consultants and employees.

After the transition plan has been developed, then it will be reviewed and validated by the BOD. The assessment was filled by BOD with expert judgments to gather in-depth comprehensive insight regarding the existing problem in the EPC Company. After collecting data on the transition plan, it was discovered that there are differences in the transition activities involving consultants and employees, based on the current and target states. This assessment is essential for integrating new initiatives into the BAU by Q4 2023 and achieving the objectives smoothly. Since the collaboration with consultants is ending soon, employees will need to take over consultants responsibilities. The assessment reveals that employees need to transition from depending on consultants to independently and also take full responsibilities managing various differencs. The differences ability between consultants and employees in business case framework development for green chemicals and green energy, such as defining objectives, key questions, strategic decisions, KPI metrics, establish framework, and collaboration across functions. The differences ability between consultants and employees in business case development for green chemicals and green energy, such as identify objectives and opportunities, analysis and summarise findings, develop structure, and presenting business case opportunities to stakeholders.

Furthermore, the differences ability between consultants and employees in off taker analysis for green chemicals, such as financial performance analysis, evaluating reputation and

compliance, market potential analysis, and evaluating legal regulations. The differences ability between consultants and employees in market research for green chemicals, such as defining potential market, making strategic decisions, managing time and resources, and engage stakeholders. The differences ability between consultants and employees in partnership shortlisting and outreach for green chemicals, such as defining and evaluating criteria, identify, analysing, negotiating, and maintain good relationship with potential partners. The differences ability between consultants and employees in pitch deck and report development for green chemicals and green energy, such as creating story lining, structuring, designing, visualising, reviewing, and refining.

In addition, the differences ability between consultants and employees in pre-FS and FS execution for green chemicals and green energy, such as estimation, profitability analysis, refine resources, market analysis, and strategic decision-making. The differences ability between consultants and employees in research on additional ad-hoc requests for green energy, such as framing research questions and research scope, gathering and analysing, and reporting in ad-hoc request. The differences ability between consultants and employees in market and subsector assessment for green energy, such as collecting, identifying, analysing market and subsector research, and making strategic recommendation. In essence, the goal is for employees could fully own manage and execute these tasks, which were previously supported by consultants.

## 5.2 Identify the Root Cause of Differences Analysis

After the data has been completely collected using transition plan assessment, it was found out that there are differences in transition activities involved consultants and employees based on current state and target state condition. The assessment is crucial within the transformation to internalise initiatives into BAU by Q4 2023 in ensuring the seamless integration to achieveing the objectives. Therefore, because the period of collaboration with consultants is going to ended, the employees must take over all of the consultant's responsibility. To comprehend understand of each differences, the researchers was carried out in-depth problem analysing using problem analysis with fishbone diagram as a visual representation that displays data regarding the factors causing a problem and analyses the deepest sub-factors leading to the primary causes of the problem (Aristriyana & Ahmad Fauzi, 2023; Kumah et al., 2024)**.** The fishbone diagram is considered suitable for use in this research to identify the underlying issue with several factors category. Several root causes were identified by the researcher by brainstorming with expert

Division Head of TMO in the differences in transition activities, as shown in the fishbone diagram in Figure 4.5 to Figure 4.13**Error! Reference source not found.**. The following are the brief explanation on each differences based on transition activities regarding the possible causes in differences.

1. Green Chemicals - Differences in Business Case Framework Development

   Based on the fishbone diagram in Figure 4.5, the diagrams shows that employees face various challenges in transition from relying on consultants to independently managing business case framework development for green chemicals. There are several factors that affecting, such as people, process, resources, and motivation. The employees might lack of specific skills and experience that needed in developing framework. They might face a resistance to change, which comfortable with the current system and hesitant to learn new system. The existing knowledge gaps and lack of motivation might lead to hinder the transition process. They might be lack of the sufficient budget to acquire experts and proper tools. They might developing framework without obtaining crucial data that crucial for decision-making. The current processs and standardised might be unclear or even non-existing, which lead into inefficient and inconsistent. Currently, employees still relying on consultants, which has significant difference in capability and ability between consultants and employees. It is making the transition into employees more challenging and can hinder their ability to develop frameworks independently. By addressing these challenges requires proper training, define clear and standardised processes, adequate resources allocation, and increase support and motivate to enable employees to successfully undertake these responsibilities.

2. Green Chemicals and Green Energy - Differences in Business Case Development

   Based on the fishbone diagram in Figure 4.6, the diagrams shows that employees have difficulty in taking ownership from receiveing consultant’s assistance to independently managing business case development for green chemicals. There are several factors that affecting, such as people, process, technology, and management. Lack of training in employees might lead them in feeling lost or unprepared to take their own initaitives without guidance by consultant’s. Poor analytical skills will face them to struggle in interpreting information and decision-making. Limited understanding and not empowered employees might lead into loss opportunities until failure. Unclear prosess might lead the

employees unsure where they should start. Lack of communication can prevent in silos and help them to identify between cross-funciton. Limited access to relevant data and poor data quality can hinder in analyse market and growth opportunities. Outdated tools might lead into struggling in transition smoothly. The unclear expectations and less opportunities might lead feeling undervalued and disengaged in take on responsibilities. By addressing these people, process, technology, and management issue, it can equip the employees to take ownership of their roles and become active participants in achieving sustainbale business transformation objectives.

3. Green Chemicals - Differences in Off Taker Analysis

   Based on the fishbone diagram in Figure 4.7, the diagrams shows that employees face various challenges in taking over from consultants to independently managing off taker analysis for green chemicals. There are several factors that affecting, such as people, process, communication, and management. Lack of training, insufficient understanding, and lack of knowledge might lead into struggling in identify areas improvement, risk and opportunities analysis, performance analysis. With no standardized might lead into inefficient and inconsistent process. Limited access to data and tools can hinder the analysis and summarise findings. The unclear expectations and lack of communication towards objectives might lead into confusion and silos effect between staekholders. The lack of support from top management might hinder the transition progress and employees feel discouraged. Specifically, that company prioritising consultants over internal development might lead to unvaluable of existing resource, hesitant to take an action and improve. By addressing these causes, the employees can enable to take ownership of off taker analysis that leads to knowledge improvement, better decision-making, and reduced reliance on external consultants.

4. Green Chemicals - Differences in Market Research

   Based on the fishbone diagram in Figure 4.8, the diagrams shows that employees face various challenges in transition from relying on consultants to independently managing market research for green chemicals. There are several factors that affecting, such as people, process, resource, and management. The employees might lack of internal expertise and limited experience in that needed specific industry. Not empowered the ownership in

employees might lead into hesistant in best decision-making. With no standardised might lead into inefficient and inconsistent in conducting market research. Ineffcient or time consuming can reduce the repetitive activity and create the efficient streamline. Lack of collaboration between departments might lead into misunderstandings. Insufficient budget misght lead to acquire experts and proper tools. Limited access to data and tools can hinder the analysis and summarise findings. The lack of support and unclear expectations might hinder the transition progress and lead in confusion. Poor communication can prevent in silos and help them to identify improvement areas. By address these challenges, it can create a strategic plan to equip employees to conduct market research independently without support from consultants.

5. Green Chemicals - Differences in Partnership Shortlisting and Outreach

   Based on the fishbone diagram in Figure 4.9, the diagrams shows that employees face various challenges in taking over from consultants to independently managing partnership shortlisting and outreach for green chemicals. There are several factors that affecting, such as people, process, materials, and management. The employees might lack of knowledge, skills, and experience might lead into struggling in identify areas improvement and decision-making. Poor communication can lead to misunderstanding and hinder the continuous progress. They might face a resistance to change, which resistant in adopting new systems in partnership shortlisting and outreach activity. Unclear criteria might be confusion and difficult understanding. With no standardised might lead into inefficient and inconsistent in conducting the activity. Insufficient data collection might hinder the shortlisting and decision-making. Limited access to relevant data might hinder in analyse partner and growth opportunities and outreach plan. Inadequate tools might lead into struggling in efficient and effective. Lack of support can help employees support in enable necessary skills and knowledge from consultants. By addressing the causes, EPC Company can build the internal strengthen capability and decision making to reduce and eliminate the consultants involvement for market research activities.

6. Green Chemicals and Green Energy - Differences in Pitch Deck Development and Report Development

Based on the fishbone diagram in Figure 4.10, the diagrams shows that employees face various challenges in taking over responsibility from consultants to independently managing pitch deck development and report development for green chemicals. There are several factors that affecting, such as people, process, materials, and management. The employees might lack of training that lead into struggling in identify areas improvement and decision-making. Poor communication can lead to misunderstanding and hinder the continuous progress. They might face a resistance to change, which resistant in adopting new systems in partnership shortlisting and outreach activity. The current processs and standardised might be unclear or even non-existing, which lead into inefficient and inconsistent. Limited access to relevant data and poor integration might hinder in transition progress. Unrealistic timeline and lack of support might lead into pressure and hinder the progress. Ultimately, it help to identify improvement areas to ensure a smoother transition of responsibilities and better communication between consultants and employees.

7. Green Chemicals and Green Energy - Differences in Pre-FS and FS execution

   Based on the fishbone diagram in Figure 4.11, the diagrams shows that employees face various challenges in taking over responsibility from consultants to independently managing pre-FS and FS execution for green chemicals. There are several factors that affecting, such as people, process, materials, and management. The employees might lack of training that lead into struggling in identify areas improvement and decision-making. Limited experience and low confidence might lead them to hesitate to take an action, thru needs consultant’s guidance. Poor knowledge and inefficient communication can lead to misunderstanding and hinder the continuous progress. Limited access to relevant data and difficulty accessing data can leas to inefficient and delays. Inaccurate data can laed them into misleading outcomes. The unclear expectations, lack of support, and poor internal developmeng might lead feeling undervalued and disengaged in take on new responsibilities. By addressing the causes, EPC Company can move step forwards from reliance on consultants to conduct pre-FS and FS execution independently.

8. Green Energy - Differences in Research on Additional Ad-hoc Requests

   Based on the fishbone diagram in Figure 4.12, the diagrams shows that employees face various challenges in transition from relying on consultants to independently managing

additional ad-hoc requests research for green energy. There are several factors that affecting, such as people, process, materials, and management. The employees might lack of training that lead into struggling in identify areas improvement and decision-making. Poor communication can prevent in silos and help them to identify between cross-funciton. With no standardised might lead into inefficient and inconsistent in conducting ad-hoc request research. Unclear procedures might lead them to unsure where they should start. Limited access to relevant data and poor data quality can hinder in analyse ad-hoc request. Outdated tools might lead into struggling in transition smoothly. They might be lack of the sufficient budget to acquire experts and proper tools. The lack of support and unclear expectations might hinder the transition progress and lead in confusion. By addressing the causes, EPC Company can move step forwards from reliance on consultants to manage ad-hoc request independently.

9. Green Energy - Differences in Market and Subsector Assessment

   Based on the fishbone diagram in Figure 4.13, the diagrams shows that employees needs to transiton from dependence on consultants in conducting ad-hoc request research activity for green energy. It can be categorised into four main categories, which are people, process, technology, and management. The employees might lack of expertise and inadequate training that lead into struggling in identify areas improvement and decision-making independently. They might face a resistance to change, which comfortable with the current system and hesitant to learn new system. The current processs and standardised might be unclear or even non-existing, which lead into inefficient and inconsistent. Limited access to relevant data and incompatible data quality can hinder in analyse market subsector. Unclear expectations and unrealistic timeline might lead into pressure and confusion. By address these challenges, it can create a strategic plan to equip employees to conduct market.

## 5.3 The Action Plan and Sequence Analysis

After the define was conducted, it is followed by ideate stage where innovative solutions are generated as possible to meet the experts needs (Ilyas et al., 2024). This stage facilitates the generation of innovative solutions by leveraging the expertise of both Division Head of TMOs and Consultants. The identified problem centers on differences between consultants and

employees regarding transition activities, as revealed by the analysis of current and target states. Addressing these differences across transition activities is crucial to ensure a seamless integration within the sustainable business transformation process.

After the analysing and visualising the causes in differences through fishbone diagram, the researchers formulate a comprehensive action plan and activities in this ideate stage to address the differences on transition activities. The action plan focuses on addressing the tranition activities for the green chemicals and green energy sectors focus on shifting responsibilities from consultants to employees, aiming to build internal capabilities and reduce dependence on external expertise. The main areas of transition include business case framework development, business case development, off-taker analysis, market research, partnership shortlisting and outreach, pitch deck and report development, pre-feasibility (Pre-FS) and feasibility (FS) execution, and handling additional ad-hoc research request.

Currently, consultants play a significant role in defining objectives, key questions and strategic decisions, KPI metrics, establish framework, and collaborate cross-function, while employees are expected to take over these responsibilities independently. Challenges include a lack of in-house expertise and experience, resistance to change, knowledge gaps, unclear processes, lack of standardised and frameworks, inadequate tools, resource constraints, lack of access to data, lack of support, dependence on consultants, lack of confidence and motivation. To address these differences in green chemicals for business case framework development, comprehensive internal training and capacity development are recommended, focusing on training in business streategy and framework development, worskshop in practice defining KPI’s and practice defining strategic question, set up regular review session. Additionally, the collaborative processes and structures development, such as establish cross-function teams, develop standard procedures for define objectives, measure KPI’s making strategic decisions, implementation tools and platforms with Microsoft Project.

Currently, consultants play a significant role in identify objectives and opportunities, analyse and summarise findings, structure development, and presenting business case opportunities to stakeholders, while employees are expected to take over these responsibilities independently. Challenges include a lack of training and understanding, poor analytical skills, feel restricted, unclear process, lack of communication, lack of access data, poor data quality, outdated tools, unclear expectations, less opportunities, insufficient allocation. To address these differences in green chemicals and green energy for business case development, comprehensive

training and skill development are recommended, focusing on training in identify objectives and opportunities, analyse and summarise findings, develop structure, present findings, worskshop in problem solving and critical thinking, communication and stakeholder engagement, data interpretation, set up regular feedback and monitor performance metrics. Additionally, the process and tool development, such as develop guideline and template in identify objectives and opportunities, analyse and summarise findings, structure, present, business case template, centralized repository with Microsoft SharePoint, and tool integration between Power BI and Excel.

Currently, consultants play a significant role in financial performance analysis, evaluating reputation and compliance, market potential analysis, and evaluating legal regulations, while employees are expected to take over these responsibilities independently. Challenges include a lack of in-house expertise and knowledge, insufficient understanding, no lack of communication, poor transfer knowledge, inefficient process, inadequate tools, lack of access to data, poor integration, lack of support, less internal development, inadequate allocation. To address these differences in green chemicals for off taker analysis, internal capability building are recommended, focusing on training in performance analysis and market potential analysis, worskshop in legal and regulatory evaluation, set up regular review meetings to discuss findings and improvements. Additionally, the implementation of process and control system, such as develop standard operation procedures in financial analysis, reputation and evaluation compliance, implementation of tool and software for CRM systems, business intelligence, and database management system.

Currently, consultants play a significant role in defining potential market, making strategic decisions, managing time and resources, and engage stakeholders, while employees are expected to take over these responsibilities independently. Challenges include a lack of internal expertise, limited experience, feel restricted, no standardised, inefficient processes, unclear process, insufficient budget, lack of access data, outdated tools, lack of support, unclear expectations, poor communication. To address these differences in green chemicals for market research, internal training and capacity building are recommended, focusing on establish market research and strategy teams, training in market analysis and resource management, worskshop in decision-making and timeline development, set up regular feedback and monitor performance. Additionally, the advanced analytical systems and tools, such as integrate market analysis and project management software using Microsoft Project and Power BI, develop

guideline and template for data collection, analysis, report and visualise, compliance and security, and set up regular evaluate and update tools.

Currently, consultants play a significant role in defining and evaluating criteria, identify, analysing, negotiating, and maintain good relationship with potential partners, while employees are expected to take over these responsibilities independently. Challenges include a lack of knowledge and skills, lack of experience, low confidence, resistance to change, process and criteria, lack of standardised, inaccurate information, lack of access to data, poor data quality, inadequate tools, lack of support and accountability, unclear expectations. To address these differences in green chemicals for partnership shortlisting and outreach, employee training and development are recommended, focusing on training in negotiation and communication, identify and analyse potential partner needs, set up regular feedback and monitor performance metrics. Additionally, the decision support system, such as implementation of tools and software for criteria evaluation, partner analysis, negotiation guidance, relationship management, develop guideline for identify criteria evaluation, evaluation process, negotiation and relationship management, template for matrix partner evaluation and checklist outreach potential partner.

Currently, consultants play a significant role in creating story lining, structuring, designing, visualising, reviewing, refining, while employees are expected to take over these responsibilities independently. Challenges include a lack of training, poor communication, employee turnover, unclear process, inefficient process, lack of standardised, lack of access to data, poor integration, unrealistic timelines, lack of support, inadequate resource allocation. To address these differences in green chemicals and green energy for pitch deck and report development, training and skill development program are recommended, focusing on training in adobe illustrator and Microsoft Power Point, workshop in create effective pitch decks and reports, set up regular feedback session and monitor performance. Additionally, the process and tools, such as develop guideline for storylining, structuring, designing, visualising, implementation tools for graphic design using Adope Creative Cloud, Canva, Figma, then data visualisation Tableau, Microsoft Powet BI, Google Data Studio, then document management system utilising Microsoft SharePoint.

Currently, consultants play a significant role in estimation, profitability analysis, refine resources, market analysis, and strategic decision-making, while employees are expected to take over these responsibilities independently. Challenges include a lack of expertise and training,

limited experience, resistance to change, unclear process, lack of standardised, poor transfer knowledge, inefficient process, poor integration, inaccurate data, lack of access data to data, unclear expectations, lack of support, inadequate allocation. To address these differences in green chemicals and green energy for pre-FS and FS execution, training and competency development are recommended, focusing on training in market analysis, estimation and profitability analysis, resource refinement, workshop in strategic decision, on-the-job training, and certifications. Additionally, the implementation decision support systems and analytical tools, such as develop centralized repository utilising Microsoft SharePoint, implementation of Microsoft Project.

Currently, consultants play a significant role in handle framing research questions and research scope, gathering and analysing, and reporting in ad-hoc request, while employees are expected to take over these responsibilities independently. Challenges include a lack of expertise, inadequate training, poor analytical skill, unclear procedures, inefficient process, lack of standardised, lack of access to data, inaccurate data, outdated tools, unclear expectations, lack of support, poor communication. To address these differences in green energy for research on additional ad-hoc requests, internal competency development are recommended, focusing on training in research methodologies, data analysis techniques, reporting skills, and set up regular review sessions. Additionally, the implementation internal support systems, such as integrate database utilising Microsoft SharePoint and develop standard procedures for managing ad-hoc request.

Currently, consultants play a significant role in collecting, identifying, analysing market and subsector research, and making strategic recommendation, while employees are expected to take over these responsibilities independently. Challenges include a lack of expertise, inadequate training, resistance to change, no standardised, unclear process, inefficient process, inaccurate data quality, lack of access data, poor integration, unclear expectations, unrealistic timeline, lack of motivation. To address these differences in green energy for market and subsector assessment, training and capacity building are recommended, focusing on training in research techniques for methodologies and data collection, strategic analysis utilising SWOT and PESTLE, report writing, on-the-job training, and set up regular feedback and monitor performance. Additionally, the progress integration and support systems, such as integrate software utilising Microsoft Project and Power BI, develop guideline and template for data

collecting, identifying and analysing, strategic-making recommencation, and set up regular evaluate performance metrics.

As in research conducted by (Sikalo et al., 2023) it was found that the combination approach implementing the AHP to determine the weighted priority of criteria and the PROMETHEE method to identify models. After the action plan was developed were shown in seamless integration within the sustainable business transformation process.

### 4.3.4 Determining Action Plan

After the analysing and visualising the causes in differences through fishbone diagram, the researchers formulate a comprehensive action plan and activities for strategic planning to address the differences in transition activities. The detail of action plan on transition activities are shown in **Error! Not a valid bookmark self-reference.** below.

Table 4.5, the MCDM method was carried out with AHP and PROMETHEE to determine the sequence and weight of each category and action plan based on expert judgments by Division Head of TMO. Based on the data processing results that have been carried out in Chapter 4 on Table 4.8, which represent the overall weight calculation on criteria and the value of consistency test is 0,03. It was found that the result of the consistency test is $\leq 0{,}1$ which indicating the answers provided by the expert is already consistent. According to Table 4.8, the urgency became the priority with highest weight of 0,63. Then, it is followed by the impact with a weight of 0,26 as the second priority, and the cost with a weight of 0,10. It can be seen from the data processing that the priority criterion is the urgency due to urgency activity come with significant risks if not address successfully that might lead in loss opportunities and end in failure. The urgency is tigtly related into tranition activity that involves consultants and employees, which employees needs immediate take over fully consultant's role to avoid the fraud and hinder the sustainable business transformation progress in achieveing the objectives.

After the priority criteria has been determined with AHP, the PROMETHEE was carried out to determine the sequence of action plan. Based on Table 4.9, which represent the comprehensive action plan will be carried out utilising PROMETHEE as a decision model to support decision making in MCMD. Based on Table 4.15, it can be concluded that the highest net flow value, the first sequence of selected action plan after consideration with criterion in urgency, impact, and cost. The sequence will be useful to create the prototype in next stage of design thinking. The main factor in evaluating action plan are leaving flow (with the highest

value) and entering flow (with the lowest value), which will be used to calculate the net flow value. The action plan with the highest net flow value will be considered the first sequence. The sequence results of action plan using the PROMETHEE as shown in Table 4.15. The greater the net flow value, the first sequence of action plan. The sequence of action plan, are shown in Table 5.1 below.

Table 5.1 Action Plan Sequence

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| D2 | Internal training and capacity building in market research | - Conduct training for market analysis, resource management<br>- Conduct workshop for decision-making, timeline development<br>- Establish internal market research and strategy teams<br>- Set up regular feedback and monitor performance (weekly) | Foundational skills necessary for the effective strong execution of other plans in greem chemicals, due to we are still lack of resource in this field | - Establishes a strong foundation for informed decision-making and strategic planning<br>- Improves ability to analyse and interpret market data effectively<br>- Enhances internal expertise<br>- Reduces dependency on external consultants | 35.973.344 | 0,654 | 1 |
| F2 | Training and skill development program in pitch deck development and report development | - Conduct workshops on creating effective pitch decks and reports<br>- Conduct training sessions on design principles and software (e.g., Adobe Illustrator, PowerPoint)<br>- Conduct regular feedback sessions and monitor performance with stakeholders (weekly) | Crucial for securing investments and partnerships, which directly impacts the business's ability to grow in wining rate of project proposal | - Enhances ability to attract investors and partners<br>- Directly impacts business growth through improved presentations<br>- Increases chances of securing funding and strategic partnerships | 47.999.376 | 0,654 | 2 |
| H2 | Internal competency development in research on | - Conduct training on research methodologies, data analysis techniques, and | Critical for informed decision-making and data-driven strategies by | - Improves research quality and data-driven decision-making capabilities | 16.222.212 | 0,654 | 3 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | additional ad-hoc request | reporting skills which can be led by internal experts or external trainers<br>- Set up regular review sessions (weekly) | clients needs, which related into research in gaining more profit | - Enhances accuracy and reliability of research outputs<br>- Strengthens internal skills for better data analysis and interpretation | | | |
| A1 | Internal training and capacity development in business case framework development | - Conduct training sessions on business strategy and framework development<br>- Conduct workshops to practice defining KPIs and strategic questions<br>- Set up regular review session (weekly) to ensure understanding and application | Directly influences for strategic planning and aligning with business objectives before decide to expand into another sector | - Strengthens strategic thinking and innovation<br>- Enhances ability to develop and implement business strategies<br>- Increases competitive edge in the market | 28.988.514 | 0,647 | 4 |
| D1 | Advanced analytical systems and tools in market research | - Integrate market analysis and project management software for efficient data collection and reporting (e.g Microsoft Project)<br>- Develop guidelines and templates<br>- Regularly evaluate and update tools and systems to ensure they meet business needs | Streamlines operations, improves efficiency, and ensures accurate data for decision-making | - Enhances efficiency and accuracy in data collection and reporting<br>- Supports better decision-making through reliable data<br>- Streamlines operations<br>- Reduces errors in manual work | 20.055.792 | 0,585 | 5 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| A2 | Collaborative processes and structures development in business case framework development | - Implement tools and platforms for project management and communication (ex. Microsoft project)<br>- Develop and apply standard procedures for defining objectives, measuring KPIs, and making strategic decisions<br>- Form cross-functional teams to collaboratively formulate and evaluate business case frameworks | Facilitates better collaboration and strategic alignment across the organisation effectively | - Promotes effective teamwork and aligned strategic decision-making<br>- Enhances communication and collaboration across departments<br>- Facilitates timely and well-informed decision-making | Rp 28.470.000 | 0,479 | 6 |
| C2 | Internal capability building in off taker analysis | - Conduct training on financial performance analysis, market potential analysis<br>- Conduct workshops on legal and regulatory evaluation<br>- Set up regular review meetings to discuss findings and improvements (weekly) | Necessary for compliance and financial health assessment | - Ensures informed financial and regulatory decisions<br>- Enhances compliance with legal and regulatory requirements<br>- Improves market potential analysis, leading to better business opportunities | 84.666.667 | 0,169 | 7 |
| H1 | Implement internal support systems in | - Integrate database for research management, data analysis, and report | Supports continuous improvement and | - Facilitates efficient management of | Rp 11.275.000 | 0,101 | 8 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | research on additional ad-hoc request | generation (e.g microsoft sharepoint)<br>- Develop standard procedures for managing ad-hoc request | efficient management of research processes | research tasks and ad-hoc requests<br>- Improves overall productivity<br>- Enhances research management through better tools and procedures | | | |
| E2 | Training and development in partnership shortlisting and outreach | - Conduct training for negotiation and communication skills, identifying and analysing potential partner needs<br>- Set up regular feedback and monitor performance metrics (weekly) | Important for critical interpersonal in successful wth external collaboration and partnerships | - Improves negotiation and communication skill<br>- Enhances ability to manage and mitigate risks<br>- Supports successful business interactions and conflict resolution | 26.535.000 | 0,044 | 9 |
| G1 | Training and competency development in pre-FS and FS execution | - Conduct training focused on market analysis, estimation , profitability analysis, and resource refinement<br>- Conduct workshops session on strategic decisions<br>- Assign employees to real projects with guidance from experienced mentors to | Ensures employees can apply their skills in real-world scenarios, enhancing their effectiveness | - Boosts practical application of skills<br>- Encourages professional certifications, leading to higher competency<br>- Enhances effectiveness and confidence in real-world scenarios | 184.250.000 | -0,076 | 10 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | | apply their skills practically (on-the-job training)<br>- Encourage obtaining relevant industry certifications (e.g. CGCP) | | | | | |
| B2 | Training and skill development in business case development | - Conduct relevant training (business analysis such as identify objective and opportunities, analyse and summarise findings, develop structure, present findings)<br>- Conduct workshops for problem solving and critical thinking, communication and stakeholder engagement, data interpretation)<br>- Set up regular feedback and monitor performance metrics (weekly) | Critical thinking and stakeholder workshops are valuable for strategic planning but can follow initial capability building | - Enhances problem-solving and stakeholder communication skills<br>- Supports more effective strategic planning and executionImproves ability to handle complex business challenges | 103.730.000 | -0,145 | 11 |
| C1 | Processes and control systems implementation | - Establish SOP for financial analysss, reputation evaluation, compliance | Financial analysis and risk management are important but rely | - Strengthens financial and risk management processes | 143.675.003 | -0,188 | 12 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | in off taker analysis | - Implement tools and software to help as database in selecting the potential off taker (e.g. CRM systems, BI, DBMS) | on foundational skills and systems being in place first | - Ensures better control and evaluation of business activities<br>- Enhances ability to manage and mitigate financial and reputational risks | | | |
| I1 | Training and capacity building in market and subsector assessment | - Conduct training on research techniques (methodologies,data collection, tools), strategic analysis (SWOT, PESTLE), and report writing<br>- On-the-job training<br>- Set up regular feedback and monitor performance based on KPI (weekly) | Improves performance over time through advanced research techniques and feedback mechanisms | - Enhances research capabilities and strategic analysis<br>- Leads to more effective performance tracking and improvement<br>- Strengthens ability to conduct thorough and accurate research | 93.681.667 | -0,213 | 13 |
| B1 | Process and tool development in business case development | - Conduct relevant training (business analysis such as identify objective and opportunities, analyse and summarise findings, develop structure, present findings)<br>- Conduct workshops for problem solving and critical thinking, | Critical thinking and stakeholder workshops are valuable for strategic planning but can follow initial capability building | - Enhances problem-solving and stakeholder communication skills<br>- Supports more effective strategic planning and executionImproves ability to handle complex business challenges | 21.115.000 | -0,523 | 14 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | | communication and stakeholder engagement, data interpretation)<br>- Set up regular feedback and monitor performance metrics (weekly) | | | | | |
| F1 | Process and tools in pitch deck and report development | - Develop a pitchdeck and report development guide for story lining, structuring, designing, visualising<br>- Implement tools graphic design software, data visualisation tools, and document management systems to support the creation and management of pitch decks and reports | Useful for producing high-quality presentations and reports but less critical initially | - Enhances quality and effectiveness of presentations and reports<br>- Supports business communications and proposals<br>- Improves ability to visually communicate business ideas and strategies | 45.163.335 | -0,592 | 15 |
| E1 | Decision support system in partnership shortlisting and outreach | - Develop a decision support system or software or database regarding potential partners for references. that fits the company's needs for criteria evaluation, partner analysis, negotiation | Ongoing tasks that can be addressed progressively, but less immediate impact compared to other actions | - Ensures continuous improvement and alignment in market research and strategic planning processes<br>- Supports standardized operational procedures<br>- Enhances cross-functional | 41.295.004 | -0,654 | 16 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | | guidance, and relationship management<br>- Create guideline and templates in chelicst the shortlisting and outreach potential partner | | collaboration and strategic alignment | | | |
| G2 | Decision support systems and analytical tools in pre-FS and FS execution | - Develop guidelines ( identify objectives and opportunities, analysing and summarizing findings, develop structure, presenting business case opportunities) and template for business case document<br>- Develop centralized repository (e.g Microsoft sharepoint)<br>- Tool integration (e.g power BI and google sheets) | Beneficial for organizing and standardizing processes but less critical than immediate training needs | - Standardizes processes and integrates tools<br>- Improves consistency and accessibility of information<br>- Enhances organisation and retrieval of important business data | Rp 14.282.501 | -0,789 | 17 |
| I1 | Progress integration and support systems in market and | - Integrate market analysis and project management software (Microsoft Project and Power BI) | Enhances strategic planning through better data management and decision support | - Supports informed strategic planning and data management<br>- Enhances ability to analyse and make strategic decisions | 16.086.667 | -0,798 | 18 |

| Code | Action Plan | Activity | Urgency | Impact | Cost (Rp) | Net Flow | Rank |
|---|---|---|---|---|---|---|---|
| | subsector assessment | - Develop guideline and template in data collecting, identify and analysing, strategic-making recommendation<br>- Set up regular evaluate performance metrics | systems, but can be prioritized later | - Improves organisation and accessibility of important business documents | | | |

It is observed that the action plan possessing the highest net value is positioned first in the sequence, followed by the second action plan in the subsequent position, and so on. Consequently, the validity of the sequence weight is contingent upon its support by the reasoning for each criterion, which was gathered through brainstorming sessions with the experts, such as Division Head of TMO and Consultans Leader, which are shown in Table 5.1 above. The transition activities for the green chemicals and green energy sectors focus on enhancing internal capabilities and improving strategic decision-making. Key initiatives include internal training and capacity building in market research, business case framework development, and pitch deck and report development. These activities aim to establish strong foundational skills, enhance the ability to attract investors and partners, and improve data analysis and reporting. The urgency of these activities varies, with market research and pitch deck development being particularly crucial for strategic planning and business growth. The costs associated with these initiatives range from Rp 11.000.000,00 to Rp 180.000.000,00, reflecting the investment needed to develop internal expertise, reduce dependency on external consultants, and implement advanced analytical tools and systems. These efforts are designed to strengthen the company's competitive edge, improve operational efficiency, and support informed decision-making processes.

After the innovative solution was generated in ideate stage and sequence of action plan using MCDM method, it is followed by prototype stage where the ideas are transformed into tangible representation of the desired solution (Hajar et al., 2024). At this prototype, those action plan are transformed into a gantt chart that will be evaluate in test stage by two experts, such as Division Head of TMO and

Consultants Leader through interview. The gantt chart outlines specific tasks and activities, sequenced determined by AHP and PROMETHEE. The visual representation helps to clarify the timeline and resource allocation needed to implement the solution are shown in Figure 4.15. This detailed visualisation method, through its representation of schedules and progress of activities, plays a fundamental role in the success of complicated activity. The gantt chart under discussion, spanning from the first quarter of 2023 to the third quarter of 2025, meticulously outlines each activity involved in prototyping. It does so by listing these activities in rows, providing essential information such as sequential numbers, activity names, durations, start dates, and end dates. The chart employs horizontal bars to represent the duration of each activity against a timeline segmented into quarters and months, offering a visual portrayal of start and end times. This visualisation highlights overlaps and dependencies among activities, encapsulating the dynamic nature of project management.

This feature not only aids in human resource allocation, ensuring a balanced workload among team members but also supports meticulous budgeting and financial planning. By keeping the project within its financial constraints, the chart helps in maintaining the economic feasibility of sustainable business transformation efforts. During the prototyping stage, where the creation of tangible representations of ideas to explore solutions and gather feedback is critical, the significance of such a planning tool cannot be overstated. The gantt chart facilitates the detailed outlining of activities ranging from research and planning to concept development, material selection, prototype construction, testing, and gathering feedback. Specific start and end dates attached to each activity ensure that team members are precisely informed about when each task needs initiation and completion.

One of the most noteworthy features of the gantt chart is its ability to provide a visual overview of activity durations and dependencies. This not only aids in managing the iterative and often complex process of prototyping but also enhances efficiency by identifying concurrent activities and ensuring logical sequencing of action plan activity. The visualisation of overlapping bars, for instance, allows team members to understand time and resource interdependencies more clearly, which can lead to more efficient utilisation of both. In essence, the gantt chart stands out as an essential component in the planning, coordination, and tracking of specific project tasks within the realm of sustainable business transformation. By offering a structured and visual approach to project management, it significantly contributes to ensuring that the prototyping stage of the design thinking process is navigated smoothly. This not only

aids in the development of refined prototypes for further testing and improvement but also underpins the successful execution of complex projects, driving the overall success of sustainable business transformation initiatives.

### 5.4 The Feedback and Reactions Analysis

After the gantt chart in prototype stage has been develop, it is followed by testing stage where the prototype will tested directly by real users to evaluate whether the prototype solve the experts needs (Ilyas et al., 2024). At this stage, is crucial to get valuable feedback from users to ensure that the strategic plan, which action plan represent as gantt chart is already meets the both users's needs and expectations. It allows the researcher to identify potential issues and provide opportunities to develop potential imrpovements (Hajar et al., 2024). In the progression toward refining strategic planning tools within the organisation, the testing phase emerged as a pivotal juncture, following the developmental strides made during the prototype stage. This critical phase was meticulously designed to subject the prototypes to a rigorous evaluation process across diverse conditions. This was not merely a procedural necessity but a concerted effort to distill a granular understanding of the prototypes' performance in scenarios that closely mirror real-world complexity. The objective was to transcend theoretical robustness, aspiring for a tool that demonstrates tangible efficacy in practical deployment.

Significantly, the enhancement of the gantt chart for strategic planning purposes marked a notable milestone within this phase. The iterative development was further enriched through an inclusive feedback mechanism, pivotal to which were the insights from two domain experts during the interview sessions that were part of the research methodology. Their expertise illuminated several dimensions of the gantt chart's utility and areas for enhancement, serving as a beacon for subsequent iterations. Notably, the Division Head of the TMO underscored the gantt chart's alignment with the requirements of managing strategic plan implementation efficiently. The endorsement was not generic but anchored in the recognition of the gantt chart's potential to foster structured execution of strategies. Moreover, the emphasis on incorporating flexibility within the gantt chart was a salient advice from Division Head of the TMO. The suggestion to weave in consultant feedback iteratively during the testing phase was anticipated to amplify the gantt chart's relevance and efficacy significantly. Furthermore, Division Head of the TMO's recommendation for the active involvement of the change management specialist in the execution phases underscored a proactive approach to adopting the tool. The advocacy for

regular updates and the seamless integration of the gantt chart into existing project management practices was projected to transcend its utility from a mere task to a strategic asset.

SA, the Consultant Leader, brought to light another perspective by lauding the comprehensive nature of the gantt chart. However, the constructive critique about the need for clearer timelines and the introduction of additional metrics pointed towards enhancing the strategic tool's accountability and focus dimensions. The recommendation to incorporate a dedicated section for risk management was indicative of the foresightedness required in planning. Furthermore, the alert on potential budget underestimations called for a cautious approach to financial planning, suggesting adjustments in alignment with evolving project requirements. A consensus among the experts highlighted the indispensable value of embedding feedback loops and adaptive strategies within the strategic planning process. This was not just about ensuring the tool's continuous improvement but about embracing a culture of agility and responsiveness to change.

The discussions paved the way for a reflective chapter that not only delves into the testing phase’s outcomes but also encapsulates a comprehensive analysis of expert feedback, projecting pathways for the gantt chart’s evolution. This comprehensive discourse aims not only to chronicle the journey thus far but also to forge a roadmap for embedding strategic agility through tools that are robust, adaptive, and intrinsically aligned with organisational growth trajectories.

# CHAPTER VI
# CONCLUSION AND SUGGESTION

## 6.1 Conclusion

Based on the research conducted through data collection and analysis, the following conclusions were reached:

1. Transition activities between consultants and employees in sustainable business transformation within an EPC Company revealed several differences, including defining objectives, key questions, strategic decisions, KPI metrics, establishing framework, and collaboration across functions for business case framework development; identifying objectives and opportunities, analysing and summarising findings, developing a structure, and presenting business case opportunities to stakeholders; conducting financial performance analysis, evaluating reputation and compliance, analysing market potential, and evaluating legal regulations for off taker analysis; defining potential markets, making strategic decisions, managing time and resources, and engaging stakeholders for market research; defining and evaluating criteria, identifying, analysing, negotiating, and maintaining good relationship with potential partners; create storyline, structuring, designing, visualising, reviewing, refining pitch decks and reports development; estimating profit, analysing profitability, refining resources, conducting market analysis, and making strategic decisions; framing research questions and research scope, gathering and analysing data, and reporting for ad-hoc requests; collecting, identifying, analysing, and making strategic recommendation for market and subsector research.

2. Several factors were identified as contributing to these differences, including lack of expertise, experience, knowledge, training, understanding, resistance to change, knowledge gaps, poor analytical skills, feel restricted, low confidence, employee turnover in the people category; lack of standardisation, frameworks, unclear and inefficient processes, poor communication, poor transfer knowledge, unclear criteria in the process category; inadequate tools, resource constraints, lack of access to data and information, outdated tools, poor integration, insufficient budget, innacurate data and information in the resource category; lack of support, confidence, motivation, accountability, dependence on consultants, unclear expectations, less opportunities, inadequate allocation, poor collaboration, unrealistic timeline in the management category.

3. The EPC Company's solutions involved a detailed action plan and activities, which were outlined in a gantt chart to outline specific timelines, resource allocation, and budget. The period from Q4 2023 to Q3 2023 had a total estimated cost of Rp 930.186.916,00. The following are the action plan sequence:
    - Internal training and capacity building in market research
    - Training and skill development program in pitch deck development and report development
    - Internal competency development in research on additional ad-hoc request
    - Internal training and capacity development in business case framework development
    - Advanced analytical systems and tools in market research
    - Collaborative processes and structures development in business case framework development
    - Internal capability building in off taker analysis
    - Implement internal support systems in research on additional ad-hoc request
    - Training and development in partnership shortlisting and outreach
    - Training and competency development in pre-FS and FS execution
    - Training and skill development in business case development
    - Processes and control systems implementation in off taker analysis
    - Training and capacity building in market and subsector assessment
    - Process and tool development in business case development
    - Process and tool development in business case development
    - Decision support system in partnership shortlisting and outreach
    - Decision support systems and analytical tools in pre-FS and FS execution
    - Progress integration and support systems in market and subsector assessment

4. The gantt chart was positively received by the experts, who endorsed its suitability for managing strategic plan implementation. Constructive feedback was provided, emphasising the need for flexibility, clearer timelines, additional risk management, success metrics, and regular updates for continuous improvement throughout the strategic planning process.

## 6.2 Suggestion

The suggestions obtained from the results of this study for further research are as follows:

1. For further research

   Further research should be conducted to evaluate the long-term impact of the action plan on transition activities between consultants and employees. This would involve monitoring the implementation of the action plan over time and, additionally, exploring the long-term effects of design thinking on sustainable business transformation within various industries undergoing significant transitions, which could provide valuable insights. This research could focus on how design thinking influences organisational culture, innovation capabilities, and financial performance. Studying the challenges and barriers faced by companies when implementing design thinking in the context of sustainability would also be beneficial. Ultimately, this research can contribute to a better understanding of best practices and offer guidance for companies looking to utilise design thinking for sustainable growth.

2. For the company

   Ongoing monitoring and evaluaton of the implemented action plan are advisable to ensure it addresses the identified root causes effectively. Adjustments should be made based on feedback and performance metrics. Also, fostering a culture of ongoing learning and development within the organisation can help address the factors contributing to differences in transition activities. Additionally, the company could benefit from learning best practices and strategies from similar industries or organisations that have successfully managed transitions between consultants and employees. Comparing the company's transition activities with industry standards through benchmarking studies could also provide opportunities for improvement and refinement.

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# APPENDIX

## A. Transcription Interview in the Empathize

### A-1 Interview Result Expert 1

Interviewee (initial): APA

Position: Division Head of Transformation Management Office

Day / Date: Monday / 04th Sep 2023

Time / Location: 10 AM / Head Office of EPC Company

Interviewer : "Good morning, Mbak. I really appreciate you carving out time for this interview."

APA : "Good morning! It's my pleasure, Nad. I'm genuinely excited about our interview today."

Interviewer : “Let's dive right in. Could you share your thoughts on why sustainability is particularly important for an Engineering, Procurement, and Construction company?"

APA : "Absolutely. You see, sustainability is critical for companies in our industry for several reasons. At its heart, it's about ensuring we can meet our current needs without compromising the ability of future generations to meet theirs. For an EPC Company, this means integrating sustainable practices right from the planning and design stages through to the construction and eventual maintenance of projects."

Interviewer : "That makes a lot of sense."

APA : "Exactly. I think sustainability is more than just a trendy term. It's really crucial for the longevity and resilience of any EPC company these days. Absolutely, it's about being economically savvy too. If we embed sustainable practices into our operations, we're not just being eco-friendly. We're also using resources more efficiently, cutting down costs in the process. Plus, it minimally impacts the environment. That makes sense. And with how environmentally conscious everyone is becoming, from clients to stakeholders, it really pays off to show we're dedicated to being sustainable. It boosts our reputation and sets us apart in the market. Right, and don't forget the regulations. They're getting tighter, making sustainability a necessity, not just something nice to have. It's also

about taking corporate responsibility seriously and facing up to global challenges like climate change and resource depletion. We're contributing positively both to society and the planet. So, it's a win on all fronts. It aligns with ethical business practices and market demands, all while making sure we're set up for success in the long run."

Interviewer : "That's a compelling overview, mba. Can you talk a bit about how our company is specifically actioning these sustainable practices?"

APA : "So, we've made a bold commitment to achieving net zero emissions by 2060 or sooner. Given we're an EPC Company, our game plan involves rolling out engineering solutions that are not just innovative but also sustainable. This pivot towards a sustainable future means we're doubling down on transforming our business in ways that fully embrace environmental sustainability. Since September 2022, we've kicked off this transformation with a significant investment, and we're talking up to 10 million Indonesian Rupiah. Our goal isn't just about reducing our environmental footprint; we're also aiming to boost our long-term profitability and stand out in the competitive landscape. To steer this massive change, we've put together a dedicated team under the Transformation Management Office (TMO), and guess what? I've been trusted to lead this charge thanks to my diverse experience in driving transformations. This journey towards greener practices is pretty new territory for us and, honestly, for me as well. That's why we're bringing in the big guns, professional consultants from the Big3 Consulting Firm. They're not just involved; they're diving deep into every phase of our transformation to ensure our success. So, that's the scoop. It's a huge leap for us, but with the right expertise and a solid strategy, we're all set to make a meaningful impact. What do you think?"

Interviewer : "It really sounds like our company is taking impressive steps towards sustainability. I noticed that you mentioned a collaboration with one of the Big3 Consulting Firms. Mba, could you shed some light on why the company decided to bring in consultants and how they are playing a role in this transformation?"

APA : "Oh, absolutely, it felt like a strategic chess move for us. Getting those Big3 consultants on board was all about propelling our company towards the green

business domain. We realized we were sort of flying blind in that area. We needed that in-depth, expert guidance on sustainability, and who better than the cream of the crop, right? Their role in this whole transformation has been nothing short of pivotal."

Interviewer : "That's fascinating. It seems like their expertise was exactly what your company needed at the time. Could you share a bit more about how their guidance specifically influenced your company's approach towards sustainability?"

APA : "Definitely. You know, stepping into the green business domain isn't just about reducing carbon footprints or implementing recycling programs. It's a holistic approach, requiring a shift in corporate culture, operations, and even the products or services offered. The Big3 consultants brought this wide-angle lens to our strategy. They helped us identify key areas where we could not only reduce environmental impact but also leverage sustainability as a competitive advantage."

Interviewer : "That sounds like a thorough transformation. How have these changes impacted our company so far?"

APA : "These consultants? They've got a solid grip on the global sustainability scene. It means they're not just comparing us to the guys next door but to standards and benchmarks worldwide. It's been a game-changer in understanding where we stand globally and figuring out what moves we need to make to lead in our sector. What's more, they've really been a catalyst in fostering a culture of innovation within our team. Motivating us to think outside the box and explore unconventional yet sustainable and economically viable solutions has breathed new life and perspectives into our efforts. Honestly, it's more than just a breath of fresh air. It's revitalized our team's spirit and made this sustainability journey an engaging and enriching experience for everyone. The strategic benefits have been noticeable, too. We've seen improvements in our strategic planning, stronger relationships with clients and partners, and even a boost in profitability. All these benefits tie back directly into our core work, smoothing out the rollout of our initiatives. They've helped us set clear objectives and align our resources to meet these goals effectively."

Interviewer : "It sounds like bringing the Big3 consultants on board was exactly the right move at the right time. Looking to the future, how do you see your company's role in the green business domain evolving?"

APA : "Our journey towards sustainability is ongoing, and there's always more to be done. The landscape of green business is constantly evolving, with new technologies, regulations, and consumer expectations. We see ourselves as pioneers in our industry, committed to continuous improvement and innovation in sustainability. With the foundation the Big3 consultants helped us build, we're well-equipped to adapt and evolve. Our aim is not just to be a participant in the green business domain but to lead by example, inspiring others to embark on their own sustainability journeys."

Interviewer : "Hearing about the company's comprehensive approach to sustainability is truly inspiring, especially considering the strong support from consultants. Mba, could you perhaps share more about how this sustainable transformation is actually being put into practice within the company?"

APA : "Of course! It's been quite the journey since we first embarked on our transformation. We laid it all out into six distinct phases to keep things organized and impactful. We kicked things off by developing the implementation plan back in the last quarter of 2022. As we moved into the first quarter of 2023, it was all hands on deck to get those priority initiatives up and running. The pace didn't slow down as we scaled up initiatives and started seeing real impact by the second quarter. Fast forward to now, we've been accelerating the realization of our efforts throughout the third quarter, and we've now reached the fourth quarter of 2023, where the main focus is on weaving these new initiatives and approaches seamlessly into our business as usual (BAU) processes. Honestly, having consultants guide us through each phase has been invaluable. They've been our navigators, helping ensure our transformation journey isn't just about change but about meaningful and sustainable improvements. And here we are in Q4, really focusing on making sure these changes are not just temporary projects but become ingrained in our everyday operations. It's exciting to think about how all these efforts will

continue to pay off starting from Q1 2024 when our improved BAU begins to truly showcase the strong impact of our journey.

Interviewer : "Wow, that's quite impressive, mba. How is the company planning to achieve its transformation objectives?"

APA : "So, our company is really stepping things up in terms of transformation. We've broken down the workload into eight major teams, known as Impact Centers, each focusing on specific aspects of internal and external initiatives."

Interviewer : "Internal and external initiatives? What does that mean?"

APA : "Right, so the external initiatives are all about scouting and capitalizing on new business opportunities to bring in fresh revenue streams. And then, we have the internal initiatives, which are more about enhancing the profitability and smooth running of our core business operations."

Interviewer : "Interesting. How are you guys managing all that?"

APA : "Well, three of these Impact Centers, those dealing with external initiatives, are directly managed by consultants. They have this specialized knowledge that's pivotal for growth and improving profitability. Their work is a game-changer, really pushing us toward market expansion and establishing ourselves as leaders in new business areas."

Interviewer : "That sounds pretty ambitious. Is there a particular area you're focused on?"

APA : "Absolutely. There's this special emphasis on IC 5, which is all about identifying and adopting the 'Right' business models and market segments. It's seen as key to driving our long-term growth. The strategy around this is pretty tight, aiming to not just evolve but also achieve specific objectives that put us at the forefront, especially in Indonesia's green sectors."

Interviewer : "Green sectors, you say?"

APA : "Yes, the whole green movement is where we're heading. Our focus is on expanding into green chemicals, like biofuel and green ammonia, and not to forget green energy sources, including bioenergy, biomass, and hydrogen power. It's not just about profits; it's also about contributing to a sustainable future and really making a mark in the industry with a strong competitive edge."

Interviewer : "Wow, that's impressive! It seems like a solid plan for transformation."

APA : "Definitely. It's an exciting time to be part of the company. The journey's challenging, but the impact we're aiming for could really set us apart."

Interviewer : "I'm really fascinated by the emphasis your company places on green chemicals and sustainable energy. It appears you have a comprehensive strategy for embedding sustainability across all business operations. Could you shed some light on the obstacles you've encountered while implementing this transformation?"

APA : "We've reached a really tricky phase. Now, we are currently in Q4 2023, it means the phase we are facing is internalise initiatives into BAU (Business as Usual). We should have the same level of ability like consultants, but in reality we have reached yet. Still far away to reach the same level with them. We were only focus on our expansion, we have not consider about the company ability. Meanwhile, our contracts with the consultants will soon expire, but it seems like our team isn't quite ready to take on their roles. There's no denying the consultants have specialized skills that really pushed us towards becoming a more green-focused business. Those transition activities in IC 5 do they manage? We're supposed to take over, but that's easier said than done. It's a tough spot. We need to ensure that the work continues smoothly between the consultants and us, but the difference in skill levels is pretty evident. It's causing a bunch of issues like inefficiency and delays in our transformation. And don't get me started on the internal challenges. There's a serious lack of clear communication and defined responsibilities. Plus, many of our team members aren't meeting the consultants' standards, not to mention the resistance to change. The resistance to change and our shaky strategies in managing these changes aren't helping at all. We really need to nail down improving communication, clarifying everyone's roles, and setting clear standards. It's the only way to smooth out this transition."

Interviewer : "Given the challenges that arise in the transition tasks, it is important to address the gap between your consultants and employees. What steps does the company expect to take to bridge the differences between consultants and employees during these transition phases to ensure a smooth, sustainable business transformation?"

APA : "Oh, absolutely. To tackle those challenges head-on, we're really looking at rolling out some creative solutions. You see, there's this difference in the transition activities that our consultants and employees are handling, and we need to bridge that. So, what we're thinking is, why not provide some focused training sessions, maybe even some knowledge-sharing meetups for our employees? This way, we're not just throwing them into the deep end. We're genuinely investing in their growth, making sure the transition is as smooth as peanut butter. It's all about leveraging what our consultants and employees do best to ensure our business transformation doesn't just succeed but does so sustainably."

Interviewer : "Well, it's been enlightening speaking with you today. Thank you for sharing your insights and plans with me, mbak."

APA : "Thank you for having me. It's been a pleasure discussing our journey and future prospects with you as well."

Interviewer : "Hopefully, my undergraduate thesis research can be used as a recommendation for the company."

APA : "Alright, that sounds fantastic. Your research could indeed offer valuable perspectives for us. I'm looking forward to seeing your recommendations."

**A-2 Interview Result Expert 2**

Interviewee (initial): SA

Position: Consultant Leader

Day / Date: Tuesday / 05th Sep 2023

Time / Location: 1 PM / Head Office of EPC Company

Interviewer : "Good afternoon! Thanks for making time to talk with me today. Let us kick things off, shall we? I'd love to hear more about your experience leading consulting projects."

SA : "Good afternoon! Thank you for having me too, Nadia. Absolutely, I'd be delighted to share my experiences in guiding consulting projects with you."

Interviewer : "That sounds great!"

SA : "Definitely. I've been involved in consulting for over a decade, focusing primarily on strategic planning and business transformation. I originally started in project management, which taught me the critical importance of understanding client needs and maintaining clear communication lines."

Interviewer : "How did that experience help you in consulting?"

SA : "It was invaluable. As I transitioned into more consulting-focused roles, that foundation in project management allowed me to lead cross-functional teams effectively. We developed and implemented solutions that aligned with our clients' strategic goals, which has been incredibly rewarding."

Interviewer : "What types of clients have you worked with?"

SA : "Oh, it's been quite varied. From tech startups to established corporations, including BUMN, multiple government ministries, and private companies. I've had the privilege of working across a diverse spectrum of industries, enriching my approach to problem-solving and project leadership."

Interviewer : "And how do you approach leading your teams?"

SA : "My role often entails guiding the project's direction while also taking time to mentor my team members. It's about fostering their skills and knowledge, ensuring we're not just achieving our immediate project goals but also growing as a team."

Interviewer : "Your diverse experience is genuinely impressive, and it adds significant value to each project you lead. Let us dive into the topic of strategy in the context of transformation. How would you describe your role as a consultant within the EPC Company?"

SA : "Absolutely, and thank you for recognizing the diversity of our experience. At the core of our role, it is essential first to understand where the business currently stands and then define clear objectives. Strategy development for us is not just about broad strokes. It dives deep into crafting detailed strategies that integrate innovative solutions with industry best practices."

Interviewer : "That sounds comprehensive. How do you approach engagement within this framework?"

SA : "We focus heavily on fostering teamwork not only within us and the company's employees but also in maintaining robust communication with our external

stakeholders. Part of our commitment is actively enhancing our capabilities and expanding our knowledge, especially around the green business sector. Staying updated with sustainability trends is critical for us."

Interviewer : "It sounds like monitoring and adaptation are big parts of your strategy. Could you expand on that?"

SA : "Indeed, they are. Monitoring our progress against the strategies we have set is fundamental. It encompasses ensuring we meet all governmental regulations and effectively managing risks. Another critical aspect is forecasting financial outcomes for the various markets we explore. This insight is crucial for strategic financial planning."

Interviewer : "And what about specific initiatives or projects? Are there areas you are particularly focused on?"

SA : "Yes, we are very much involved in various initiatives, but we place a particular emphasis on what we call transition activities. These projects are pivotal as they steer our strategy towards not just sustainability but also innovation. Our continuous process improvement and specialized expertise equip us well to guide the company toward achieving its objectives, enhancing efficiency, productivity, and, ultimately, our competitive edge in the green industry."

Interviewer : "You've said that the focused on in transition activities? I've heard from mba APA that consultants fully manage the transition activities, but you are about to leave soon, right?"

SA : "Absolutely, Nadia. You've hit the nail on the head. As consultants, we've been at the help of those transition activities, offering guidance and support and applying our expertise where it benefits employees the most. However, our time here is winding down and we'll be stepping away once our contracts conclude."

Interviewer : "I see. So, you're responsible for managing the transition activities. Who will take over the responsibility for managing these transition activities after you guys leave?"

SA : "The responsibility will be passed on to employees itself in this company. They need to take over all our responsibilities in transition activities, specifically

green sectors in green chemicals and green energy, to become the leading company in the green business of Indonesia."

Interviewer : "It does sound like there's a significant change on the way. As this time is coming up, do you believe the employees are ready to embrace the transition activities ahead?"

SA : "Not quite yet. Despite being in Q4 2023 already, it seems the company still requires guidance and support from us. They haven't fully mastered handling the consultant activities or what we refer to as transition activities."

Interviewer : "That sounds like a substantial challenge. They're supposed to take over the whole, yeah?"

SA : "Yes, exactly. We have challenges in taking over responsibilities due to the existing differences between us and our employees. They need to have similar skill levels to us as consultants. It's crucial that they understand the nuances of our processes and can handle the same responsibilities. We need people who not only have the technical know-how but also the ability to adapt to our specific way of working. It's about ensuring continuity and maintaining the quality of our outcomes from this sustainable business transformation. The transition between consultants and employees needs to be seamless, with minimal disruption to our operations and sustained focus on our strategic objectives.

Interviewer : “Why the company havent fully manage the consultant’s activities, since the consultant’s already here in Q4 2022. I thought it can be easier to make the transition seamlessly if we start the internalise in previous quarters?”

SA : “You’re right, Nadia. It was out big mistakes for thisn transformation. The company and consultants only focus on the expansion with our help from consultants, we conduct the research, approach partner, analyse information, create pitch deck and report. But the company just receive the result from us. We are as consultants have so many tools to access the market databse around the from that was supported by our consulting firm and it all paid tools. But the company has not enough budget to purchase the same tools as us. Also we have not conduct the pitch deck development training for employees due to the one who usually manage that activity is only the leader of TMO. And now we need

to hand over to them, we we need them to able to execute with themselves. That’s only for the example. Anyway, Nadia, have you noticed the rough patches we've been hitting with our transformation lately?”

Interviewer : "Yeah, definitely. It feels like we're constantly running into snags."

SA : "Well, it's all this friction between the consultants and employees. There's a clear difference in skill levels, and it's throwing a wrench into our transformation efforts. We're just not syncing up the way we should be."

Interviewer : "Oh, I see what you mean. Plus, there are those internal issues, too, right? Such as the lack of clear communication and really pinpointing everyone's roles are big hurdles for us. It's like we're all speaking different languages."

SA : "That's right. And don't forget how some of our team members just aren't meeting the consultants' standards. It's like pulling teeth to get everyone on the same page. Plus, this resistance to change isn't doing us any favours. Our strategies for managing change feel pretty shaky at best."

Interviewer : "So, what do you think we should do about all this?"

SA : "Honestly, I think we need to zero in on improving communication first. If we can start by making sure everyone knows what's expected of them and can speak the same language, so to speak, we might start to see some real progress."

Interviewer : "Makes sense. Clarifying roles would naturally follow, right?"

SA : "Exactly. And setting clear standards. It's the only way we'll be able to smooth out this transition and get everyone moving in the right direction. Nadia, you could potentially focus on directing this smooth transition for your undergraduate thesis, correct?"

Interviewer : "Certainly, it does seem like a compelling topic."

SA : "Agreed. We hope..."

Interviewer : "Thank you for sharing your insights with me today."

SA : "My pleasure, thank you for having me.”

# B. Analytical Hierarchy Process (AHP) Calculation

## B-1 Questionnaire of Criteria

| COMPARISON BETWEEN **CRITERIA** | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **No** | **Criteria** | **Scale** | | | | | | | | | | | | | | | | **Criteria** |
| 1 | Urgency | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Impact |
| 2 | Urgency | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cost |
| 3 | Impact | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Cost |

## B-2 Weighting and Consistency Test of Criteria

| WEIGHTING AND CONSISTENCY TEST OF **CRITERIA** | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 = 3/2 | 5 = Sum 4/Sum | 6 = (5 - Sum 1)/(Sum 1- 1) | 7 | 8 = 6/7 | |
| **Criteria** | **Urgency** | **Impact** | **Cost** | **Urgency** | **Impact** | **Cost** | **Total Weight** | **eugen vector** | **Multiplication Matrix** | **Eugen Value** | **λ max** | **CI** | **IR** | **CR** | **True or False** |
| Urgency | 1 | 3 | 5 | 0,6522 | 0,6923 | 0,5556 | 1,9000 | 0,633 | 1,9456 | 3,0720 | 3,0387 | 0,0194 | 0,5800 | 0,033 | **TRUE** |
| Impact | 1/3 | 1 | 3 | 0,2174 | 0,2308 | 0,3333 | 0,7815 | 0,260 | 0,7901 | 3,0330 | | | | | |
| Cost | 1/5 | 1/3 | 1 | 0,1304 | 0,0769 | 0,1111 | 0,3185 | 0,106 | 0,3197 | 3,0112 | | | | | |
| Total | 1,53333 | 4,3333 | 9 | 1,0000 | 1,0000 | 1,0000 | 3,0000 | 1,000 | 3,0554 | 9,1161 | | | | | |

# C. PROMETHEE Calculation

## C-1 The Value of Each Action Plan for Each Criterion

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (A1,A2) | x | 0 | 0 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (A1,B1) | x | 2 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (A1,B2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (A1,C1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,C2) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (A1,D1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (A1,D2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (A1,E1) | x | 2 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,E2) | x | 1 | 0 | -3 |
| | (P(x) | 1 | 0 | 0 |
| (A1,F1) | x | 2 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (A1,F2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (A1,G1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (A1,G2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,H1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (A1,H2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (A1,I1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A1,I2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (A2,A1) | x | 0 | 0 | -3 |
| | (P(x) | 0 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (A2,B1) | x | 2 | 1 | -3 |
| | (P(x) | 1 | 1 | 0 |
| (A2,B2) | x | 1 | 1 | -2 |
| | (P(x) | 1 | 1 | 0 |
| (A2,C1) | x | 1 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (A2,C2) | x | 1 | 0 | -3 |
| | (P(x) | 1 | 0 | 0 |
| (A2,D1) | x | 0 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (A2,D2) | x | 0 | 0 | -3 |
| | (P(x) | 0 | 0 | 0 |
| (A2,E1) | x | 2 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (A2,E2) | x | 1 | 0 | -1 |
| | (P(x) | 1 | 0 | 0 |
| (A2,F1) | x | 2 | 1 | -2 |
| | (P(x) | 1 | 1 | 0 |
| (A2,F2) | x | 0 | 0 | -3 |
| | (P(x) | 0 | 0 | 0 |
| (A2,G1) | x | 1 | 1 | -3 |
| | (P(x) | 1 | 1 | 0 |
| (A2,G2) | x | 2 | 2 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (A2,H1) | x | 1 | 0 | -2 |
| | (P(x) | 1 | 0 | 0 |
| (A2,H2) | x | 0 | 0 | -3 |
| | (P(x) | 0 | 0 | 0 |
| (A2,I1) | x | 1 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (A2,I2) | x | 2 | 2 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (B1, A1) | x | -2 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B1, A2) | x | -2 | -1 | 3 |
| | (P(x) | 0 | 0 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (B1, B2) | x | -1 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B1, C1) | x | -1 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (B1, C2) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B1, D1) | x | -2 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B1, D2) | x | -2 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B1, E1) | x | 0 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (B1, E2) | x | -1 | -1 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (B1, F1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B1, F2) | x | -2 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B1, G1) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B1, G2) | x | 0 | 1 | 2 |
| | (P(x) | 0 | 1 | 1 |
| (B1, H1) | x | -1 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B1, H2) | x | -2 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B1, I1) | x | -1 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (B1, I2) | x | 0 | 1 | 2 |
| | (P(x) | 0 | 1 | 1 |
| (B2, A1) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (B2, A2) | x | -1 | -1 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (B2, B1) | x | 1 | -1 | -1 |
| | (P(x) | 1 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (B2, C1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B2, C2) | x | 0 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (B2, D1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B2, D2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (B2, E1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (B2, E2) | x | 0 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B2, F1) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (B2, F2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (B2, G1) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (B2, G2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (B2, H1) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (B2, H2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (B2, I1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (B2, I2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (C1, A1) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (C1, A2) | x | -1 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (C1, B1) | x | 1 | 0 | -2 |
| | (P(x) | 1 | 0 | 0 |
| (C1, B2) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (C1, C2) | x | 0 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (C1, D1) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (C1, D2) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (C1, E1) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (C1, E2) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (C1, F1) | x | 1 | 0 | -1 |
| | (P(x) | 1 | 0 | 0 |
| (C1, F2) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (C1, G1) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (C1, G2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (C1, H1) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (C1, H2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (C1, I1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (C1, I2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (C2, A1) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (C2, A2) | x | -1 | 0 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (C2, B1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (C2, B2) | x | 0 | 1 | 1 |
| | (P(x) | 0 | 1 | 1 |
| (C2, C1) | x | 0 | 1 | 2 |
| | (P(x) | 0 | 1 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (C2, D1) | x | -1 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (C2, D2) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (C2, E1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (C2, E2) | x | 0 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (C2, F1) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (C2, F2) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (C2, G1) | x | 0 | 1 | 0 |
| | (P(x) | 0 | 1 | 0 |
| (C2, G2) | x | 1 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (C2, H1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (C2, H2) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (C2, I1) | x | 0 | 1 | 2 |
| | (P(x) | 0 | 1 | 1 |
| (C2, I2) | x | 1 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (D1, A1) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (D1, A2) | x | 0 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (D1, B1) | x | 2 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (D1, B2) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (D1, C1) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D1, C2) | x | 1 | 0 | -1 |
| | (P(x) | 1 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (D1, D2) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (D1, E1) | x | 2 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D1, E2) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (D1, F1) | x | 2 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (D1, F2) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (D1, G1) | x | 1 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (D1, G2) | x | 2 | 2 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D1, H1) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (D1, H2) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (D1, I1) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D1, I2) | x | 2 | 2 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D2, A1) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (D2, A2) | x | 0 | 0 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (D2, B1) | x | 2 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (D2, B2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D2, C1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (D2, C2) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (D2, D1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (D2, E1) | x | 2 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (D2, E2) | x | 1 | 0 | 2 |
| | (P(x) | 1 | 0 | 1 |
| (D2, F1) | x | 2 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (D2, F2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (D2, G1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (D2, G2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (D2, H1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (D2, H2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (D2, I1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (D2, I2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (E1, A1) | x | -2 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E1, A2) | x | -2 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (E1, B1) | x | 0 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E1, B2) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (E1, C1) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (E1, C2) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E1, D1) | x | -2 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (E1, D2) | x | -2 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (E1, E2) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (E1, F1) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (E1, F2) | x | -2 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E1, G1) | x | -1 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E1, G2) | x | 0 | 1 | 0 |
| | (P(x) | 0 | 1 | 0 |
| (E1, H1) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (E1, H2) | x | -2 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E1, I1) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (E1, I2) | x | 0 | 1 | 0 |
| | (P(x) | 0 | 1 | 0 |
| (E2, A1) | x | -1 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E2, A2) | x | -1 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (E2, B1) | x | 1 | 1 | -2 |
| | (P(x) | 1 | 1 | 0 |
| (E2, B2) | x | 0 | 1 | -1 |
| | (P(x) | 0 | 1 | 0 |
| (E2, C1) | x | 0 | 1 | 0 |
| | (P(x) | 0 | 1 | 0 |
| (E2, C2) | x | 0 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E2, D1) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (E2, D2) | x | -1 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E2, E1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (E2, F1) | x | 1 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (E2, F2) | x | -1 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E2, G1) | x | 0 | 1 | -2 |
| | (P(x) | 0 | 1 | 0 |
| (E2, G2) | x | 1 | 2 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (E2, H1) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (E2, H2) | x | -1 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (E2, I1) | x | 0 | 1 | 0 |
| | (P(x) | 0 | 1 | 0 |
| (E2, I2) | x | 1 | 2 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (F1, A1) | x | -2 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, A2) | x | -2 | -1 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (F1, B1) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, B2) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (F1, C1) | x | -1 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (F1, C2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, D1) | x | -2 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (F1, D2) | x | -2 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, E1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (F1, E2) | x | -1 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (F1, F2) | x | -2 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, G1) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, G2) | x | 0 | 1 | 1 |
| | (P(x) | 0 | 1 | 1 |
| (F1, H1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (F1, H2) | x | -2 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (F1, I1) | x | -1 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (F1, I2) | x | 0 | 1 | 1 |
| | (P(x) | 0 | 1 | 1 |
| (F2, A1) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (F2, A2) | x | 0 | 0 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (F2, B2) | x | 2 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (F2, B2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (F2, C1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (F2, C2) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (F2, D1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (F2, D2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (F2, E1) | x | 2 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (F2, E2) | x | 1 | 0 | 2 |
| | (P(x) | 1 | 0 | 1 |
| (F2, F1) | x | 2 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (F2, G1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (F2, G2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (F2, H1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (F2, H2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (F2, I1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (F2, I2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (G1, A1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G1, A2) | x | -1 | -1 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (G1, B1) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (G1, B2) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (G1, C1) | x | 0 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (G1, C2) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G1, D1) | x | -1 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (G1, D2) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G1, E1) | x | 1 | 0 | 2 |
| | (P(x) | 1 | 0 | 1 |
| (G1, E2) | x | 0 | -1 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (G1, F1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |
| (G1, F2) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (G1, G2) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (G1, H1) | x | 0 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (G1, H2) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G1, I1) | x | 0 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (G1, I2) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (G2, A1) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (G2, A2) | x | -2 | -2 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (G2, B1) | x | 0 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (G2, B2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (G2, C1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G2, C2) | x | -1 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (G2, D1) | x | -2 | -2 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (G2, D2) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (G2, E1) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G2, E2) | x | -1 | -2 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G2, F1) | x | 0 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (G2, F2) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (G2, G1) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (G2, H1) | x | -1 | -2 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (G2, H2) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (G2, I1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (G2, I2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (H1, A1) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (H1, A2) | x | -1 | 0 | 2 |
| | (P(x) | 0 | 0 | 1 |
| (H1, B1) | x | 1 | 1 | -1 |
| | (P(x) | 1 | 1 | 0 |
| (H1, B2) | x | 0 | 1 | 0 |
| | (P(x) | 0 | 1 | 0 |
| (H1, C1) | x | 0 | 1 | 1 |
| | (P(x) | 0 | 1 | 1 |
| (H1, C2) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (H1, D1) | x | -1 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (H1, D2) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (H1, E1) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (H1, E2) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (H1, F1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (H1, F2) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (H1, G1) | x | 0 | 1 | -1 |
| | (P(x) | 0 | 1 | 0 |
| (H1, G2) | x | 1 | 2 | 1 |
| | (P(x) | 1 | 1 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (H1, H2) | x | -1 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (H1, I1) | x | 0 | 1 | 1 |
| | (P(x) | 0 | 1 | 1 |
| (H1, I2) | x | 1 | 2 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (H2, A1) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (H2, A2) | x | 0 | 0 | 3 |
| | (P(x) | 0 | 0 | 1 |
| (H2, B1) | x | 2 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (H2, B2) | x | 1 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (H2, C1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (H2, C2) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (H2, D1) | x | 0 | 0 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (H2, D2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (H2, E1) | x | 2 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (H2, E2) | x | 1 | 0 | 2 |
| | (P(x) | 1 | 0 | 1 |
| (H2, F1) | x | 2 | 1 | 1 |
| | (P(x) | 1 | 1 | 1 |
| (H2, F2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (H2, G1) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (H2, G2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (H2, H1) | x | 1 | 0 | 1 |
| | (P(x) | 1 | 0 | 1 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (H2, I1) | x | 1 | 1 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (H2, I2) | x | 2 | 2 | 2 |
| | (P(x) | 1 | 1 | 1 |
| (I1, A1) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I1, A2) | x | -1 | -1 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (I1, B1) | x | 1 | 0 | -2 |
| | (P(x) | 1 | 0 | 0 |
| (I1, B2) | x | 0 | 0 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I1, C1) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (I1, C2) | x | 0 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I1, D1) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I1, D2) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I1, E1) | x | 1 | 0 | 0 |
| | (P(x) | 1 | 0 | 0 |
| (I1, E2) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (I1, F1) | x | 1 | 0 | -1 |
| | (P(x) | 1 | 0 | 0 |
| (I1, F2) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I1, G1) | x | 0 | 0 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I1, G2) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (I1, H1) | x | 0 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I1, H2) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |

| Action Plan | | Criterion | | |
|---|---|---|---|---|
| | | C1 | C2 | C3 |
| (I1, I2) | x | 1 | 1 | 0 |
| | (P(x) | 1 | 1 | 0 |
| (I2, A1) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, A2) | x | -2 | -2 | 1 |
| | (P(x) | 0 | 0 | 1 |
| (I2, B1) | x | 0 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, B2) | x | -1 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I2, C1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (I2, C2) | x | -1 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, D1) | x | -2 | -2 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I2, D2) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, E1) | x | 0 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (I2, E2) | x | -1 | -2 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (I2, F1) | x | 0 | -1 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I2, F2) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, G1) | x | -1 | -1 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, G2) | x | 0 | 0 | 0 |
| | (P(x) | 0 | 0 | 0 |
| (I2, H1) | x | -1 | -2 | -1 |
| | (P(x) | 0 | 0 | 0 |
| (I2, H2) | x | -2 | -2 | -2 |
| | (P(x) | 0 | 0 | 0 |
| (I2, I1) | x | -1 | -1 | 0 |
| | (P(x) | 0 | 0 | 0 |

## C-2 Calculation of Criteria Preference Values

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (A1,A2) | 0 | 0 | 0,106 | 0,106 |
| (A1, B1) | 0,633 | 0,2605 | 0 | 0,894 |
| (A1, B2) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A1, C1) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A1, C2) | 0,633 | 0 | 0 | 0,633 |
| (A1, D1) | 0 | 0 | 0,106 | 0,106 |
| (A1, D2) | 0 | 0 | 0 | 0,000 |
| (A1, E1) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A1, E2) | 0,633 | 0 | 0 | 0,633 |
| (A1, F1) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A1, F2) | 0 | 0 | 0 | 0,000 |
| (A1, G1) | 0,633 | 0,2605 | 0 | 0,894 |
| (A1, G2) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A1, H1) | 0,633 | 0 | 0,106 | 0,740 |
| (A1, H2) | 0 | 0 | 0 | 0,000 |
| (A1, I1) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A1, I2) | 0,633 | 0,2605 | 0,106 | 1,000 |
| (A2, A1) | 0 | 0 | 0 | 0,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (A2, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, B2) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, C1) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, C2) | 0,633 | 0 | 0 | 0,633 |
| (A2, D1) | 0 | 0 | 0 | 0,000 |
| (A2, D2) | 0 | 0 | 0 | 0,000 |
| (A2, E1) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, E2) | 0,633 | 0 | 0 | 0,633 |
| (A2, F1) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, F2) | 0 | 0 | 0 | 0,000 |
| (A2, G1) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, G2) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, H1) | 0,633 | 0 | 0 | 0,633 |
| (A2, H2) | 0 | 0 | 0 | 0,000 |
| (A2, I1) | 0,633 | 0,260 | 0 | 0,894 |
| (A2, I2) | 0,633 | 0,260 | 0 | 0,894 |
| (B1, A1) | 0 | 0 | 0 | 0,000 |
| (B1, A2) | 0 | 0 | 0,106 | 0,106 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (B1, B2) | 0 | 0 | 0,106 | 0,106 |
| (B1, C1) | 0 | 0 | 0,106 | 0,106 |
| (B1, C2) | 0 | 0 | 0 | 0,000 |
| (B1, D1) | 0 | 0 | 0,106 | 0,106 |
| (B1, D2) | 0 | 0 | 0 | 0,000 |
| (B1, E1) | 0 | 0 | 0,106 | 0,106 |
| (B1, E2) | 0 | 0 | 0,106 | 0,106 |
| (B1, F1) | 0 | 0 | 0,106 | 0,106 |
| (B1, F2) | 0 | 0 | 0 | 0,000 |
| (B1, G1) | 0 | 0 | 0 | 0,000 |
| (B1, G2) | 0 | 0,260 | 0,106 | 0,367 |
| (B1, H1) | 0 | 0 | 0,106 | 0,106 |
| (B1, H2) | 0 | 0 | 0 | 0,000 |
| (B1, I1) | 0 | 0 | 0,106 | 0,106 |
| (B1, I2) | 0 | 0,260 | 0,106 | 0,367 |
| (B2, A1) | 0 | 0 | 0 | 0,000 |
| (B2, A2) | 0 | 0 | 0,106 | 0,106 |
| (B2, B1) | 0,633 | 0 | 0 | 0,633 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (B2, C1) | 0 | 0 | 0,106 | 0,106 |
| (B2, C2) | 0 | 0 | 0 | 0,000 |
| (B2, D1) | 0 | 0 | 0 | 0,000 |
| (B2, D2) | 0 | 0 | 0 | 0,000 |
| (B2, E1) | 0,633 | 0 | 0,106 | 0,740 |
| (B2, E2) | 0 | 0 | 0,106 | 0,106 |
| (B2, F1) | 0,633 | 0 | 0 | 0,633 |
| (B2, F2) | 0 | 0 | 0 | 0,000 |
| (B2, G1) | 0 | 0 | 0 | 0,000 |
| (B2, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (B2, H1) | 0 | 0 | 0 | 0,000 |
| (B2, H2) | 0 | 0 | 0 | 0,000 |
| (B2, I1) | 0 | 0 | 0,106 | 0,106 |
| (B2, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (C1, A1) | 0 | 0 | 0 | 0,000 |
| (C1, A2) | 0 | 0 | 0,106 | 0,106 |
| (C1, B1) | 0,633 | 0 | 0 | 0,633 |
| (C1, B2) | 0 | 0 | 0 | 0,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (C1, C2) | 0 | 0 | 0 | 0,000 |
| (C1, D1) | 0 | 0 | 0 | 0,000 |
| (C1, D2) | 0 | 0 | 0 | 0,000 |
| (C1, E1) | 0,633 | 0 | 0 | 0,633 |
| (C1, E2) | 0 | 0 | 0 | 0,000 |
| (C1, F1) | 0,633 | 0 | 0 | 0,633 |
| (C1, F2) | 0 | 0 | 0 | 0,000 |
| (C1, G1) | 0 | 0 | 0 | 0,000 |
| (C1, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (C1, H1) | 0 | 0 | 0 | 0,000 |
| (C1, H2) | 0 | 0 | 0 | 0,000 |
| (C1, I1) | 0 | 0 | 0,106 | 0,106 |
| (C1, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (C2, A1) | 0 | 0 | 0 | 0,000 |
| (C2, A2) | 0 | 0 | 0,106 | 0,106 |
| (C2, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (C2, B2) | 0 | 0,260 | 0,106 | 0,367 |
| (C2, C1) | 0 | 0,260 | 0,106 | 0,367 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (C2, D1) | 0 | 0 | 0,106 | 0,106 |
| (C2, D2) | 0 | 0 | 0 | 0,000 |
| (C2, E1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (C2, E2) | 0 | 0 | 0,106 | 0,106 |
| (C2, F1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (C2, F2) | 0 | 0 | 0 | 0,000 |
| (C2, G1) | 0 | 0,260 | 0 | 0,260 |
| (C2, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (C2, H1) | 0 | 0 | 0,106 | 0,106 |
| (C2, H2) | 0 | 0 | 0 | 0,000 |
| (C2, I1) | 0 | 0,260 | 0,106 | 0,367 |
| (C2, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D1, A1) | 0 | 0 | 0 | 0,000 |
| (D1, A2) | 0 | 0 | 0,106 | 0,106 |
| (D1, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (D1, B2) | 0,633 | 0,260 | 0 | 0,894 |
| (D1, C1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D1, C2) | 0,633 | 0 | 0 | 0,633 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (D1, D2) | 0 | 0 | 0 | 0,000 |
| (D1, E1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D1, E2) | 0,633 | 0 | 0,106 | 0,740 |
| (D1, F1) | 0,633 | 0,260 | 0 | 0,894 |
| (D1, F2) | 0 | 0 | 0 | 0,000 |
| (D1, G1) | 0,633 | 0,260 | 0 | 0,894 |
| (D1, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D1, H1) | 0,633 | 0 | 0 | 0,633 |
| (D1, H2) | 0 | 0 | 0 | 0,000 |
| (D1, I1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D1, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, A1) | 0 | 0 | 0 | 0,000 |
| (D2, A2) | 0 | 0 | 0,106 | 0,106 |
| (D2, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (D2, B2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, C1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, C2) | 0,633 | 0 | 0 | 0,633 |
| (D2, D1) | 0 | 0 | 0,106 | 0,106 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (D2, E1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, E2) | 0,633 | 0 | 0,106 | 0,740 |
| (D2, F1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, F2) | 0 | 0 | 0 | 0,000 |
| (D2, G1) | 0,633 | 0,260 | 0 | 0,894 |
| (D2, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, H1) | 0,633 | 0 | 0,106 | 0,740 |
| (D2, H2) | 0 | 0 | 0 | 0,000 |
| (D2, I1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (D2, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (E1, A1) | 0 | 0 | 0 | 0,000 |
| (E1, A2) | 0 | 0 | 0,106 | 0,106 |
| (E1, B1) | 0 | 0 | 0 | 0,000 |
| (E1, B2) | 0 | 0 | 0 | 0,000 |
| (E1, C1) | 0 | 0 | 0 | 0,000 |
| (E1, C2) | 0 | 0 | 0 | 0,000 |
| (E1, D1) | 0 | 0 | 0 | 0,000 |
| (E1, D2) | 0 | 0 | 0 | 0,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (E1, E2) | 0 | 0 | 0 | 0,000 |
| (E1, F1) | 0 | 0 | 0 | 0,000 |
| (E1, F2) | 0 | 0 | 0 | 0,000 |
| (E1, G1) | 0 | 0 | 0 | 0,000 |
| (E1, G2) | 0 | 0,260 | 0 | 0,260 |
| (E1, H1) | 0 | 0 | 0 | 0,000 |
| (E1, H2) | 0 | 0 | 0 | 0,000 |
| (E1, I1) | 0 | 0 | 0 | 0,000 |
| (E1, I2) | 0 | 0,260 | 0 | 0,260 |
| (E2, A1) | 0 | 0 | 0 | 0,000 |
| (E2, A2) | 0 | 0 | 0,106 | 0,106 |
| (E2, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (E2, B2) | 0 | 0,260 | 0 | 0,260 |
| (E2, C1) | 0 | 0,260 | 0 | 0,260 |
| (E2, C2) | 0 | 0 | 0 | 0,000 |
| (E2, D1) | 0 | 0 | 0 | 0,000 |
| (E2, D2) | 0 | 0 | 0 | 0,000 |
| (E2, E1) | 0,633 | 0,260 | 0 | 0,894 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (E2, F1) | 0,633 | 0,260 | 0 | 0,894 |
| (E2, F2) | 0 | 0 | 0 | 0,000 |
| (E2, G1) | 0 | 0,260 | 0 | 0,260 |
| (E2, G2) | 0,633 | 0,260 | 0 | 0,894 |
| (E2, H1) | 0 | 0 | 0 | 0,000 |
| (E2, H2) | 0 | 0 | 0 | 0,000 |
| (E2, I1) | 0 | 0,260 | 0 | 0,260 |
| (E2, I2) | 0,633 | 0,260 | 0 | 0,894 |
| (F1, A1) | 0 | 0 | 0 | 0,000 |
| (F1, A2) | 0 | 0 | 0,106 | 0,106 |
| (F1, B1) | 0 | 0 | 0 | 0,000 |
| (F1, B2) | 0 | 0 | 0 | 0,000 |
| (F1, C1) | 0 | 0 | 0,106 | 0,106 |
| (F1, C2) | 0 | 0 | 0 | 0,000 |
| (F1, D1) | 0 | 0 | 0 | 0,000 |
| (F1, D2) | 0 | 0 | 0 | 0,000 |
| (F1, E1) | 0 | 0 | 0,106 | 0,106 |
| (F1, E2) | 0 | 0 | 0,106 | 0,106 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (F1, F2) | 0 | 0 | 0 | 0,000 |
| (F1, G1) | 0 | 0 | 0 | 0,000 |
| (F1, G2) | 0 | 0,260 | 0,106 | 0,367 |
| (F1, H1) | 0 | 0 | 0 | 0,000 |
| (F1, H2) | 0 | 0 | 0 | 0,000 |
| (F1, I1) | 0 | 0 | 0,106 | 0,106 |
| (F1, I2) | 0 | 0,260 | 0,106 | 0,367 |
| (F2, A1) | 0 | 0 | 0 | 0,000 |
| (F2, A2) | 0 | 0 | 0,106 | 0,106 |
| (F2, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (F2, B2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (F2, C1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (F2, C2) | 0,633 | 0 | 0 | 0,633 |
| (F2, D1) | 0 | 0 | 0,106 | 0,106 |
| (F2, D2) | 0 | 0 | 0 | 0,000 |
| (F2, E1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (F2, E2) | 0,633 | 0 | 0,106 | 0,740 |
| (F2, F1) | 0,633 | 0,260 | 0,106 | 1,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (F2, G1) | 0,633 | 0,260 | 0 | 0,894 |
| (F2, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (F2, H1) | 0,633 | 0 | 0,106 | 0,739 |
| (F2, H2) | 0 | 0 | 0 | 0,000 |
| (F2, I1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (F2, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (G1, A1) | 0 | 0 | 0 | 0,000 |
| (G1, A2) | 0 | 0 | 0,106 | 0,106 |
| (G1, B1) | 0,633 | 0 | 0 | 0,633 |
| (G1, B2) | 0 | 0 | 0,106 | 0,106 |
| (G1, C1) | 0 | 0 | 0,106 | 0,106 |
| (G1, C2) | 0 | 0 | 0 | 0,000 |
| (G1, D1) | 0 | 0 | 0,106 | 0,106 |
| (G1, D2) | 0 | 0 | 0 | 0,000 |
| (G1, E1) | 0,633 | 0 | 0,106 | 0,739 |
| (G1, E2) | 0 | 0 | 0,106 | 0,106 |
| (G1, F1) | 0,633 | 0 | 0,106 | 0,739 |
| (G1, F2) | 0 | 0 | 0 | 0,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (G1, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (G1, H1) | 0 | 0 | 0,106 | 0,106 |
| (G1, H2) | 0 | 0 | 0 | 0,000 |
| (G1, I1) | 0 | 0 | 0,106 | 0,106 |
| (G1, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (G2, A1) | 0 | 0 | 0 | 0,000 |
| (G2, A2) | 0 | 0 | 0,106 | 0,106 |
| (G2, B1) | 0 | 0 | 0 | 0,000 |
| (G2, B2) | 0 | 0 | 0 | 0,000 |
| (G2, C1) | 0 | 0 | 0 | 0,000 |
| (G2, C2) | 0 | 0 | 0 | 0,000 |
| (G2, D1) | 0 | 0 | 0 | 0,000 |
| (G2, D2) | 0 | 0 | 0 | 0,000 |
| (G2, E1) | 0 | 0 | 0 | 0,000 |
| (G2, E2) | 0 | 0 | 0 | 0,000 |
| (G2, F1) | 0 | 0 | 0 | 0,000 |
| (G2, F2) | 0 | 0 | 0 | 0,000 |
| (G2, G1) | 0 | 0 | 0 | 0,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (G2, H1) | 0 | 0 | 0 | 0,000 |
| (G2, H2) | 0 | 0 | 0 | 0,000 |
| (G2, I1) | 0 | 0 | 0 | 0,000 |
| (G2, I2) | 0 | 0 | 0 | 0,000 |
| (H1, A1) | 0 | 0 | 0 | 0,000 |
| (H1, A2) | 0 | 0 | 0,106 | 0,106 |
| (H1, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (H1, B2) | 0 | 0,260 | 0 | 0,260 |
| (H1, C1) | 0 | 0,260 | 0,106 | 0,366 |
| (H1, C2) | 0 | 0 | 0 | 0,000 |
| (H1, D1) | 0 | 0 | 0 | 0,000 |
| (H1, D2) | 0 | 0 | 0 | 0,000 |
| (H1, E1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H1, E2) | 0 | 0 | 0,106 | 0,106 |
| (H1, F1) | 0,633 | 0,260 | 0 | 0,894 |
| (H1, F2) | 0 | 0 | 0 | 0,000 |
| (H1, G1) | 0 | 0,260 | 0 | 0,260 |
| (H1, G2) | 0,633 | 0,260 | 0,106 | 1,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (H1, H2) | 0 | 0 | 0 | 0,000 |
| (H1, I1) | 0 | 0,260 | 0,106 | 0,366 |
| (H1, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, A1) | 0 | 0 | 0 | 0,000 |
| (H2, A2) | 0 | 0 | 0,106 | 0,106 |
| (H2, B1) | 0,633 | 0,260 | 0 | 0,894 |
| (H2, B2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, C1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, C2) | 0,633 | 0 | 0 | 0,633 |
| (H2, D1) | 0 | 0 | 0,106 | 0,106 |
| (H2, D2) | 0 | 0 | 0 | 0,000 |
| (H2, E1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, E2) | 0,633 | 0 | 0,106 | 0,739 |
| (H2, F1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, F2) | 0 | 0 | 0 | 0,000 |
| (H2, G1) | 0,633 | 0,260 | 0 | 0,894 |
| (H2, G2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, H1) | 0,633 | 0 | 0,106 | 0,739 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (H2, I1) | 0,633 | 0,260 | 0,106 | 1,000 |
| (H2, I2) | 0,633 | 0,260 | 0,106 | 1,000 |
| (I1, A1) | 0 | 0 | 0 | 0,000 |
| (I1, A2) | 0 | 0 | 0,106 | 0,106 |
| (I1, B1) | 0,633 | 0 | 0 | 0,633 |
| (I1, B2) | 0 | 0 | 0 | 0,000 |
| (I1, C1) | 0 | 0 | 0 | 0,000 |
| (I1, C2) | 0 | 0 | 0 | 0,000 |
| (I1, D1) | 0 | 0 | 0 | 0,000 |
| (I1, D2) | 0 | 0 | 0 | 0,000 |
| (I1, E1) | 0,633 | 0 | 0 | 0,633 |
| (I1, E2) | 0 | 0 | 0 | 0,000 |
| (I1, F1) | 0,633 | 0 | 0 | 0,633 |
| (I1, F2) | 0 | 0 | 0 | 0,000 |
| (I1, G1) | 0 | 0 | 0 | 0,000 |
| (I1, G2) | 0,633 | 0,260 | 0 | 0,894 |
| (I1, H1) | 0 | 0 | 0 | 0,000 |
| (I1, H2) | 0 | 0 | 0 | 0,000 |

| Action Plan | Criterion | | | |
|---|---|---|---|---|
| | C1 | C2 | C3 | Total |
| (I1, I2) | 0,633 | 0,260 | 0 | 0,894 |
| (I2, A1) | 0 | 0 | 0 | 0,000 |
| (I2, A2) | 0 | 0 | 0,106 | 0,106 |
| (I2, B1) | 0 | 0 | 0 | 0,000 |
| (I2, B2) | 0 | 0 | 0 | 0,000 |
| (I2, C1) | 0 | 0 | 0 | 0,000 |
| (I2, C2) | 0 | 0 | 0 | 0,000 |
| (I2, D1) | 0 | 0 | 0 | 0,000 |
| (I2, D2) | 0 | 0 | 0 | 0,000 |
| (I2, E1) | 0 | 0 | 0 | 0,000 |
| (I2, E2) | 0 | 0 | 0 | 0,000 |
| (I2, F1) | 0 | 0 | 0 | 0,000 |
| (I2, F2) | 0 | 0 | 0 | 0,000 |
| (I2, G1) | 0 | 0 | 0 | 0,000 |
| (I2, G2) | 0 | 0 | 0 | 0,000 |
| (I2, H1) | 0 | 0 | 0 | 0,000 |
| (I2, H2) | 0 | 0 | 0 | 0,000 |
| (I2, I1) | 0 | 0 | 0 | 0,000 |

## C-3 Preference Index Value

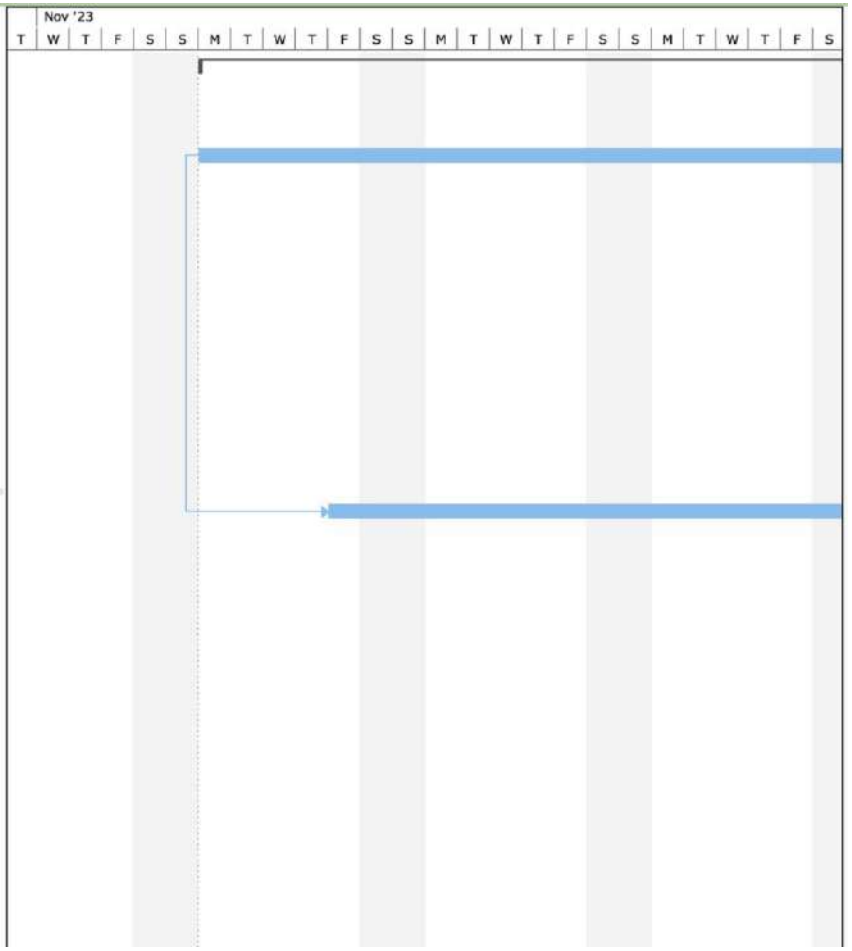
| Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (A1,A2) | **0,106** | (A2, B1) | **0,894** | (B1, B2) | **0,106** | (B2, C1) | **0,106** | (C1, C2) | **0,000** | (C2, D1) | **0,106** |
| (A1, B1) | **0,894** | (A2, B2) | **0,894** | (B1, C1) | **0,106** | (B2, C2) | **0,000** | (C1, D1) | **0,000** | (C2, D2) | **0,000** |
| (A1, B2) | **1,000** | (A2, C1) | **0,894** | (B1, C2) | **0,000** | (B2, D1) | **0,000** | (C1, D2) | **0,000** | (C2, E1) | **1,000** |
| (A1, C1) | **1,000** | (A2, C2) | **0,633** | (B1, D1) | **0,106** | (B2, D2) | **0,000** | (C1, E1) | **0,633** | (C2, E2) | **0,106** |
| (A1, C2) | **0,633** | (A2, D1) | **0,000** | (B1, D2) | **0,000** | (B2, E1) | **0,740** | (C1, E2) | **0,000** | (C2, F1) | **1,000** |
| (A1, D1) | **0,106** | (A2, D2) | **0,000** | (B1, E1) | **0,106** | (B2, E2) | **0,106** | (C1, F1) | **0,633** | (C2, F2) | **0,000** |
| (A1, D2) | **0,000** | (A2, E1) | **0,894** | (B1, E2) | **0,106** | (B2, F1) | **0,633** | (C1, F2) | **0,000** | (C2, G1) | **0,260** |
| (A1, E1) | **1,000** | (A2, E2) | **0,633** | (B1, F1) | **0,106** | (B2, F2) | **0,000** | (C1, G1) | **0,000** | (C2, G2) | **1,000** |
| (A1, E2) | **0,633** | (A2, F1) | **0,894** | (B1, F2) | **0,000** | (B2, G1) | **0,000** | (C1, G2) | **1,000** | (C2, H1) | **0,106** |
| (A1, F1) | **1,000** | (A2, F2) | **0,000** | (B1, G1) | **0,000** | (B2, G2) | **1,000** | (C1, H1) | **0,000** | (C2, H2) | **0,000** |
| (A1, F2) | **0,000** | (A2, G1) | **0,894** | (B1, G2) | **0,367** | (B2, H1) | **0,000** | (C1, H2) | **0,000** | (C2, I1) | **0,367** |
| (A1, G1) | **0,894** | (A2, G2) | **0,894** | (B1, H1) | **0,106** | (B2, H2) | **0,000** | (C1, I1) | **0,106** | (C2, I2) | **1,000** |
| (A1, G2) | **1,000** | (A2, H1) | **0,633** | (B1, H2) | **0,000** | (B2, I1) | **0,106** | (C1, I2) | **1,000** | (D1, A1) | **0,000** |
| (A1, H1) | **0,740** | (A2, H2) | **0,000** | (B1, I1) | **0,106** | (B2, I2) | **1,000** | (C2, A1) | **0,000** | (D1, A2) | **0,106** |
| (A1, H2) | **0,000** | (A2, I1) | **0,894** | (B1, I2) | **0,367** | (C1, A1) | **0,000** | (C2, A2) | **0,106** | (D1, B1) | **0,894** |
| (A1, I1) | **1,000** | (A2, I2) | **0,894** | (B2, A1) | **0,000** | (C1, A2) | **0,106** | (C2, B1) | **0,894** | (D1, B2) | **0,894** |
| (A1, I2) | **1,000** | (B1, A1) | **0,000** | (B2, A2) | **0,106** | (C1, B1) | **0,633** | (C2, B2) | **0,367** | (D1, C1) | **1,000** |
| (A2, A1) | **0,000** | (B1, A2) | **0,106** | (B2, B1) | **0,633** | (C1, B2) | **0,000** | (C2, C1) | **0,367** | (D1, C2) | **0,633** |

| Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (D1, D2) | 0,000 | (D2, E1) | **1,000** | (E1, E2) | **0,000** | (E2, F1) | **0,894** | (F1, F2) | **0,000** | (F2, G1) | **0,894** |
| (D1, E1) | **1,000** | (D2, E2) | **0,740** | (E1, F1) | **0,000** | (E2, F2) | **0,000** | (F1, G1) | **0,000** | (F2, G2) | **1,000** |
| (D1, E2) | **0,740** | (D2, F1) | **1,000** | (E1, F2) | **0,000** | (E2, G1) | **0,260** | (F1, G2) | **0,367** | (F2, H1) | **0,739** |
| (D1, F1) | **0,894** | (D2, F2) | **0,000** | (E1, G1) | **0,000** | (E2, G2) | **0,894** | (F1, H1) | **0,000** | (F2, H2) | **0,000** |
| (D1, F2) | **0,000** | (D2, G1) | **0,894** | (E1, G2) | **0,260** | (E2, H1) | **0,000** | (F1, H2) | **0,000** | (F2, I1) | **1,000** |
| (D1, G1) | **0,894** | (D2, G2) | **1,000** | (E1, H1) | **0,000** | (E2, H2) | **0,000** | (F1, I1) | **0,106** | (F2, I2) | **1,000** |
| (D1, G2) | **1,000** | (D2, H1) | **0,740** | (E1, H2) | **0,000** | (E2, I1) | **0,260** | (F1, I2) | **0,367** | (G1, A1) | **0,000** |
| (D1, H1) | **0,633** | (D2, H2) | **0,000** | (E1, I1) | **0,000** | (E2, I2) | **0,894** | (F2, A1) | **0,000** | (G1, A2) | **0,106** |
| (D1, H2) | **0,000** | (D2, I1) | **1,000** | (E1, I2) | **0,260** | (F1, A1) | **0,000** | (F2, A2) | **0,106** | (G1, B1) | **0,633** |
| (D1, I1) | **1,000** | (D2, I2) | **1,000** | (E2, A1) | **0,000** | (F1, A2) | **0,106** | (F2, B1) | **0,894** | (G1, B2) | **0,106** |
| (D1, I2) | **1,000** | (E1, A1) | **0,000** | (E2, A2) | **0,106** | (F1, B1) | **0,000** | (F2, B2) | **1,000** | (G1, C1) | **0,106** |
| (D2, A1) | **0,000** | (E1, A2) | **0,106** | (E2, B1) | **0,894** | (F1, B2) | **0,000** | (F2, C1) | **1,000** | (G1, C2) | **0,000** |
| (D2, A2) | **0,106** | (E1, B1) | **0,000** | (E2, B2) | **0,260** | (F1, C1) | **0,106** | (F2, C2) | **0,633** | (G1, D1) | **0,106** |
| (D2, B1) | **0,894** | (E1, B2) | **0,000** | (E2, C1) | **0,260** | (F1, C2) | **0,000** | (F2, D1) | **0,106** | (G1, D2) | **0,000** |
| (D2, B2) | **1,000** | (E1, C1) | **0,000** | (E2, C2) | **0,000** | (F1, D1) | **0,000** | (F2, D2) | **0,000** | (G1, E1) | **0,739** |
| (D2, C1) | **1,000** | (E1, C2) | **0,000** | (E2, D1) | **0,000** | (F1, D2) | **0,000** | (F2, E1) | **1,000** | (G1, E2) | **0,106** |
| (D2, C2) | **0,633** | (E1, D1) | **0,000** | (E2, D2) | **0,000** | (F1, E1) | **0,106** | (F2, E2) | **0,740** | (G1, F1) | **0,739** |
| (D2, D1) | **0,106** | (E1, D2) | **0,000** | (E2, E1) | **0,894** | (F1, E2) | **0,106** | (F2, F1) | **1,000** | (G1, F2) | **0,000** |

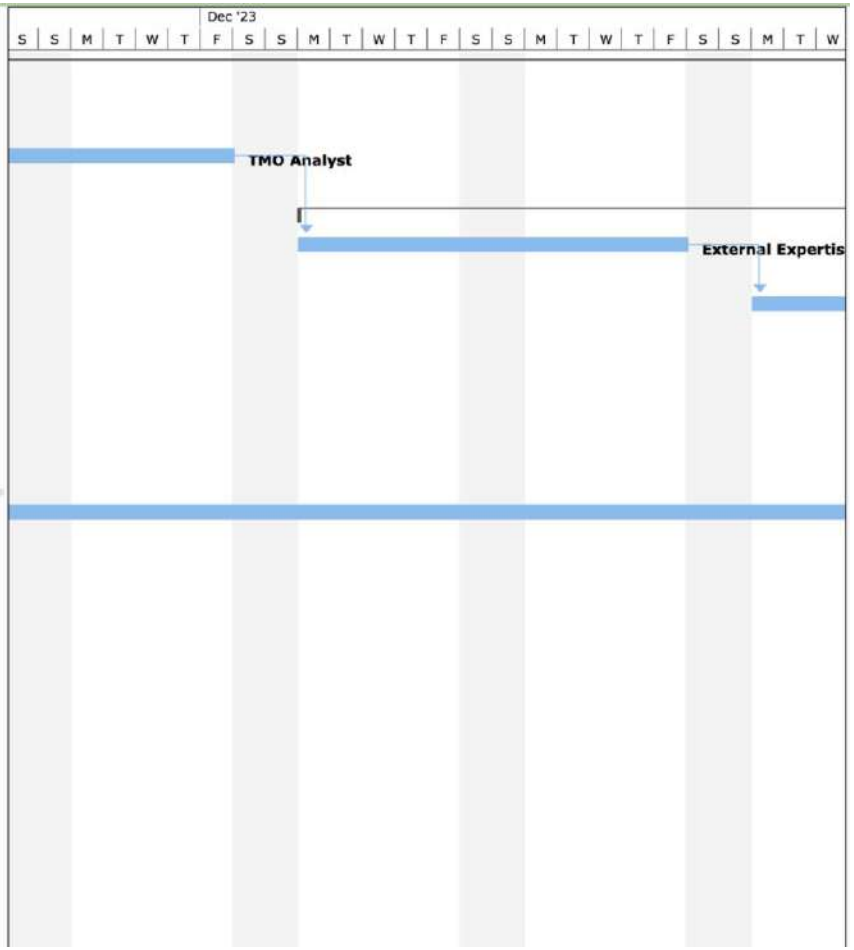
| Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total | Action Plan | Total |
|---|---|---|---|---|---|---|---|---|---|
| (G1, G2) | **1,000** | (G2, H1) | **0,000** | (H1, H2) | **0,000** | (H2, I1) | **1,000** | (I1, I2) | **0,894** |
| (G1, H1) | **0,106** | (G2, H2) | **0,000** | (H1, I1) | **0,366** | (H2, I2) | **1,000** | (I2, A1) | **0,000** |
| (G1, H2) | **0,000** | (G2, I1) | **0,000** | (H1, I2) | **1,000** | (I1, A1) | **0,000** | (I2, A2) | **0,106** |
| (G1, I1) | **0,106** | (G2, I2) | **0,000** | (H2, A1) | **0,000** | (I1, A2) | **0,106** | (I2, B1) | **0,000** |
| (G1, I2) | **1,000** | (H1, A1) | **0,000** | (H2, A2) | **0,106** | (I1, B1) | **0,633** | (I2, B2) | **0,000** |
| (G2, A1) | **0,000** | (H1, A2) | **0,106** | (H2, B1) | **0,894** | (I1, B2) | **0,000** | (I2, C1) | **0,000** |
| (G2, A2) | **0,106** | (H1, B1) | **0,894** | (H2, B2) | **1,000** | (I1, C1) | **0,000** | (I2, C2) | **0,000** |
| (G2, B1) | **0,000** | (H1, B2) | **0,260** | (H2, C1) | **1,000** | (I1, C2) | **0,000** | (I2, D1) | **0,000** |
| (G2, B2) | **0,000** | (H1, C1) | **0,366** | (H2, C2) | **0,633** | (I1, D1) | **0,000** | (I2, D2) | **0,000** |
| (G2, C1) | **0,000** | (H1, C2) | **0,000** | (H2, D1) | **0,106** | (I1, D2) | **0,000** | (I2, E1) | **0,000** |
| (G2, C2) | **0,000** | (H1, D1) | **0,000** | (H2, D2) | **0,000** | (I1, E1) | **0,633** | (I2, E2) | **0,000** |
| (G2, D1) | **0,000** | (H1, D2) | **0,000** | (H2, E1) | **1,000** | (I1, E2) | **0,000** | (I2, F1) | **0,000** |
| (G2, D2) | **0,000** | (H1, E1) | **1,000** | (H2, E2) | **0,739** | (I1, F1) | **0,633** | (I2, F2) | **0,000** |
| (G2, E1) | **0,000** | (H1, E2) | **0,106** | (H2, F1) | **1,000** | (I1, F2) | **0,000** | (I2, G1) | **0,000** |
| (G2, E2) | **0,000** | (H1, F1) | **0,894** | (H2, F2) | **0,000** | (I1, G1) | **0,000** | (I2, G2) | **0,000** |
| (G2, F1) | **0,000** | (H1, F2) | **0,000** | (H2, G1) | **0,894** | (I1, G2) | **0,894** | (I2, H1) | **0,000** |
| (G2, F2) | **0,000** | (H1, G1) | **0,260** | (H2, G2) | **1,000** | (I1, H1) | **0,000** | (I2, H2) | **0,000** |
| (G2, G1) | **0,000** | (H1, G2) | **1,000** | (H2, H1) | **0,739** | (I1, H2) | **0,000** | (I2, I1) | **0,000** |

## D. Gantt Chart

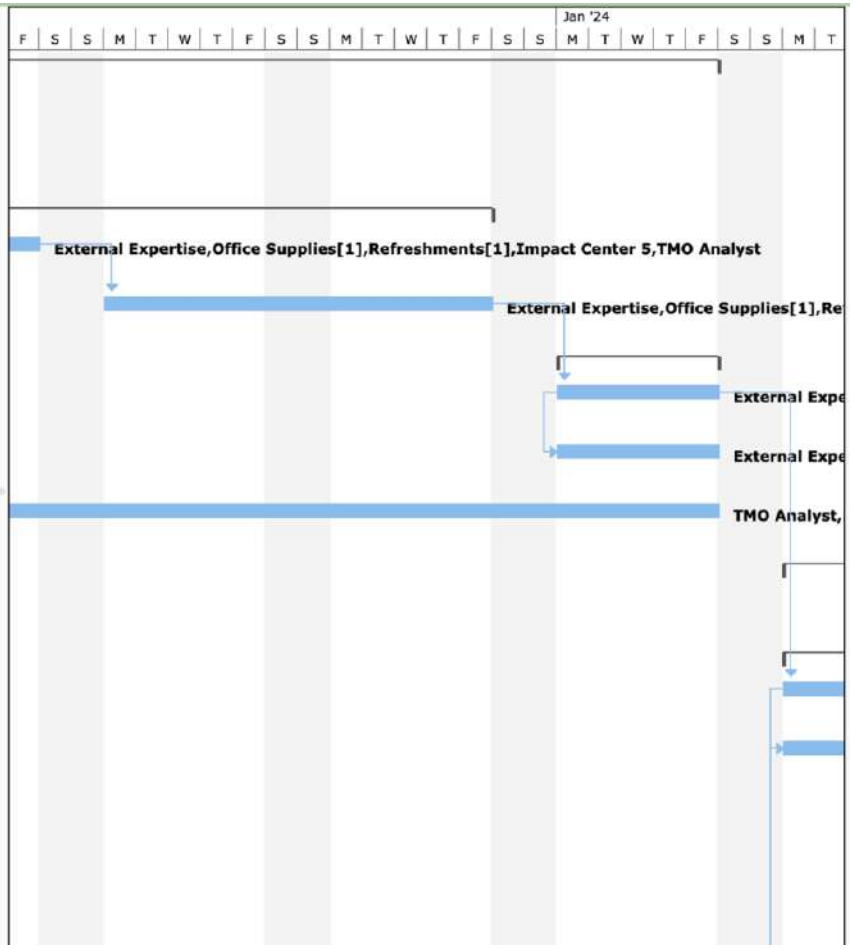
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 1 | **Internal training and capacity building in market research** | | **45 days** | **Mon 11/6/23** | **Fri 1/5/24** | | **148 hrs** | **Rp35.973.344** |
| 2 | Establish market research and strategy teams | TMO Analyst | 20 days | Mon 11/6/23 | Fri 12/1/23 | | 30 hrs | Rp1.650.000 |
| 3 | **Training** | | **20 days** | **Mon 12/4/23** | **Fri 12/29/23** | | **50 hrs** | **Rp15.863.178** |
| 4 | Market analysis training | External Expertise. | 10 days | Mon 12/4/23 | Fri 12/15/23 | 2 | 30 hrs | Rp9.357.907 |
| 5 | Resource management training | External Expertise. | 10 days | Mon 12/18/23 | Fri 12/29/23 | 4 | 20 hrs | Rp6.505.271 |
| 6 | **Workshop** | | **5 days** | **Mon 1/1/24** | **Fri 1/5/24** | | **50 hrs** | **Rp11.734.647** |
| 7 | Decision-making workshop | External Expertise. | 5 days | Mon 1/1/24 | Fri 1/5/24 | 5 | 40 hrs | Rp9.511.120 |
| 8 | Timeline development workshop | External Expertise. | 5 days | Mon 1/1/24 | Fri 1/5/24 | 7SS | 10 hrs | Rp2.223.527 |
| 9 | Regular feedback and monitor performance | TMO Analyst, | 41 days | Fri 11/10/23 | Fri 1/5/24 | 2SS+4 days | 18 hrs | Rp6.725.520 |
| 10 | **Training and skill development program in pitch deck development and report development** | | **15 days** | **Mon 1/8/24** | **Fri 1/26/24** | | **126 hrs** | **Rp47.999.376** |
| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
| 14 | **Workshop** | | **5 days** | **Mon 1/22/24** | **Fri 1/26/24** | | **45 hrs** | **Rp15.510.516** |
| 15 | Create effective pitch decks workshop | External Expertise. | 5 days | Mon 1/22/24 | Fri 1/26/24 | 12,13 | 40 hrs | Rp12.210.516 |
| 16 | Create reports workshop | Office Supplies[1], | 5 days | Mon 1/22/24 | Fri 1/26/24 | 15SS | 5 hrs | Rp3.300.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 1 | **Internal training and capacity building in market research** | | **45 days** | **Mon 11/6/23** | **Fri 1/5/24** | | **148 hrs** | **Rp35.973.344** |
| 2 | Establish market research and strategy teams | TMO Analyst | 20 days | Mon 11/6/23 | Fri 12/1/23 | | 30 hrs | Rp1.650.000 |
| 3 | **Training** | | **20 days** | **Mon 12/4/23** | **Fri 12/29/23** | | **50 hrs** | **Rp15.863.178** |
| 4 | Market analysis training | External Expertise | 10 days | Mon 12/4/23 | Fri 12/15/23 | 2 | 30 hrs | Rp9.357.907 |
| 5 | Resource management training | External Expertise | 10 days | Mon 12/18/23 | Fri 12/29/23 | 4 | 20 hrs | Rp6.505.271 |
| 6 | **Workshop** | | **5 days** | **Mon 1/1/24** | **Fri 1/5/24** | | **50 hrs** | **Rp11.734.647** |
| 7 | Decision-making workshop | External Expertise | 5 days | Mon 1/1/24 | Fri 1/5/24 | 5 | 40 hrs | Rp9.511.120 |
| 8 | Timeline development workshop | External Expertise | 5 days | Mon 1/1/24 | Fri 1/5/24 | 7SS | 10 hrs | Rp2.223.527 |
| 9 | Regular feedback and monitor performance | TMO Analyst, | 41 days | Fri 11/10/23 | Fri 1/5/24 | 2SS+4 days | 18 hrs | Rp6.725.520 |
| 10 | **Training and skill development program in pitch deck development and report development** | | **15 days** | **Mon 1/8/24** | **Fri 1/26/24** | | **126 hrs** | **Rp47.999.376** |
| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
| 14 | **Workshop** | | **5 days** | **Mon 1/22/24** | **Fri 1/26/24** | | **45 hrs** | **Rp15.510.516** |
| 15 | Create effective pitch decks workshop | External Expertise | 5 days | Mon 1/22/24 | Fri 1/26/24 | 12,13 | 40 hrs | Rp12.210.516 |
| 16 | Create reports workshop | Office Supplies[1], | 5 days | Mon 1/22/24 | Fri 1/26/24 | 15SS | 5 hrs | Rp3.300.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 1 | **Internal training and capacity building in market research** | | **45 days** | **Mon 11/6/23** | **Fri 1/5/24** | | **148 hrs** | **Rp35.973.344** |
| 2 | Establish market research and strategy teams | TMO Analyst | 20 days | Mon 11/6/23 | Fri 12/1/23 | | 30 hrs | Rp1.650.000 |
| 3 | **Training** | | **20 days** | **Mon 12/4/23** | **Fri 12/29/23** | | **50 hrs** | **Rp15.863.178** |
| 4 | Market analysis training | External Expertise. | 10 days | Mon 12/4/23 | Fri 12/15/23 | 2 | 30 hrs | Rp9.357.907 |
| 5 | Resource management training | External Expertise. | 10 days | Mon 12/18/23 | Fri 12/29/23 | 4 | 20 hrs | Rp6.505.271 |
| 6 | **Workshop** | | **5 days** | **Mon 1/1/24** | **Fri 1/5/24** | | **50 hrs** | **Rp11.734.647** |
| 7 | Decision-making workshop | External Expertise. | 5 days | Mon 1/1/24 | Fri 1/5/24 | 5 | 40 hrs | Rp9.511.120 |
| 8 | Timeline development workshop | External Expertise. | 5 days | Mon 1/1/24 | Fri 1/5/24 | 7SS | 10 hrs | Rp2.223.527 |
| 9 | Regular feedback and monitor performance | TMO Analyst, | 41 days | Fri 11/10/23 | Fri 1/5/24 | 2SS+4 days | 18 hrs | Rp6.725.520 |
| 10 | **Training and skill development program in pitch deck development and report development** | | **15 days** | **Mon 1/8/24** | **Fri 1/26/24** | | **126 hrs** | **Rp47.999.376** |
| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
| 14 | **Workshop** | | **5 days** | **Mon 1/22/24** | **Fri 1/26/24** | | **45 hrs** | **Rp15.510.516** |
| 15 | Create effective pitch decks workshop | External Expertise. | 5 days | Mon 1/22/24 | Fri 1/26/24 | 12,13 | 40 hrs | Rp12.210.516 |
| 16 | Create reports workshop | Office Supplies[1], | 5 days | Mon 1/22/24 | Fri 1/26/24 | 15SS | 5 hrs | Rp3.300.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
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| 4 | Market analysis training | External Expertise | 10 days | Mon 12/4/23 | Fri 12/15/23 | 2 | 30 hrs | Rp9.357.907 |
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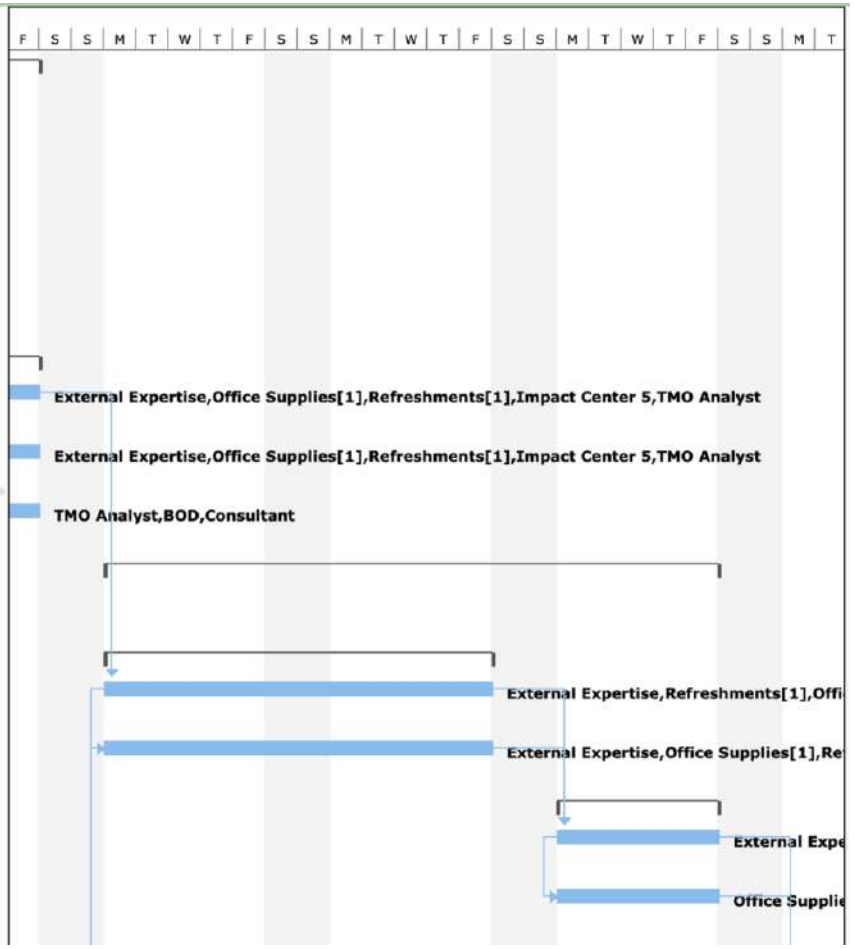
| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
| 14 | **Workshop** | | **5 days** | **Mon 1/22/24** | **Fri 1/26/24** | | **45 hrs** | **Rp15.510.516** |
| 15 | Create effective pitch decks workshop | External Expertise | 5 days | Mon 1/22/24 | Fri 1/26/24 | 12,13 | 40 hrs | Rp12.210.516 |
| 16 | Create reports workshop | Office Supplies[1], | 5 days | Mon 1/22/24 | Fri 1/26/24 | 15SS | 5 hrs | Rp3.300.000 |



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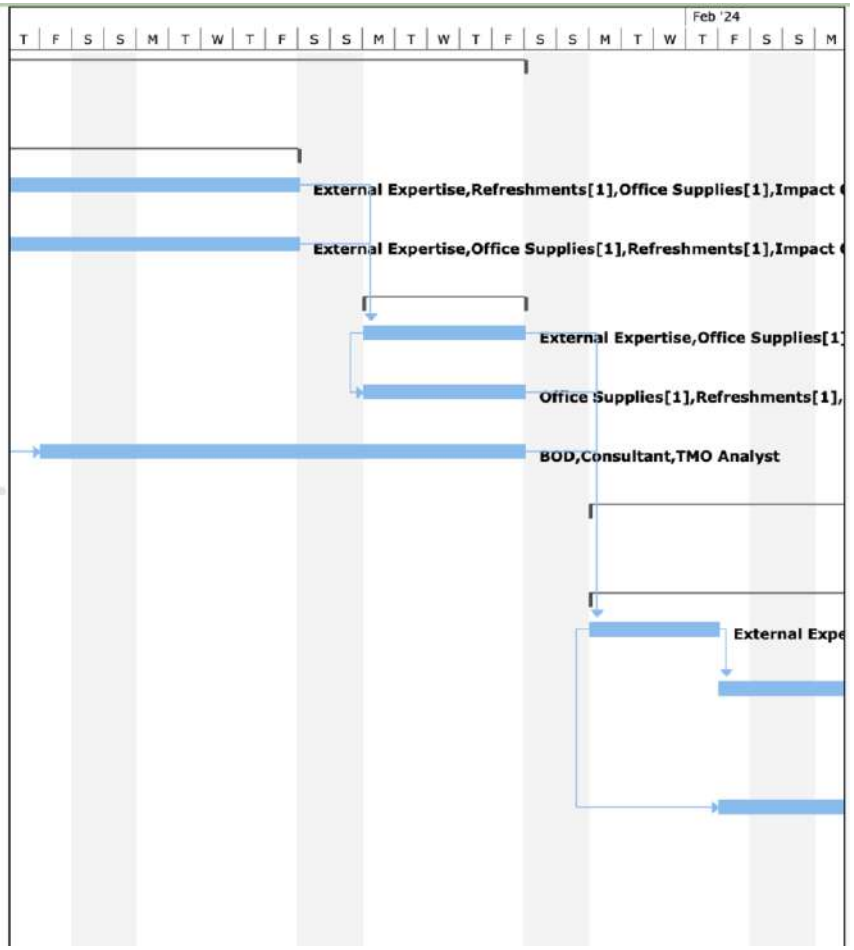
| 10 | **Training and skill development program in pitch deck development and report development** | | **15 days** | **Mon 1/8/24** | **Fri 1/26/24** | | **126 hrs** | **Rp47.999.376** |
| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
| 14 | **Workshop** | | **5 days** | **Mon 1/22/24** | **Fri 1/26/24** | | **45 hrs** | **Rp15.510.516** |
| 15 | Create effective pitch decks workshop | External Expertise. | 5 days | Mon 1/22/24 | Fri 1/26/24 | 12,13 | 40 hrs | Rp12.210.516 |
| 16 | Create reports workshop | Office Supplies[1], | 5 days | Mon 1/22/24 | Fri 1/26/24 | 15SS | 5 hrs | Rp3.300.000 |
| 17 | Regular feedback session and monitor performance | BOD,Consultan | 11 days | Fri 1/12/24 | Fri 1/26/24 | 13SS+4 days | 6 hrs | Rp1.610.000 |
| 18 | **Internal competency development in research on additional ad-hoc request** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **46 hrs** | **Rp16.222.212** |
| 19 | **Training** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **40 hrs** | **Rp14.612.212** |
| 20 | Research methodologies training | External Expertise. | 4 days | Mon 1/29/24 | Thu 2/1/24 | 15,16,17 | 8 hrs | Rp2.819.464 |
| 21 | Data analysis techniques training | External Expertise. | 5 days | Fri 2/2/24 | Thu 2/8/24 | 20 | 20 hrs | Rp8.819.041 |
| 22 | Reporting skills training | External Expertise. | 6 days | Fri 2/9/24 | Fri 2/16/24 | 21 | 12 hrs | Rp2.973.707 |
| 23 | Regular review sessions | BOD,Co | 11 days | Fri 2/2/24 | Fri 2/16/24 | 20SS+4 days | 6 hrs | Rp1.610.000 |
| 24 | **Internal training and capacity development in business case framework development** | | **15 days** | **Mon 2/19/24** | **Fri 3/8/24** | | **81 hrs** | **Rp28.988.514** |
| 25 | **Training** | | **10 days** | **Mon 2/19/24** | **Fri 3/1/24** | | **45 hrs** | **Rp18.232.907** |



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| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
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| 15 | Create effective pitch decks workshop | External Expertise. | 5 days | Mon 1/22/24 | Fri 1/26/24 | 12,13 | 40 hrs | Rp12.210.516 |
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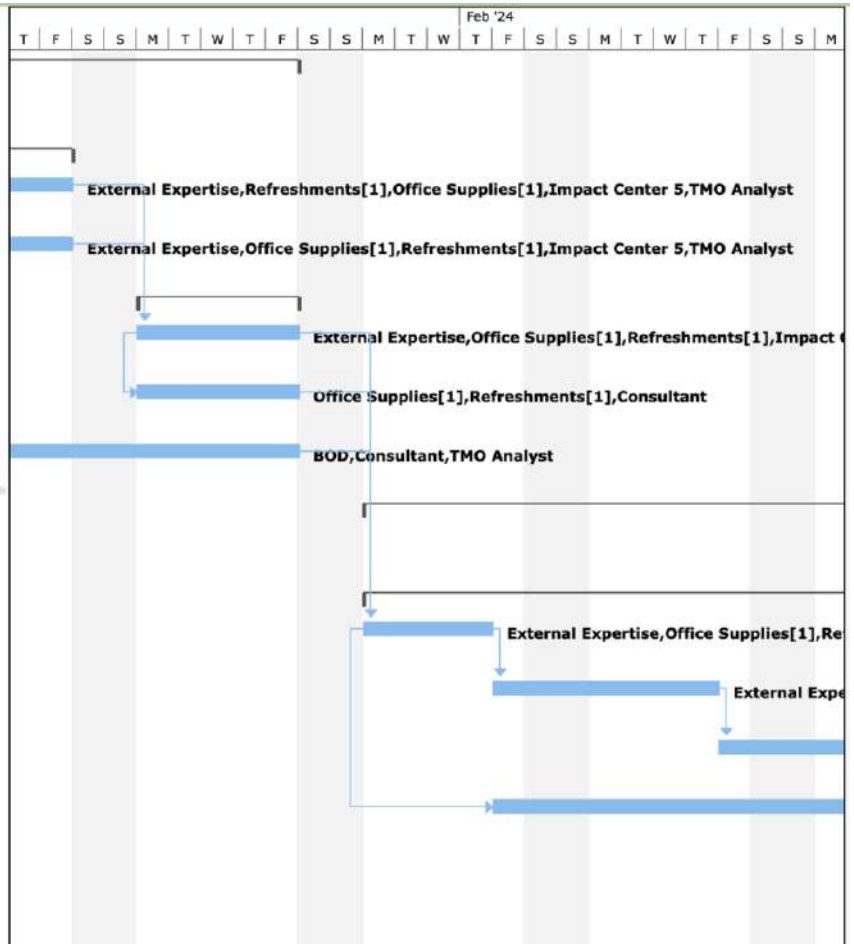
| 17 | Regular feedback session and monitor performance | BOD,Consultan | 11 days | Fri 1/12/24 | Fri 1/26/24 | 13SS+4 days | 6 hrs | Rp1.610.000 |
| 18 | **Internal competency development in research on additional ad-hoc request** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **46 hrs** | **Rp16.222.212** |
| 19 | **Training** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **40 hrs** | **Rp14.612.212** |
| 20 | Research methodologies training | External Expertise. | 4 days | Mon 1/29/24 | Thu 2/1/24 | 15,16,17 | 8 hrs | Rp2.819.464 |
| 21 | Data analysis techniques training | External Expertise. | 5 days | Fri 2/2/24 | Thu 2/8/24 | 20 | 20 hrs | Rp8.819.041 |
| 22 | Reporting skills training | External Expertise. | 6 days | Fri 2/9/24 | Fri 2/16/24 | 21 | 12 hrs | Rp2.973.707 |
| 23 | Regular review sessions | BOD,Co | 11 days | Fri 2/2/24 | Fri 2/16/24 | 20SS+4 days | 6 hrs | Rp1.610.000 |
| 24 | **Internal training and capacity development in business case framework development** | | **15 days** | **Mon 2/19/24** | **Fri 3/8/24** | | **81 hrs** | **Rp28.988.514** |
| 25 | **Training** | | **10 days** | **Mon 2/19/24** | **Fri 3/1/24** | | **45 hrs** | **Rp18.232.907** |



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| 11 | **Training** | | **10 days** | **Mon 1/8/24** | **Fri 1/19/24** | | **75 hrs** | **Rp30.878.859** |
| 12 | Adobe illustrator training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 7 | 50 hrs | Rp16.620.526 |
| 13 | Microsoft power point training | External Expertise. | 10 days | Mon 1/8/24 | Fri 1/19/24 | 12SS | 25 hrs | Rp14.258.333 |
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| 17 | Regular feedback session and monitor performance | BOD,Consultan | 11 days | Fri 1/12/24 | Fri 1/26/24 | 13SS+4 days | 6 hrs | Rp1.610.000 |
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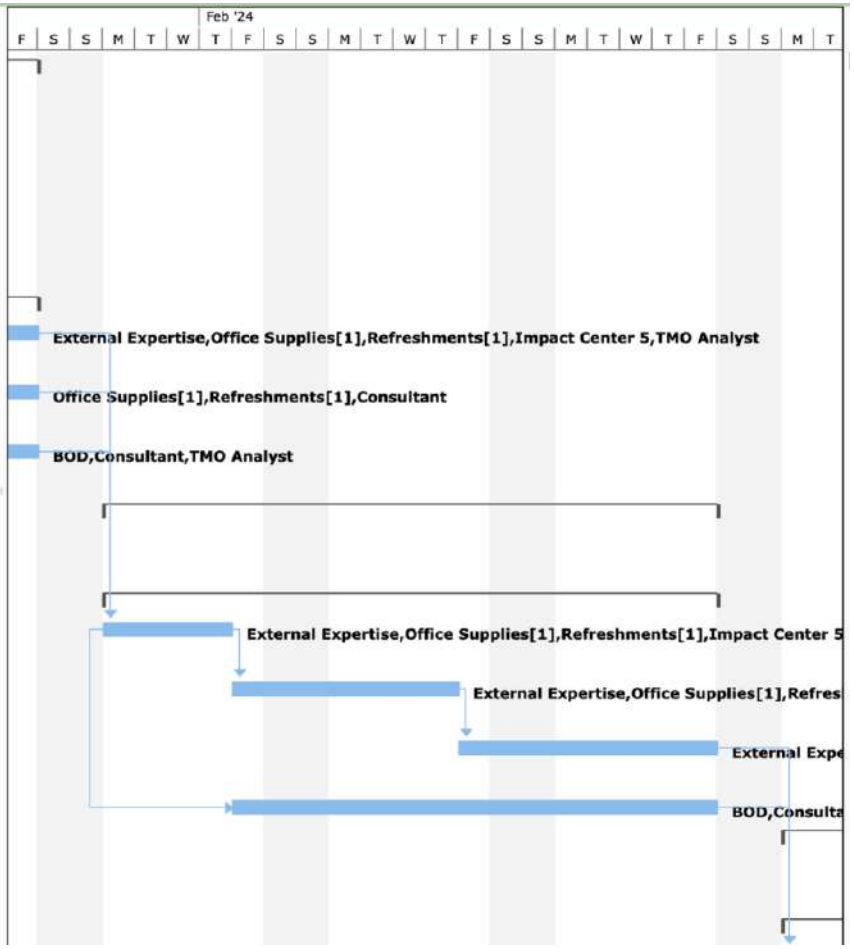
| 19 | **Training** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **40 hrs** | **Rp14.612.212** |
| 20 | Research methodologies training | External Expertise. | 4 days | Mon 1/29/24 | Thu 2/1/24 | 15,16,17 | 8 hrs | Rp2.819.464 |
| 21 | Data analysis techniques training | External Expertise. | 5 days | Fri 2/2/24 | Thu 2/8/24 | 20 | 20 hrs | Rp8.819.041 |
| 22 | Reporting skills training | External Expertise. | 6 days | Fri 2/9/24 | Fri 2/16/24 | 21 | 12 hrs | Rp2.973.707 |
| 23 | Regular review sessions | BOD,Co | 11 days | Fri 2/2/24 | Fri 2/16/24 | 20SS+4 days | 6 hrs | Rp1.610.000 |
| 24 | **Internal training and capacity development in business case framework development** | | **15 days** | **Mon 2/19/24** | **Fri 3/8/24** | | **81 hrs** | **Rp28.988.514** |
| 25 | **Training** | | **10 days** | **Mon 2/19/24** | **Fri 3/1/24** | | **45 hrs** | **Rp18.232.907** |



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| 21 | Data analysis techniques training | External Expertise | 5 days | Fri 2/2/24 | Thu 2/8/24 | 20 | 20 hrs | Rp8.819.041 |
| 22 | Reporting skills training | External Expertise | 6 days | Fri 2/9/24 | Fri 2/16/24 | 21 | 12 hrs | Rp2.973.707 |
| 23 | Regular review sessions | BOD,Co | 11 days | Fri 2/2/24 | Fri 2/16/24 | 20SS+4 days | 6 hrs | Rp1.610.000 |
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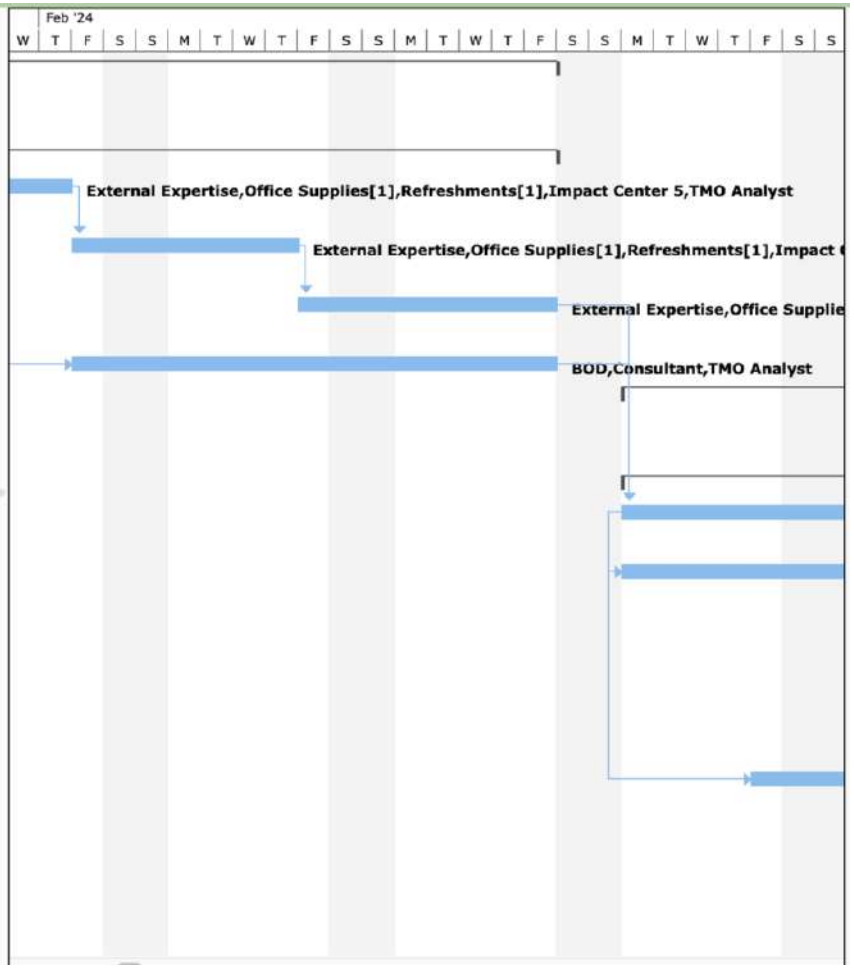
| 25 | **Training** | | **10 days** | **Mon 2/19/24** | **Fri 3/1/24** | | **45 hrs** | **Rp18.232.907** |
| 26 | Business strategy training | External Expertise | 10 days | Mon 2/19/24 | Fri 3/1/24 | 22,23 | 30 hrs | Rp9.357.907 |
| 27 | Framework development training | External Expertise | 10 days | Mon 2/19/24 | Fri 3/1/24 | 26SS | 15 hrs | Rp8.875.000 |
| 28 | **Workshop** | | **5 days** | **Mon 3/4/24** | **Fri 3/8/24** | | **30 hrs** | **Rp9.145.607** |
| 29 | Practice defining KPI's workshop | External Expertise | 5 days | Mon 3/4/24 | Fri 3/8/24 | 26 | 15 hrs | Rp5.078.940 |
| 30 | Practice defining strategic question workshop | External Expertise | 5 days | Mon 3/4/24 | Fri 3/8/24 | 29SS | 15 hrs | Rp4.066.667 |
| 31 | Regular review session | BOD,Co | 11 days | Fri 2/23/24 | Fri 3/8/24 | 26SS+4 days | 6 hrs | Rp1.610.000 |
| 32 | **Advanced analytical systems and tools in market research** | | **20 days** | **Mon 3/11/24** | **Fri 4/5/24** | | **99 hrs** | **Rp20.055.792** |
| 33 | Integrate market analysis and project management software (Microsoft Project dan Power BI) | External Expertise | 10 days | Mon 3/11/24 | Fri 3/22/24 | 29,30,31 | 30 hrs | Rp5.404.125 |



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| 18 | **Internal competency development in research on additional ad-hoc request** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **46 hrs** | **Rp16.222.212** |
| 19 | **Training** | | **15 days** | **Mon 1/29/24** | **Fri 2/16/24** | | **40 hrs** | **Rp14.612.212** |
| 20 | Research methodologies training | External Expertise | 4 days | Mon 1/29/24 | Thu 2/1/24 | 15,16,17 | 8 hrs | Rp2.819.464 |
| 21 | Data analysis techniques training | External Expertise | 5 days | Fri 2/2/24 | Thu 2/8/24 | 20 | 20 hrs | Rp8.819.041 |
| 22 | Reporting skills training | External Expertise | 6 days | Fri 2/9/24 | Fri 2/16/24 | 21 | 12 hrs | Rp2.973.707 |
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| 26 | Business strategy training | External Expertise | 10 days | Mon 2/19/24 | Fri 3/1/24 | 22,23 | 30 hrs | Rp9.357.907 |
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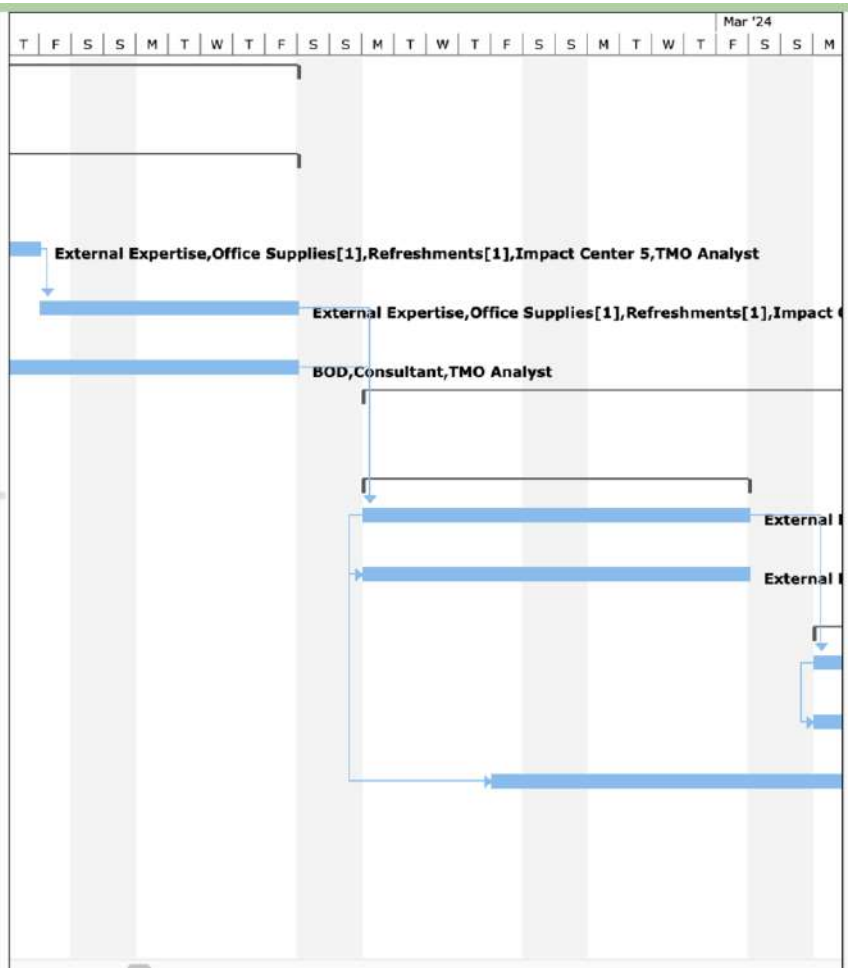

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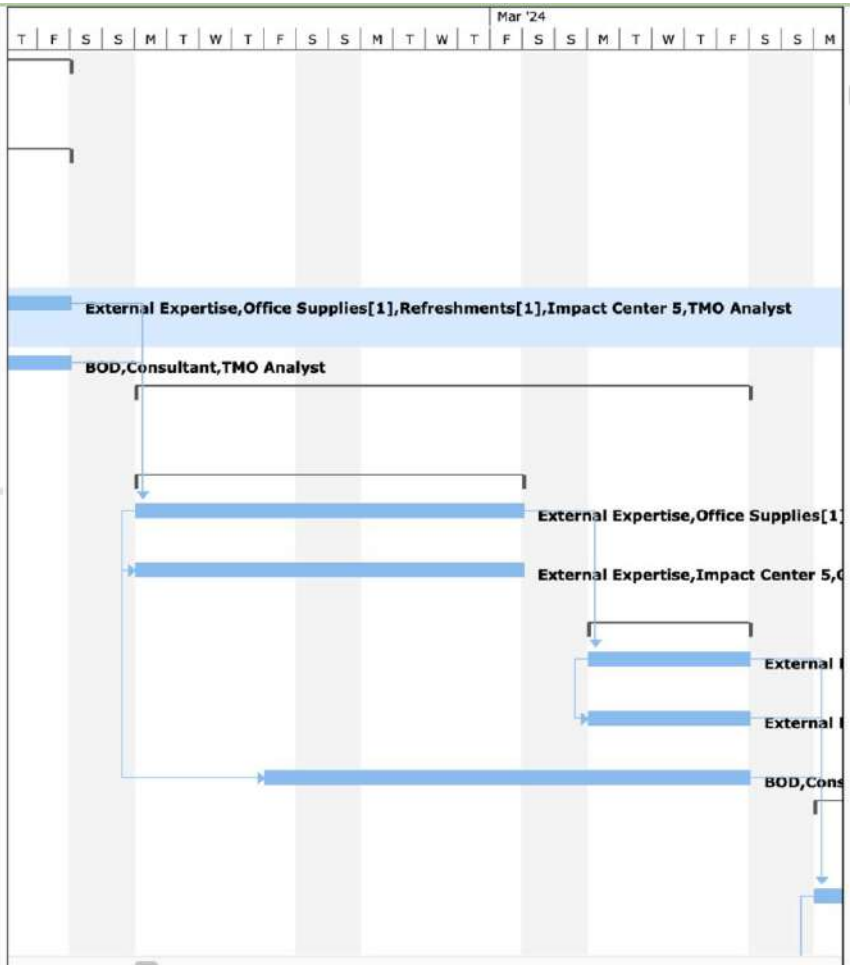
| 21 | Data analysis techniques training | External Expertise | 5 days | Fri 2/2/24 | Thu 2/8/24 | 20 | 20 hrs | Rp8.819.041 |
| 22 | Reporting skills training | External Expertise | 6 days | Fri 2/9/24 | Fri 2/16/24 | 21 | 12 hrs | Rp2.973.707 |
| 23 | Regular review sessions | BOD,Co | 11 days | Fri 2/2/24 | Fri 2/16/24 | 20SS+4 days | 6 hrs | Rp1.610.000 |
| 24 | **Internal training and capacity development in business case framework development** | | **15 days** | **Mon 2/19/24** | **Fri 3/8/24** | | **81 hrs** | **Rp28.988.514** |
| 25 | **Training** | | **10 days** | **Mon 2/19/24** | **Fri 3/1/24** | | **45 hrs** | **Rp18.232.907** |
| 26 | Business strategy training | External Expertise | 10 days | Mon 2/19/24 | Fri 3/1/24 | 22,23 | 30 hrs | Rp9.357.907 |
| 27 | Framework development training | External Expertise | 10 days | Mon 2/19/24 | Fri 3/1/24 | 26SS | 15 hrs | Rp8.875.000 |
| 28 | **Workshop** | | **5 days** | **Mon 3/4/24** | **Fri 3/8/24** | | **30 hrs** | **Rp9.145.607** |
| 29 | Practice defining KPI's workshop | External Expertise | 5 days | Mon 3/4/24 | Fri 3/8/24 | 26 | 15 hrs | Rp5.078.940 |
| 30 | Practice defining strategic question workshop | External Expertise | 5 days | Mon 3/4/24 | Fri 3/8/24 | 29SS | 15 hrs | Rp4.066.667 |
| 31 | Regular review session | BOD,Co | 11 days | Fri 2/23/24 | Fri 3/8/24 | 26SS+4 days | 6 hrs | Rp1.610.000 |
| 32 | **Advanced analytical systems and tools in market research** | | **20 days** | **Mon 3/11/24** | **Fri 4/5/24** | | **99 hrs** | **Rp20.055.792** |
| 33 | Integrate market analysis and project management software (Microsoft Project dan Power BI) | External Expertise | 10 days | Mon 3/11/24 | Fri 3/22/24 | 29,30,31 | 30 hrs | Rp5.404.125 |



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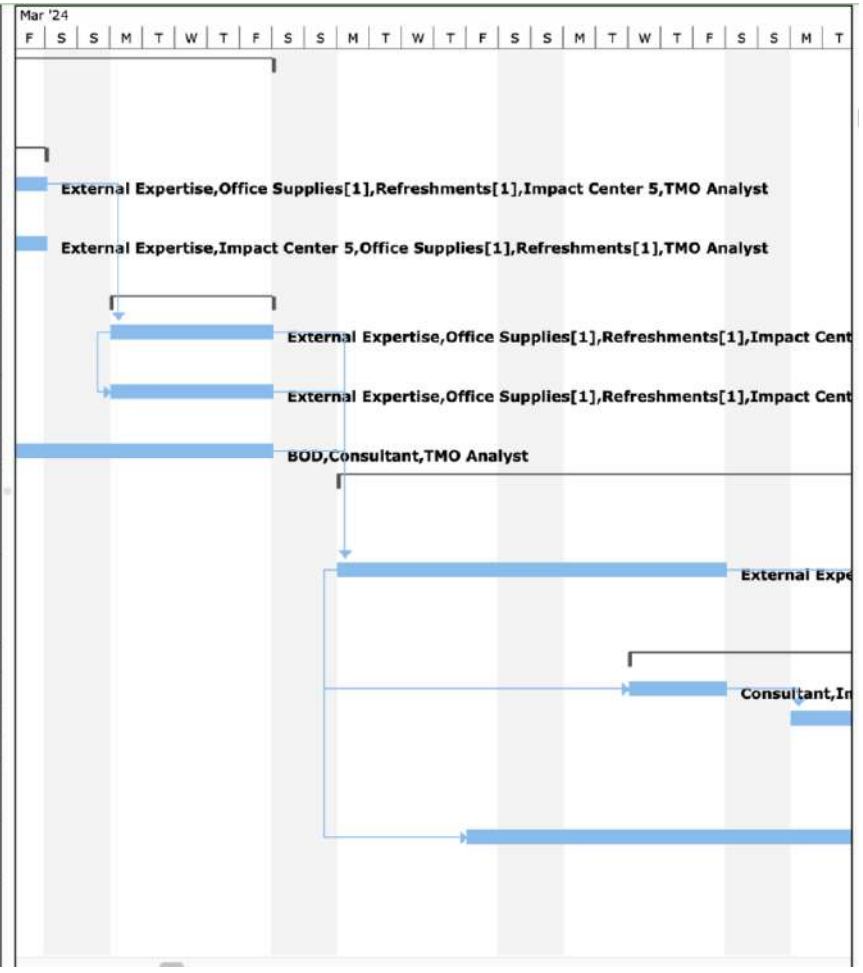
| 34 | **Guideline and template** | | **13 days** | **Wed 3/20/24** | **Fri 4/5/24** | | **61 hrs** | **Rp12.505.000** |
| 35 | Data collection | Consulta | 3 days | Wed 3/20/24 | Fri 3/22/24 | 33SS+7 days | 15 hrs | Rp3.075.000 |
| 36 | Analysis | Consulta | 4 days | Mon 3/25/24 | Thu 3/28/24 | 35 | 16 hrs | Rp3.280.000 |
| 37 | Report and visualize | Consulta | 3 days | Fri 3/29/24 | Tue 4/2/24 | 36 | 15 hrs | Rp3.075.000 |
| 38 | Compliance and security | Consulta nt, | 3 days | Wed 4/3/24 | Fri 4/5/24 | 37 | 15 hrs | Rp3.075.000 |
| 39 | Regular evaluate and update tools | BOD,Co nsu ltan | 16 days | Fri 3/15/24 | Fri 4/5/24 | 33SS+4 days | 8 hrs | Rp2.146.667 |
| 40 | **Collaborative processes and structures development in business case framework** | | **11 days** | **Mon 4/8/24** | **Mon 4/22/24** | | **49 hrs** | **Rp28.470.000** |



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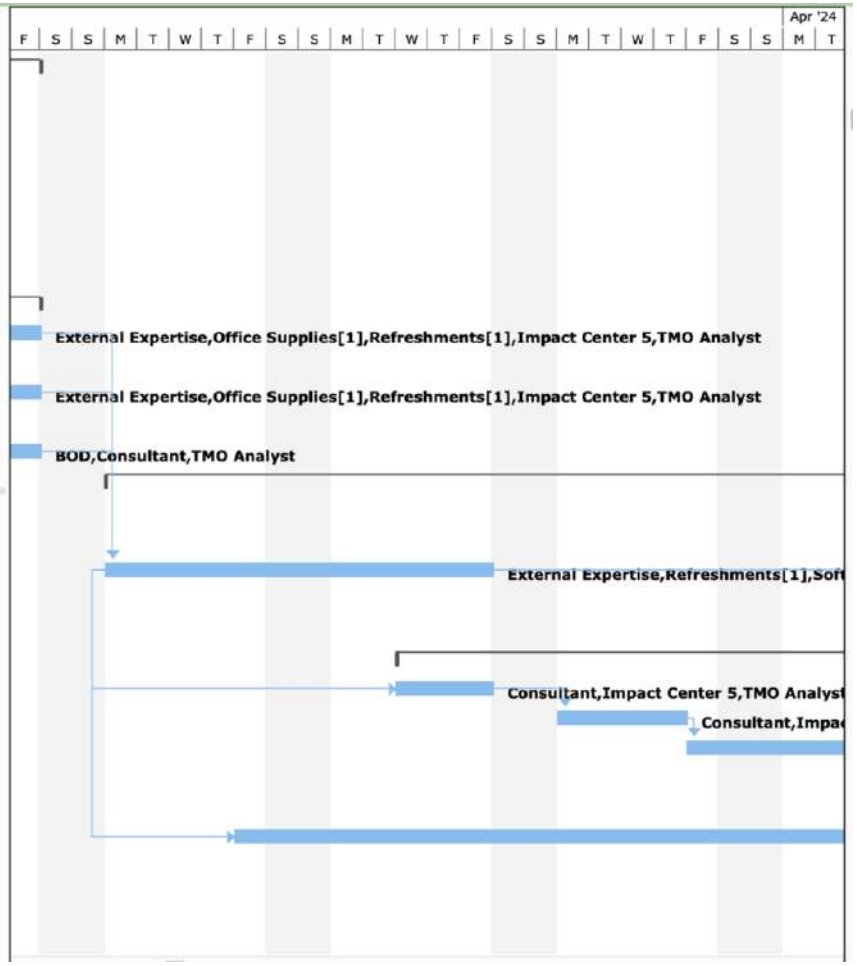
| 35 | Data collection | Consulta | 3 days | Wed 3/20/24 | Fri 3/22/24 | 33SS+7 days | 15 hrs | Rp3.075.000 |
| 36 | Analysis | Consulta | 4 days | Mon 3/25/24 | Thu 3/28/24 | 35 | 16 hrs | Rp3.280.000 |
| 37 | Report and visualize | Consulta | 3 days | Fri 3/29/24 | Tue 4/2/24 | 36 | 15 hrs | Rp3.075.000 |
| 38 | Compliance and security | Consulta nt, | 3 days | Wed 4/3/24 | Fri 4/5/24 | 37 | 15 hrs | Rp3.075.000 |
| 39 | Regular evaluate and update tools | BOD,Co nsu ltan | 16 days | Fri 3/15/24 | Fri 4/5/24 | 33SS+4 days | 8 hrs | Rp2.146.667 |
| 40 | **Collaborative processes and structures development in business case framework** | | **11 days** | **Mon 4/8/24** | **Mon 4/22/24** | | **49 hrs** | **Rp28.470.000** |



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| 32 | **Advanced analytical systems and tools in market research** | | **20 days** | **Mon 3/11/24** | **Fri 4/5/24** | | **99 hrs** | **Rp20.055.792** |
| 33 | Integrate market analysis and project management software (Microsoft Project dan Power BI) | External Expertise, | 10 days | Mon 3/11/24 | Fri 3/22/24 | 29,30,31 | 30 hrs | Rp5.404.125 |
| 34 | **Guideline and template** | | **13 days** | **Wed 3/20/24** | **Fri 4/5/24** | | **61 hrs** | **Rp12.505.000** |
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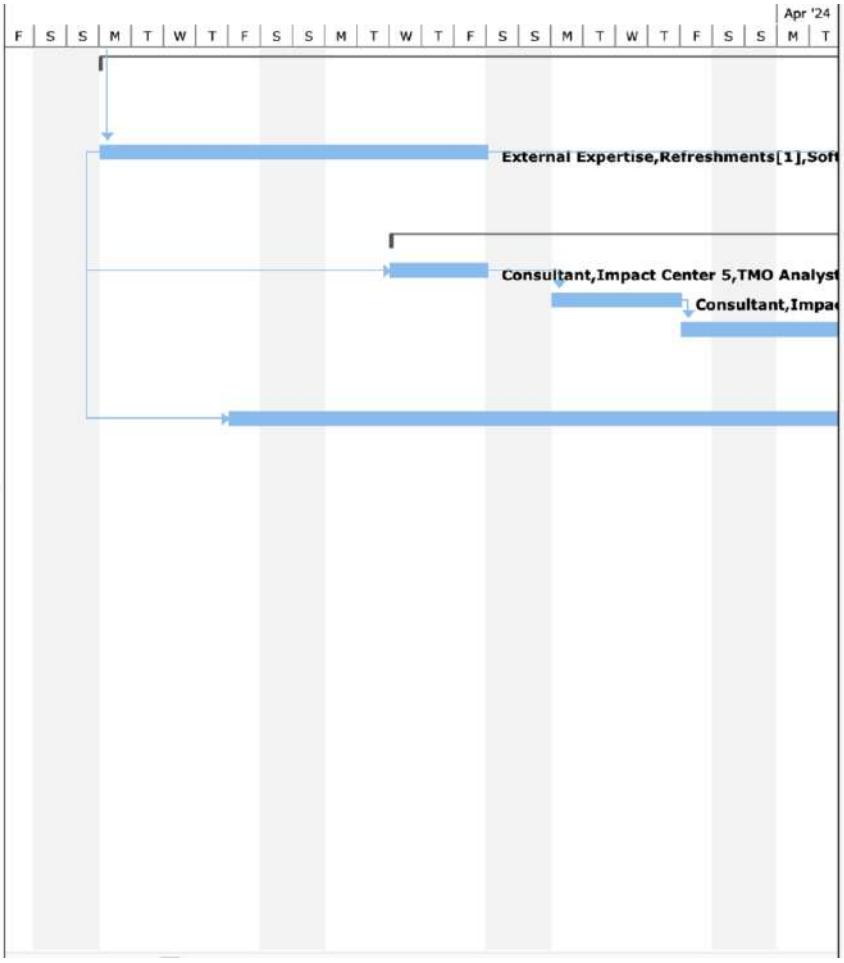
| 40 | **Collaborative processes and structures development in business case framework development** | | **11 days** | **Mon 4/8/24** | **Mon 4/22/24** | | **49 hrs** | **Rp28.470.000** |
| 41 | Create cross-functional teams to collaboratively formulate and evaluate | TMO An alyst | 5 days | Mon 4/8/24 | Fri 4/12/24 | 33,38,39 | 10 hrs | Rp550.000 |
| 42 | **Develop standard procedures** | | **3 days** | **Mon 4/15/24** | **Wed 4/17/24** | | **24 hrs** | **Rp4.920.000** |
| 43 | Define objectives | Consulta | 1 day | Mon 4/15/24 | Mon 4/15/24 | 41 | 8 hrs | Rp1.640.000 |
| 44 | Measuring KPIs | Consulta | 1 day | Tue 4/16/24 | Tue 4/16/24 | 43 | 8 hrs | Rp1.640.000 |
| 45 | Making strategic decisions | Consulta nt, | 1 day | Wed 4/17/24 | Wed 4/17/24 | 44 | 8 hrs | Rp1.640.000 |
| 46 | Implement tools and platforms (Microsoft Project) | External Expertise | 3 days | Thu 4/18/24 | Mon 4/22/24 | 45 | 15 hrs | Rp23.000.000 |
| 47 | **Internal capability building in off taker analysis** | | **18 days** | **Wed 4/24/24** | **Fri 5/17/24** | | **84 hrs** | **Rp84.666.667** |
| 48 | **Training** | | **10 days** | **Wed 4/24/24** | **Tue 5/7/24** | | **60 hrs** | **Rp56.920.000** |



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| 40 | **Collaborative processes and structures development in business case framework development** | | **11 days** | **Mon 4/8/24** | **Mon 4/22/24** | | **49 hrs** | **Rp28.470.000** |
| 41 | Create cross-functional teams to collaboratively formulate and evaluate | TMO An alyst | 5 days | Mon 4/8/24 | Fri 4/12/24 | 33,38,39 | 10 hrs | Rp550.000 |
| 42 | **Develop standard procedures** | | **3 days** | **Mon 4/15/24** | **Wed 4/17/24** | | **24 hrs** | **Rp4.920.000** |
| 43 | Define objectives | Consulta | 1 day | Mon 4/15/24 | Mon 4/15/24 | 41 | 8 hrs | Rp1.640.000 |
| 44 | Measuring KPIs | Consulta | 1 day | Tue 4/16/24 | Tue 4/16/24 | 43 | 8 hrs | Rp1.640.000 |
| 45 | Making strategic decisions | Consulta nt, | 1 day | Wed 4/17/24 | Wed 4/17/24 | 44 | 8 hrs | Rp1.640.000 |
| 46 | Implement tools and platforms (Microsoft Project) | External Expertise . | 3 days | Thu 4/18/24 | Mon 4/22/24 | 45 | 15 hrs | Rp23.000.000 |
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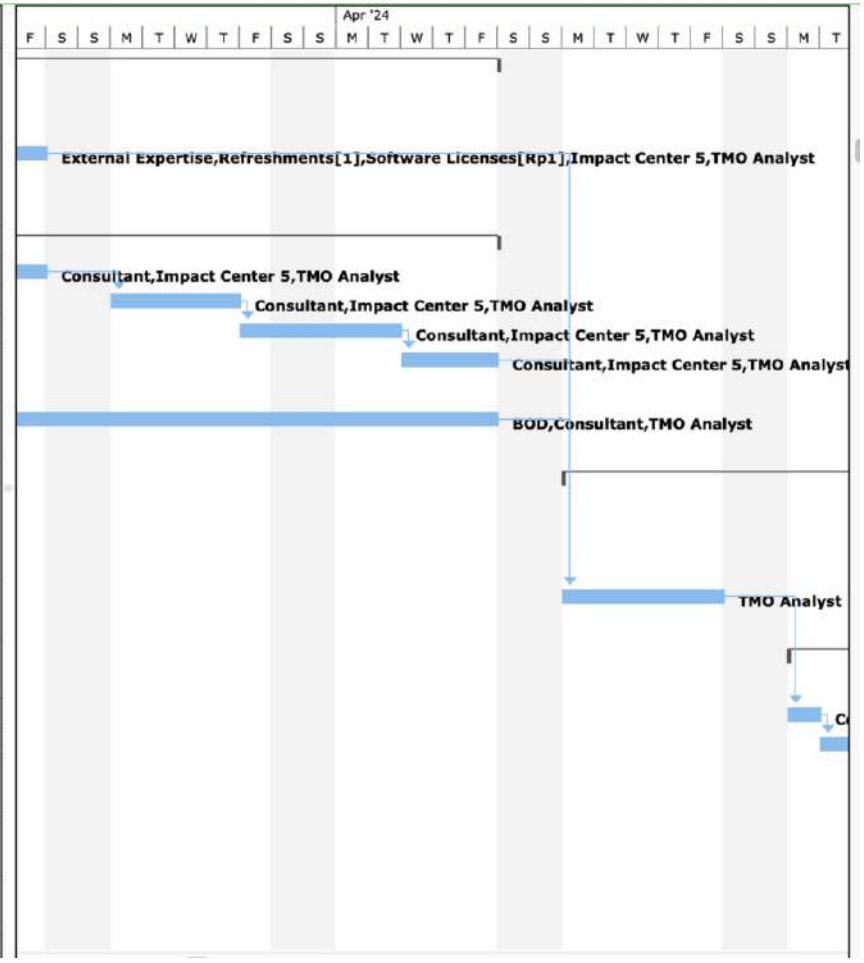

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| 41 | Create cross-functional teams to collaboratively formulate and evaluate | TMO Analyst | 5 days | Mon 4/8/24 | Fri 4/12/24 | 33,38,39 | 10 hrs | Rp550.000 |
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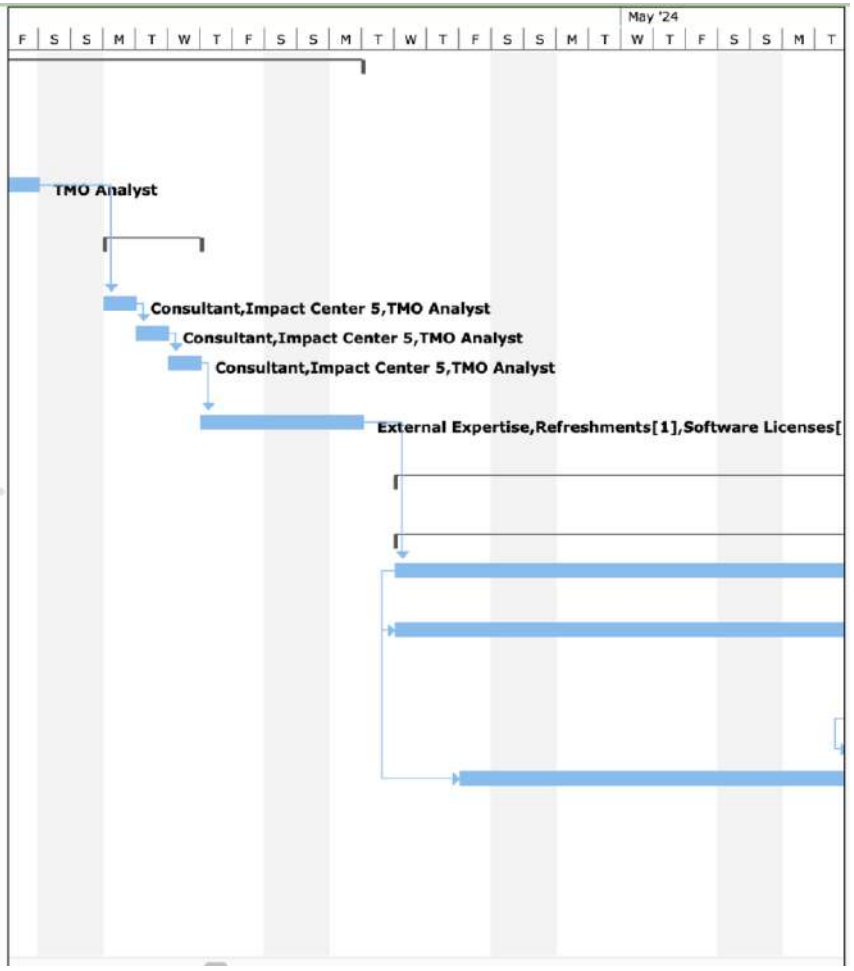
| 49 | Financial performance analysis training | External Expertise | 10 days | Wed 4/24/24 | Tue 5/7/24 | 46FS+1 day | 30 hrs | Rp11.120.000 |
| 50 | Market potential analysis training | External Expertise | 10 days | Wed 4/24/24 | Tue 5/7/24 | 49SS | 30 hrs | Rp45.800.000 |
| 51 | **Workshop** | | **8 days** | **Wed 5/8/24** | **Fri 5/17/24** | | **16 hrs** | **Rp25.600.000** |
| 52 | Legal workshop | External | 8 days | Wed 5/8/24 | Fri 5/17/24 | 49,50 | 8 hrs | Rp12.800.000 |
| 53 | Regulatory workshop | External | 8 days | Wed 5/8/24 | Fri 5/17/24 | 52SS | 8 hrs | Rp12.800.000 |
| 54 | Regular review meetings | BOD,Co | 16 days | Fri 4/26/24 | Fri 5/17/24 | 49SS+2 days | 8 hrs | Rp2.146.667 |
| 55 | **Internal support systems implementation in research on additional ad-hoc request** | | **20 days** | **Mon 5/20/24** | **Fri 6/14/24** | | **55 hrs** | **Rp11.275.000** |
| 56 | Integrate database for research management, data analysis, and report generation (Microsoft | Consulta nt, | 10 days | Mon 5/20/24 | Fri 5/31/24 | 52,53,54 | 30 hrs | Rp6.150.000 |



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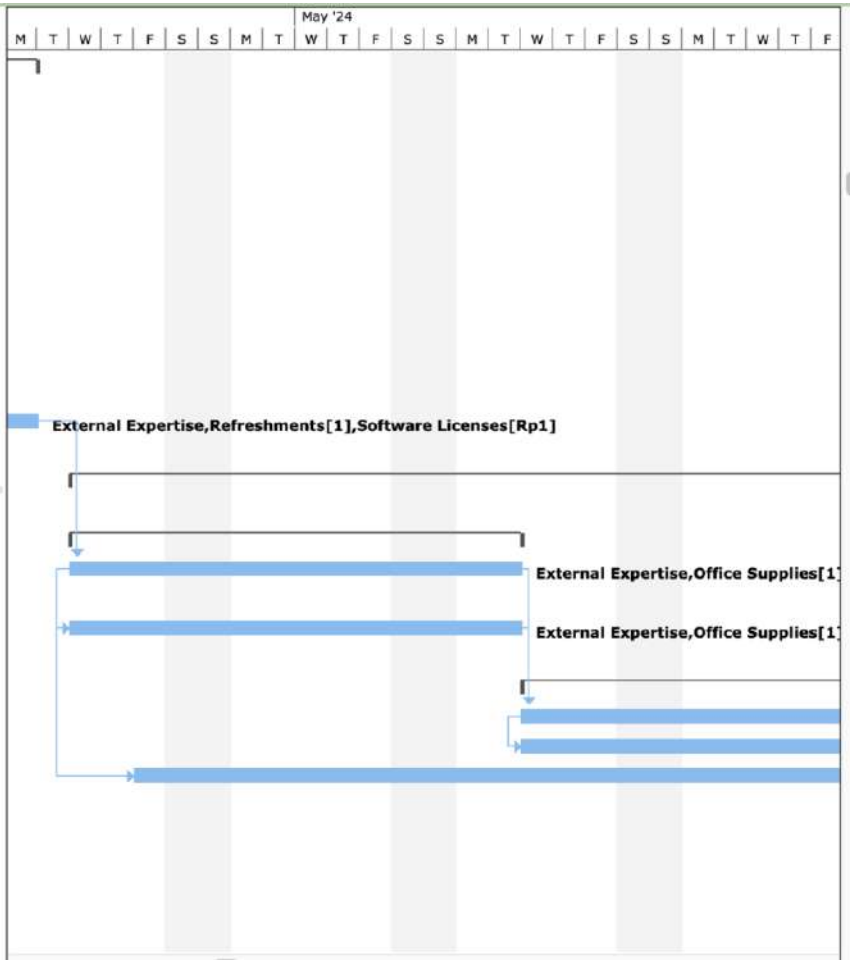

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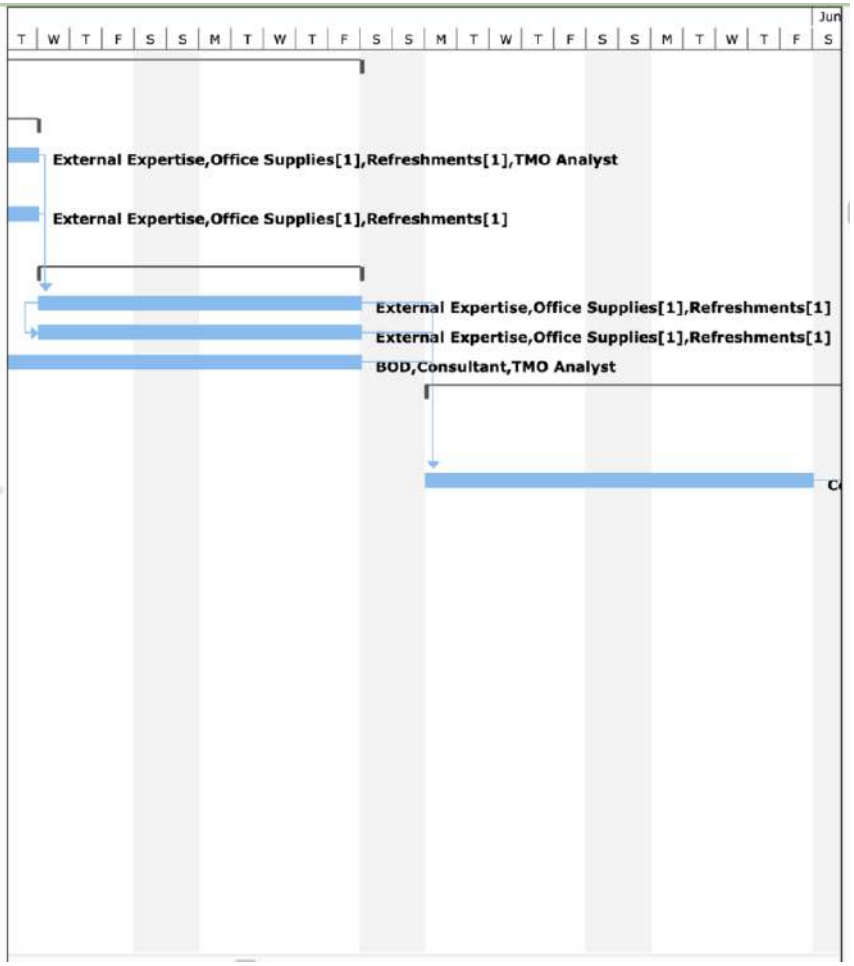
| 55 | **Internal support systems implementation in research on additional ad-hoc request** | | **20 days** | **Mon 5/20/24** | **Fri 6/14/24** | | **55 hrs** | **Rp11.275.000** |
| 56 | Integrate database for research management, data analysis, and report generation (Microsoft Sharepoint) | Consultant, | 10 days | Mon 5/20/24 | Fri 5/31/24 | 52,53,54 | 30 hrs | Rp6.150.000 |
| 57 | Develop standard procedures for managing ad-hoc request | Consultant, | 10 days | Mon 6/3/24 | Fri 6/14/24 | 56 | 25 hrs | Rp5.125.000 |
| 58 | **Employee training and development in partnership shortlisting and outreach** | | **15 days** | **Mon 6/17/24** | **Fri 7/5/24** | | **36 hrs** | **Rp26.535.000** |
| 59 | **Training** | | **15 days** | **Mon 6/17/24** | **Fri 7/5/24** | | **30 hrs** | **Rp24.925.000** |
| 60 | Negotiation and communication skills training | External Expertise, | 7 days | Mon 6/17/24 | Tue 6/25/24 | 57 | 14 hrs | Rp11.685.000 |
| 61 | Identify and analyze potential partner needs training | External Expertise, | 8 days | Wed 6/26/24 | Fri 7/5/24 | 60 | 16 hrs | Rp13.240.000 |
| 62 | Regular feedback and | BOD,Co | 11 days | Fri 6/21/24 | Fri 7/5/24 | 60SS+4 days | 6 hrs | Rp1.610.000 |



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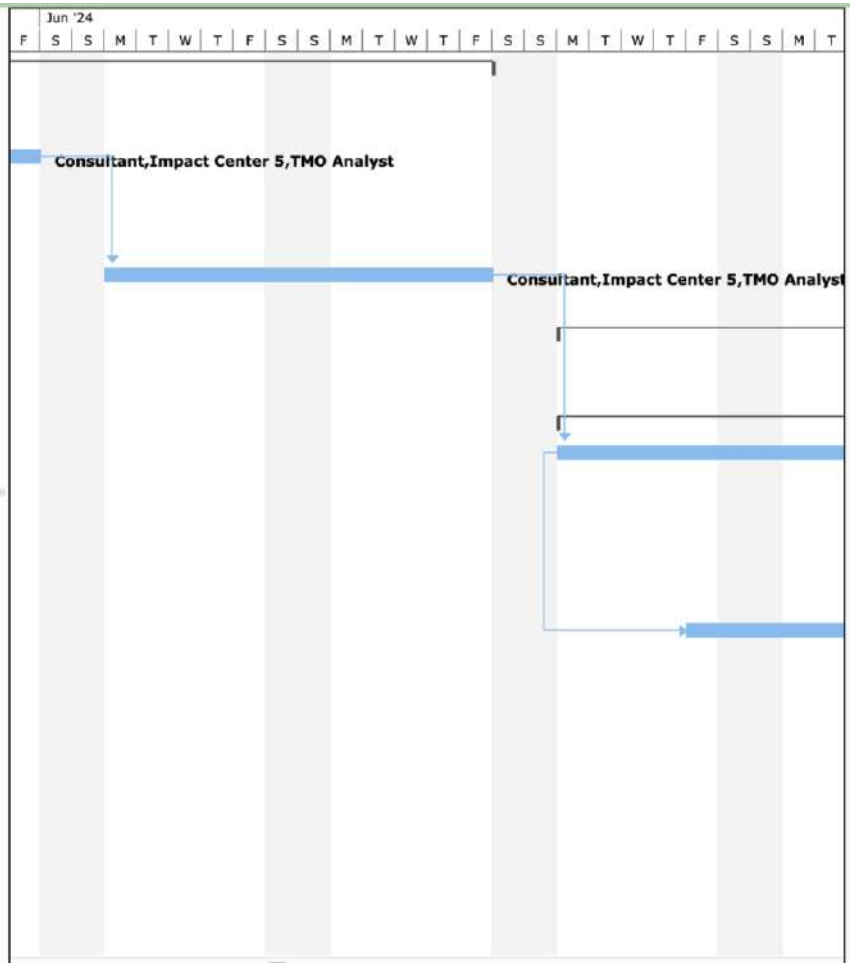
| 57 | Develop standard procedures for managing ad-hoc request | Consultant, | 10 days | Mon 6/3/24 | Fri 6/14/24 | 56 | 25 hrs | Rp5.125.000 |
| 58 | **Employee training and development in partnership shortlisting and outreach** | | **15 days** | **Mon 6/17/24** | **Fri 7/5/24** | | **36 hrs** | **Rp26.535.000** |
| 59 | **Training** | | **15 days** | **Mon 6/17/24** | **Fri 7/5/24** | | **30 hrs** | **Rp24.925.000** |
| 60 | Negotiation and communication skills training | External Expertise, | 7 days | Mon 6/17/24 | Tue 6/25/24 | 57 | 14 hrs | Rp11.685.000 |
| 61 | Identify and analyze potential partner needs training | External Expertise, | 8 days | Wed 6/26/24 | Fri 7/5/24 | 60 | 16 hrs | Rp13.240.000 |
| 62 | Regular feedback and monitor performance metrics | BOD,Consultan | 11 days | Fri 6/21/24 | Fri 7/5/24 | 60SS+4 days | 6 hrs | Rp1.610.000 |
| 63 | **Training and competency development in pre-FS and FS execution** | | **60 days** | **Mon 7/8/24** | **Fri 9/27/24** | | **210 hrs** | **Rp152.775.000** |
| 64 | **Training** | | **20 days** | **Mon 7/8/24** | **Fri 8/2/24** | | **70 hrs** | **Rp56.825.000** |
| 65 | Market analysis training | External Expertise. | 10 days | Mon 7/8/24 | Fri 7/19/24 | 61,62 | 40 hrs | Rp31.900.000 |
| 66 | Estimation and profitability analysis training | External Expertise. | 5 days | Mon 7/22/24 | Fri 7/26/24 | 65 | 15 hrs | Rp12.462.500 |
| 67 | Resource refinement training | External Expertise | 5 days | Mon 7/29/24 | Fri 8/2/24 | 66 | 15 hrs | Rp12.462.500 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 55 | **Internal support systems implementation in research on additional ad-hoc request** | | **20 days** | **Mon 5/20/24** | **Fri 6/14/24** | | **55 hrs** | **Rp11.275.000** |
| 56 | Integrate database for research management, data analysis, and report generation (Microsoft Sharepoint) | Consultant, | 10 days | Mon 5/20/24 | Fri 5/31/24 | 52,53,54 | 30 hrs | Rp6.150.000 |
| 57 | Develop standard procedures for managing ad-hoc request | Consultant, | 10 days | Mon 6/3/24 | Fri 6/14/24 | 56 | 25 hrs | Rp5.125.000 |
| 58 | **Employee training and development in partnership shortlisting and outreach** | | **15 days** | **Mon 6/17/24** | **Fri 7/5/24** | | **36 hrs** | **Rp26.535.000** |
| 59 | **Training** | | **15 days** | **Mon 6/17/24** | **Fri 7/5/24** | | **30 hrs** | **Rp24.925.000** |
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| 63 | **Training and competency development in pre-FS and FS execution** | | **60 days** | **Mon 7/8/24** | **Fri 9/27/24** | | **210 hrs** | **Rp152.775.000** |
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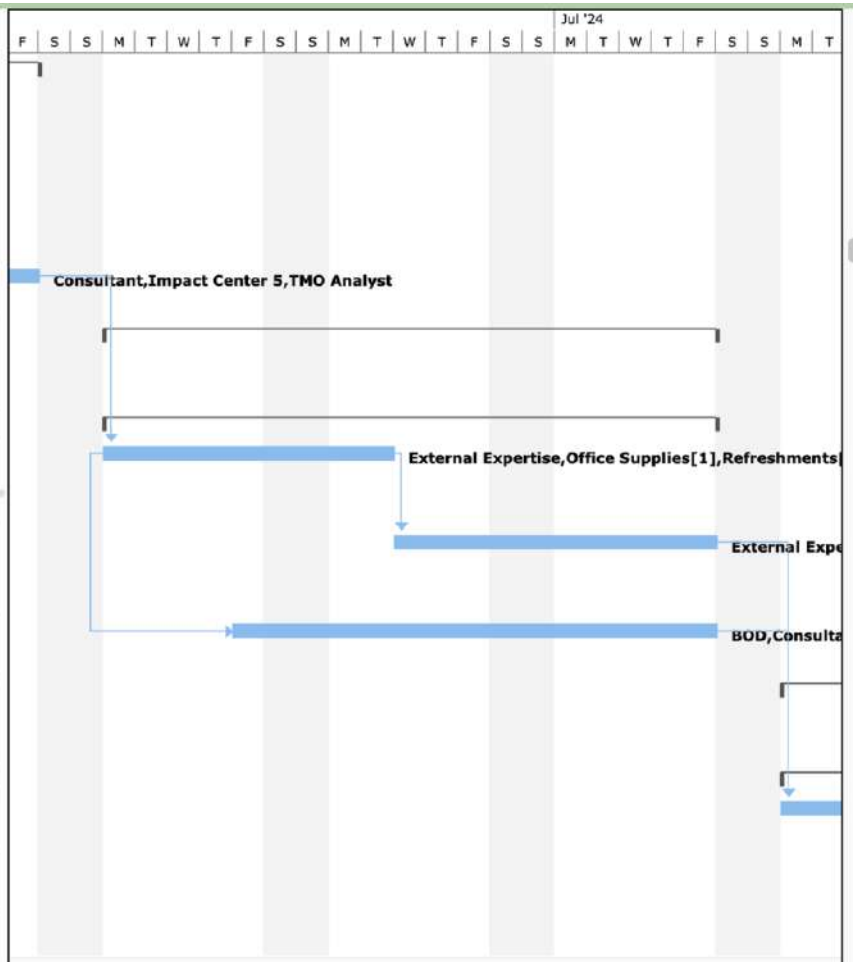

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| 62 | Regular feedback and monitor performance metrics | BOD,Consultan | 11 days | Fri 6/21/24 | Fri 7/5/24 | 60SS+4 days | 6 hrs | Rp1.610.000 |
| 63 | **Training and competency development in pre-FS and FS execution** | | **60 days** | **Mon 7/8/24** | **Fri 9/27/24** | | **210 hrs** | **Rp152.775.000** |
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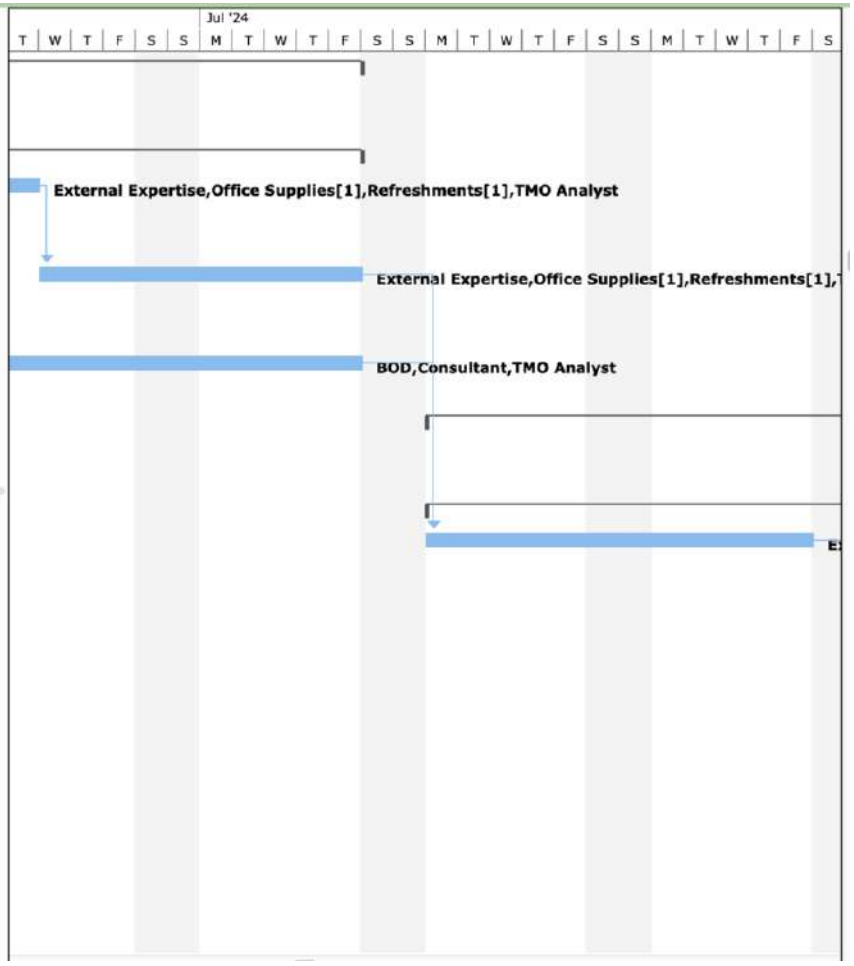
| 66 | Estimation and profitability analysis training | External Expertise. | 5 days | Mon 7/22/24 | Fri 7/26/24 | 65 | 15 hrs | Rp12.462.500 |
| 67 | Resource refinement training | External Expertise. | 5 days | Mon 7/29/24 | Fri 8/2/24 | 66 | 15 hrs | Rp12.462.500 |
| 68 | **Workshop** | | **5 days** | **Mon 8/5/24** | **Fri 8/9/24** | | **20 hrs** | **Rp16.350.000** |
| 69 | Strategic decisions workshop | External Expertise. | 5 days | Mon 8/5/24 | Fri 8/9/24 | 67 | 20 hrs | Rp16.350.000 |
| 70 | On-the-job training | External | 20 days | Mon 8/12/24 | Fri 9/6/24 | 69 | 60 hrs | Rp32.800.000 |
| 71 | Certifications | External | 15 days | Mon 9/9/24 | Fri 9/27/24 | 70 | 60 hrs | Rp46.800.000 |
| 72 | **Training and skill development in business case development** | | **45 days** | **Mon 9/30/24** | **Fri 11/29/24** | | **138 hrs** | **Rp103.730.000** |
| 73 | **Training** | | **30 days** | **Mon 9/30/24** | **Fri 11/8/24** | | **85 hrs** | **Rp69.287.500** |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
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| 63 | **Training and competency development in pre-FS and FS execution** | | **60 days** | **Mon 7/8/24** | **Fri 9/27/24** | | **210 hrs** | **Rp152.775.000** |
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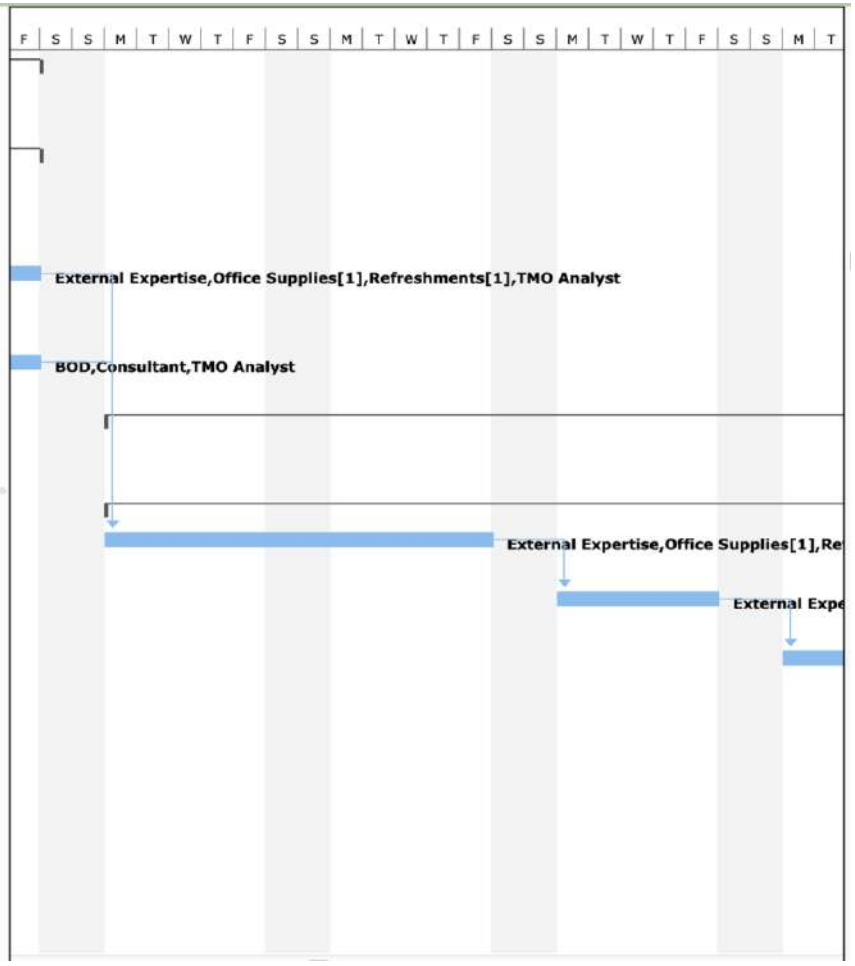
| 71 | Certifications | External | 15 days | Mon 9/9/24 | Fri 9/27/24 | 70 | 60 hrs | Rp46.800.000 |
| 72 | **Training and skill development in business case development** | | **45 days** | **Mon 9/30/24** | **Fri 11/29/24** | | **138 hrs** | **Rp103.730.000** |
| 73 | **Training** | | **30 days** | **Mon 9/30/24** | **Fri 11/8/24** | | **85 hrs** | **Rp69.287.500** |



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| 63 | **Training and competency development in pre-FS and FS execution** | | **60 days** | **Mon 7/8/24** | **Fri 9/27/24** | | **210 hrs** | **Rp152.775.000** |
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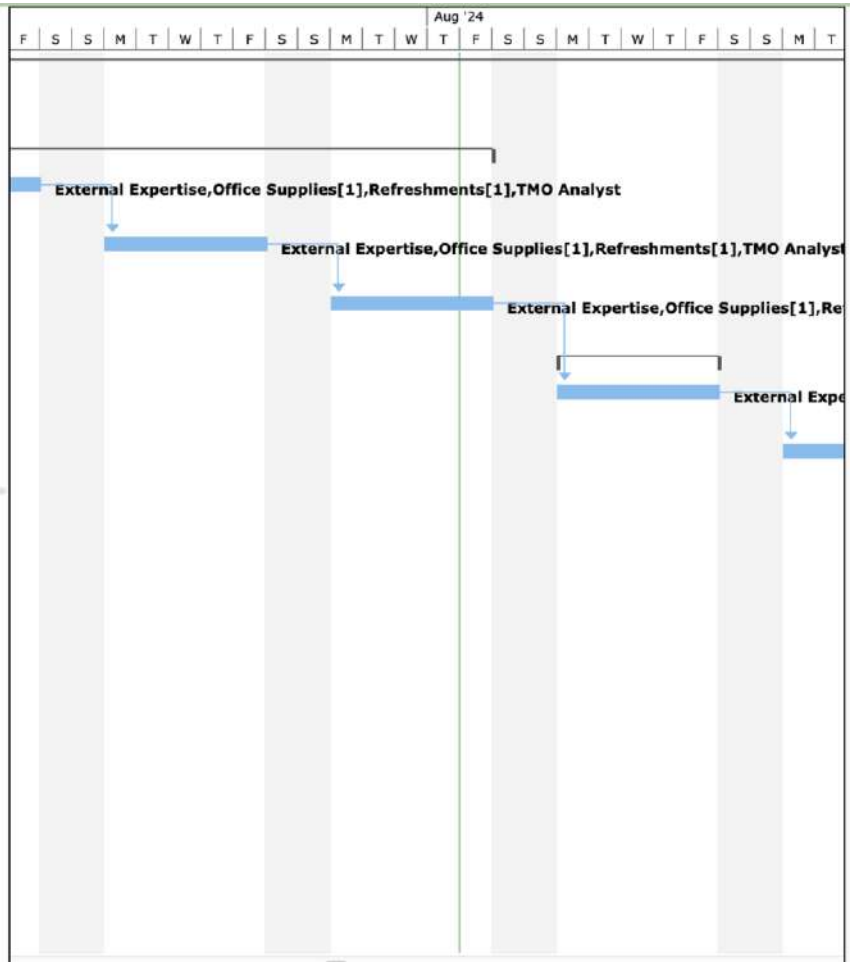
| 76 | Develop structure training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 75 | 15 hrs | Rp12.462.500 |
| 77 | Present findings training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 76SS | 20 hrs | Rp16.350.000 |
| 78 | **Workshop** | | **15 days** | **Mon 11/11/2** | **Fri 11/29/24** | | **35 hrs** | **Rp29.612.500** |
| 79 | Problem solving and critical thinking workshop | External Expertise | 5 days | Mon 11/11/24 | Fri 11/15/24 | 77 | 15 hrs | Rp12.462.500 |
| 80 | Communication and | External | 5 days | Mon | Fri 11/22/24 | 79 | 10 hrs | Rp8.575.000 |



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| 73 | **Training** | | **30 days** | **Mon 9/30/24** | **Fri 11/8/24** | | **85 hrs** | **Rp69.287.500** |
| 74 | Identify objectives and opportunities training | External Expertise | 10 days | Mon 9/30/24 | Fri 10/11/24 | 71 | 20 hrs | Rp16.350.000 |
| 75 | Analyse and summarize findings training | External Expertise | 10 days | Mon 10/14/24 | Fri 10/25/24 | 74 | 30 hrs | Rp24.125.000 |
| 76 | Develop structure training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 75 | 15 hrs | Rp12.462.500 |
| 77 | Present findings training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 76SS | 20 hrs | Rp16.350.000 |
| 78 | **Workshop** | | **15 days** | **Mon 11/11/2** | **Fri 11/29/24** | | **35 hrs** | **Rp29.612.500** |
| 79 | Problem solving and critical thinking workshop | External Expertise | 5 days | Mon 11/11/24 | Fri 11/15/24 | 77 | 15 hrs | Rp12.462.500 |
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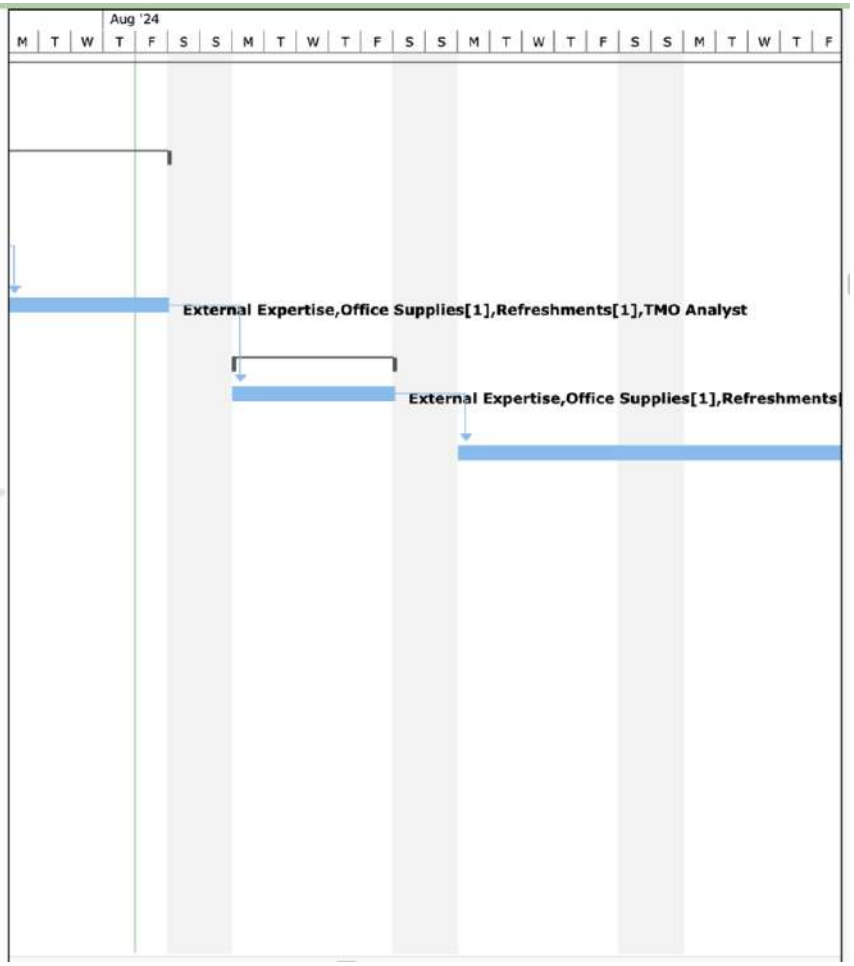

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| 74 | Identify objectives and opportunities training | External Expertise | 10 days | Mon 9/30/24 | Fri 10/11/24 | 71 | 20 hrs | Rp16.350.000 |
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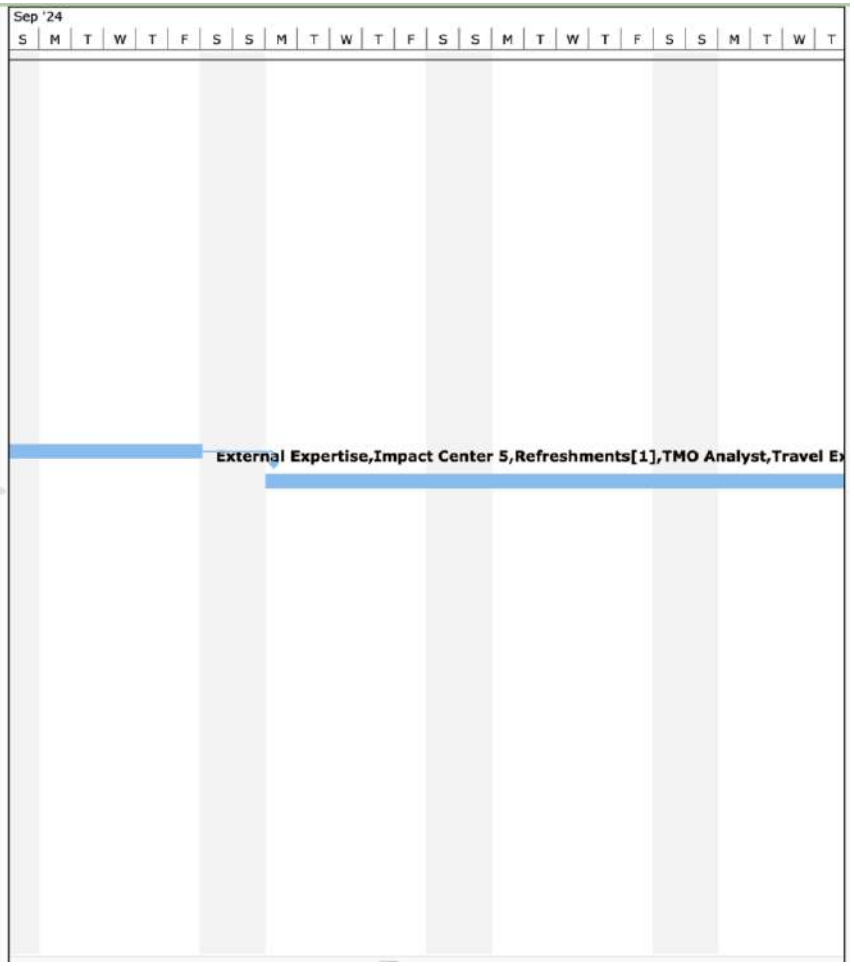
| 79 | Problem solving and critical thinking workshop | External Expertise | 5 days | Mon 11/11/24 | Fri 11/15/24 | 77 | 15 hrs | Rp12.462.500 |
| 80 | Communication and | External | 5 days | Mon | Fri 11/22/24 | 79 | 10 hrs | Rp8.575.000 |



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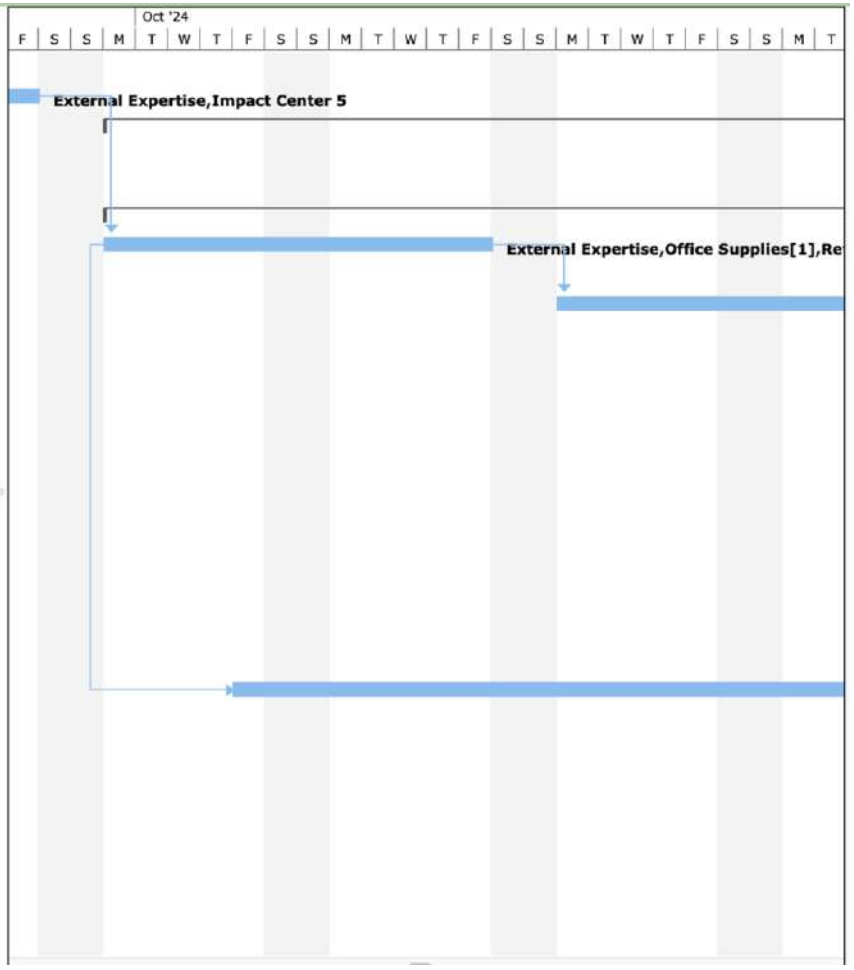
| 81 | Data interpretation workshop | External Expertise | 5 days | Mon 11/25/24 | Fri 11/29/24 | 80 | 10 hrs | Rp8.575.000 |
| 82 | Regular feedback and monitor performance metrics | BOD,Consultan | 41 days | Fri 10/4/24 | Fri 11/29/24 | 74SS+4 days | 18 hrs | Rp4.830.000 |
| 83 | **Processes and control systems implementation in off taker analysis** | | **40 days** | **Mon 12/2/24** | **Fri 1/24/25** | | **125 hrs** | **Rp143.675.003** |
| 84 | **Standard operation procedures** | | **20 days** | **Mon 12/2/24** | **Fri 12/27/24** | | **35 hrs** | **Rp7.175.000** |
| 85 | Financial analysis | Consulta | 10 days | Mon 12/2/24 | Fri 12/13/24 | 81,82 | 25 hrs | Rp5.125.000 |
| 86 | Reputation evaluation and compliance | Consulta nt, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |



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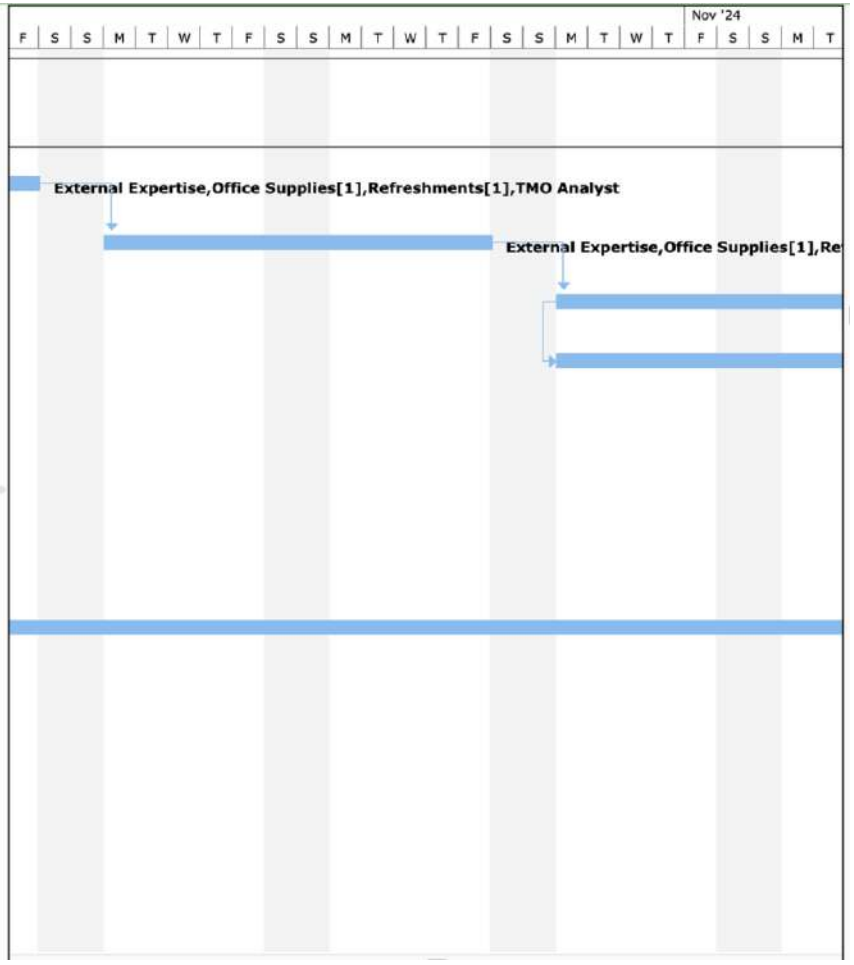
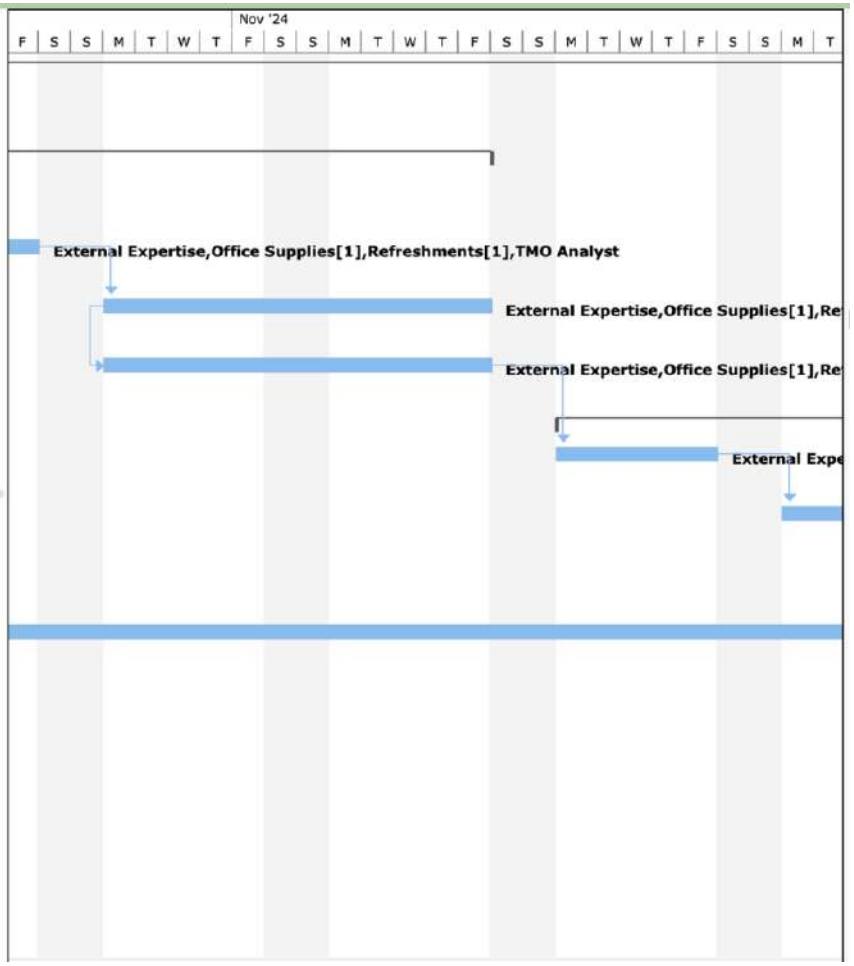
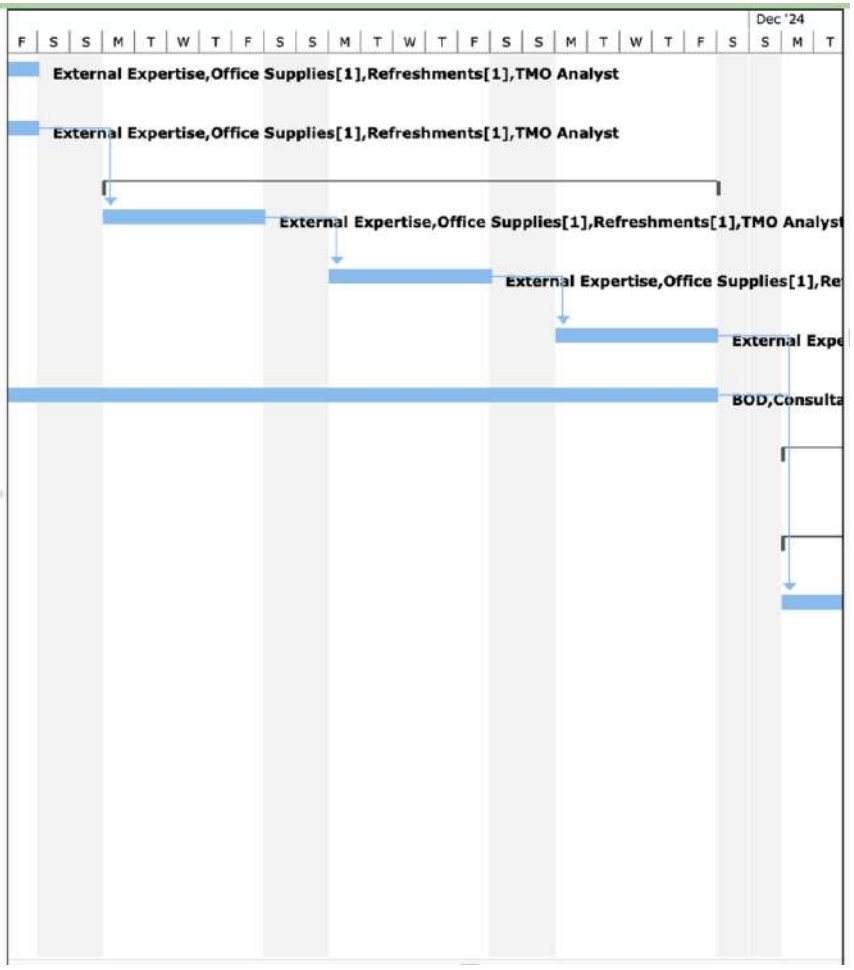
| 85 | Financial analysis | Consulta | 10 days | Mon 12/2/24 | Fri 12/13/24 | 81,82 | 25 hrs | Rp5.125.000 |
| 86 | Reputation evaluation and compliance | Consulta nt, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |



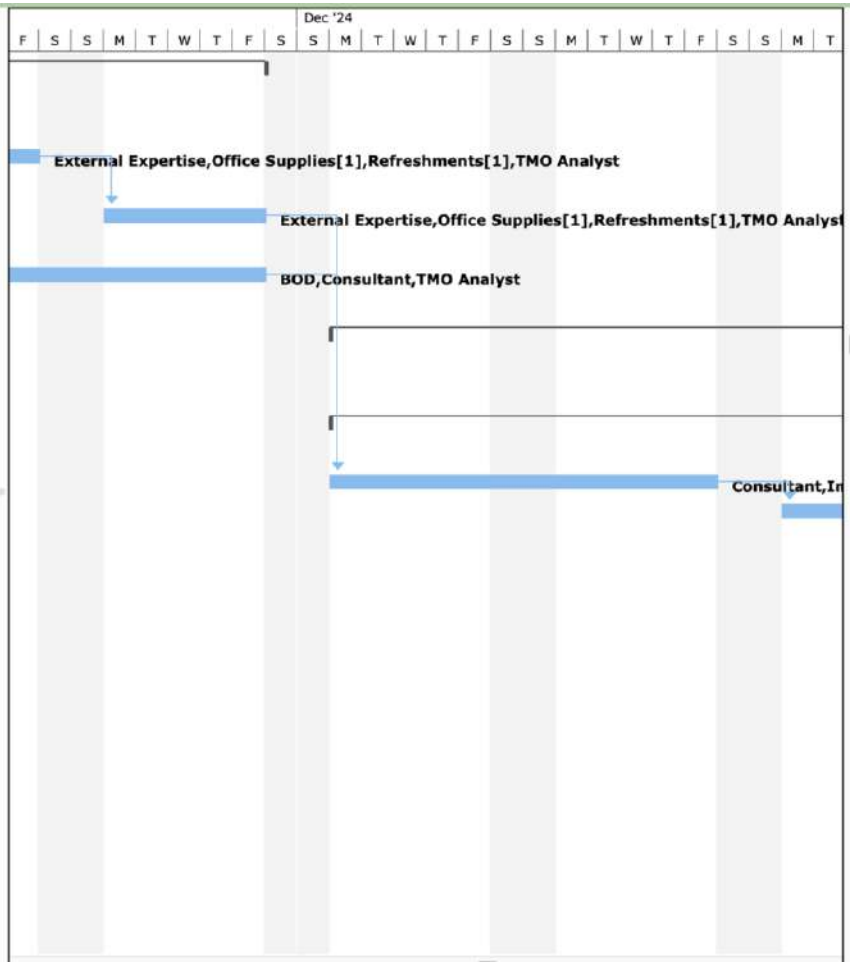
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 72 | **Training and skill development in business case development** | | **45 days** | **Mon 9/30/24** | **Fri 11/29/24** | | **138 hrs** | **Rp103.730.000** |
| 73 | **Training** | | **30 days** | **Mon 9/30/24** | **Fri 11/8/24** | | **85 hrs** | **Rp69.287.500** |
| 74 | Identify objectives and opportunities training | External Expertise | 10 days | Mon 9/30/24 | Fri 10/11/24 | 71 | 20 hrs | Rp16.350.000 |
| 75 | Analyse and summarize findings training | External Expertise | 10 days | Mon 10/14/24 | Fri 10/25/24 | 74 | 30 hrs | Rp24.125.000 |
| 76 | Develop structure training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 75 | 15 hrs | Rp12.462.500 |
| 77 | Present findings training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 76SS | 20 hrs | Rp16.350.000 |
| 78 | **Workshop** | | **15 days** | **Mon 11/11/2** | **Fri 11/29/24** | | **35 hrs** | **Rp29.612.500** |
| 79 | Problem solving and critical thinking workshop | External Expertise | 5 days | Mon 11/11/24 | Fri 11/15/24 | 77 | 15 hrs | Rp12.462.500 |
| 80 | Communication and stakeholder engagement workshop | External Expertise | 5 days | Mon 11/18/24 | Fri 11/22/24 | 79 | 10 hrs | Rp8.575.000 |
| 81 | Data interpretation workshop | External Expertise | 5 days | Mon 11/25/24 | Fri 11/29/24 | 80 | 10 hrs | Rp8.575.000 |
| 82 | Regular feedback and monitor performance metrics | BOD,Consultan | 41 days | Fri 10/4/24 | Fri 11/29/24 | 74SS+4 days | 18 hrs | Rp4.830.000 |
| 83 | **Processes and control systems implementation in off taker analysis** | | **40 days** | **Mon 12/2/24** | **Fri 1/24/25** | | **125 hrs** | **Rp143.675.003** |
| 84 | **Standard operation procedures** | | **20 days** | **Mon 12/2/24** | **Fri 12/27/24** | | **35 hrs** | **Rp7.175.000** |
| 85 | Financial analysis | Consulta | 10 days | Mon 12/2/24 | Fri 12/13/24 | 81,82 | 25 hrs | Rp5.125.000 |
| 86 | Reputation evaluation and compliance | Consulta nt, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |



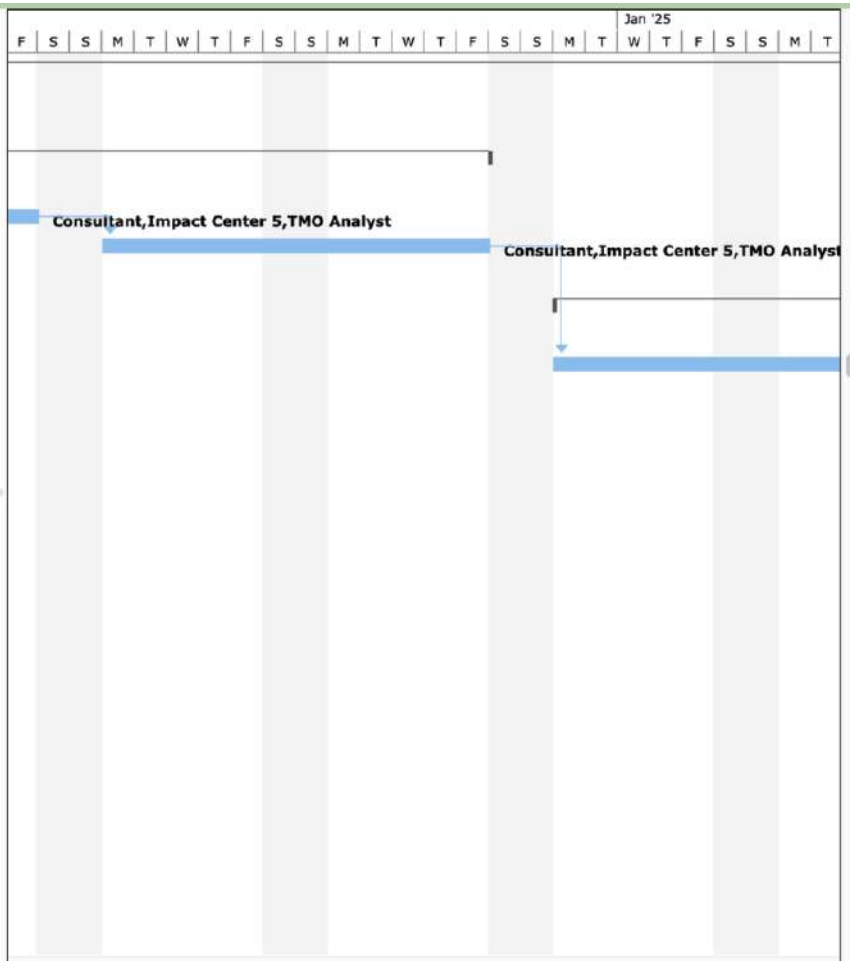
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 76 | Develop structure training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 75 | 15 hrs | Rp12.462.500 |
| 77 | Present findings training | External Expertise | 10 days | Mon 10/28/24 | Fri 11/8/24 | 76SS | 20 hrs | Rp16.350.000 |
| 78 | **Workshop** | | **15 days** | **Mon 11/11/2** | **Fri 11/29/24** | | **35 hrs** | **Rp29.612.500** |
| 79 | Problem solving and critical thinking workshop | External Expertise | 5 days | Mon 11/11/24 | Fri 11/15/24 | 77 | 15 hrs | Rp12.462.500 |
| 80 | Communication and stakeholder engagement workshop | External Expertise | 5 days | Mon 11/18/24 | Fri 11/22/24 | 79 | 10 hrs | Rp8.575.000 |
| 81 | Data interpretation workshop | External Expertise | 5 days | Mon 11/25/24 | Fri 11/29/24 | 80 | 10 hrs | Rp8.575.000 |
| 82 | Regular feedback and monitor performance metrics | BOD,Consultan | 41 days | Fri 10/4/24 | Fri 11/29/24 | 74SS+4 days | 18 hrs | Rp4.830.000 |
| 83 | **Processes and control systems implementation in off taker analysis** | | **40 days** | **Mon 12/2/24** | **Fri 1/24/25** | | **125 hrs** | **Rp143.675.003** |
| 84 | **Standard operation procedures** | | **20 days** | **Mon 12/2/24** | **Fri 12/27/24** | | **35 hrs** | **Rp7.175.000** |
| 85 | Financial analysis | Consulta | 10 days | Mon 12/2/24 | Fri 12/13/24 | 81,82 | 25 hrs | Rp5.125.000 |
| 86 | Reputation evaluation and compliance | Consultant, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |
| 88 | CRM systems | External | 10 days | Mon 12/30/2 | Fri 1/10/25 | 86 | 30 hrs | Rp45.500.001 |
| 89 | Business intelligence | External | 10 days | Mon 1/13/25 | Fri 1/24/25 | 88 | 40 hrs | Rp60.500.001 |
| 90 | Database management system | External Expertise | 10 days | Mon 1/13/25 | Fri 1/24/25 | 89SS | 20 hrs | Rp30.500.001 |
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |



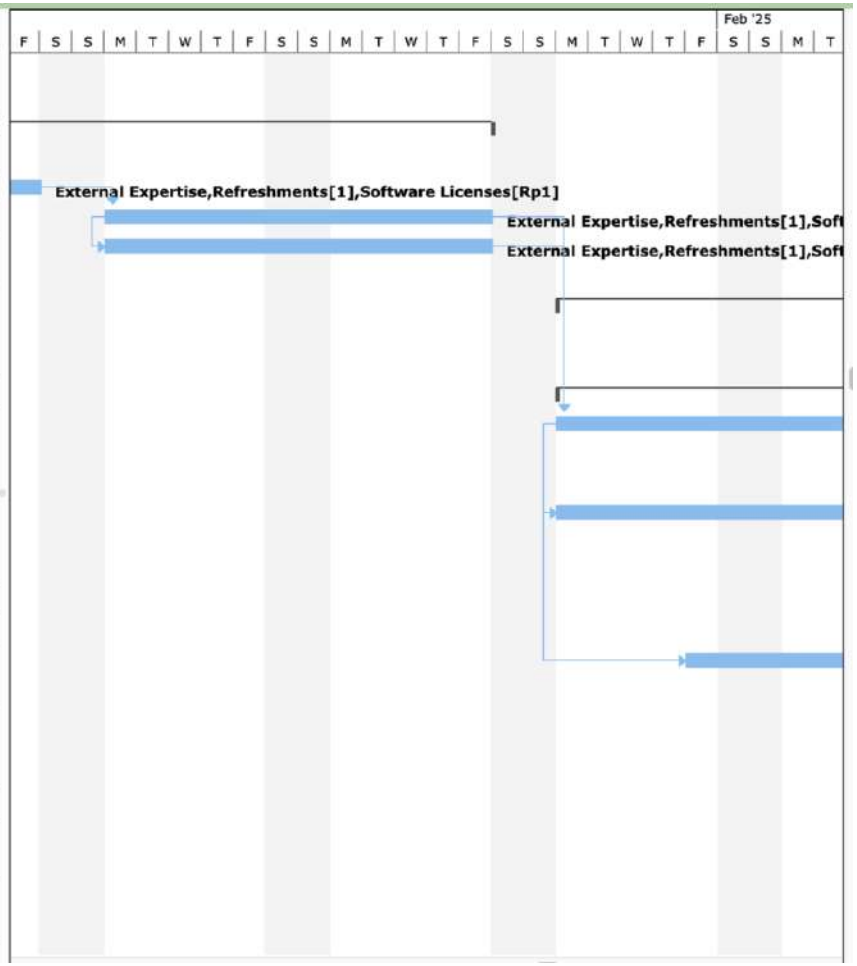
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 78 | **Workshop** | | **15 days** | **Mon 11/11/2** | **Fri 11/29/24** | | **35 hrs** | **Rp29.612.500** |
| 79 | Problem solving and critical thinking workshop | External Expertise | 5 days | Mon 11/11/24 | Fri 11/15/24 | 77 | 15 hrs | Rp12.462.500 |
| 80 | Communication and stakeholder engagement workshop | External Expertise | 5 days | Mon 11/18/24 | Fri 11/22/24 | 79 | 10 hrs | Rp8.575.000 |
| 81 | Data interpretation workshop | External Expertise | 5 days | Mon 11/25/24 | Fri 11/29/24 | 80 | 10 hrs | Rp8.575.000 |
| 82 | Regular feedback and monitor performance metrics | BOD,Consultan | 41 days | Fri 10/4/24 | Fri 11/29/24 | 74SS+4 days | 18 hrs | Rp4.830.000 |
| 83 | **Processes and control systems implementation in off taker analysis** | | **40 days** | **Mon 12/2/24** | **Fri 1/24/25** | | **125 hrs** | **Rp143.675.003** |
| 84 | **Standard operation procedures** | | **20 days** | **Mon 12/2/24** | **Fri 12/27/24** | | **35 hrs** | **Rp7.175.000** |
| 85 | Financial analysis | Consulta | 10 days | Mon 12/2/24 | Fri 12/13/24 | 81,82 | 25 hrs | Rp5.125.000 |
| 86 | Reputation evaluation and compliance | Consulta nt, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |
| 88 | CRM systems | External | 10 days | Mon 12/30/2 | Fri 1/10/25 | 86 | 30 hrs | Rp45.500.001 |
| 89 | Business intelligence | External | 10 days | Mon 1/13/25 | Fri 1/24/25 | 88 | 40 hrs | Rp60.500.001 |
| 90 | Database management system | External Expertise | 10 days | Mon 1/13/25 | Fri 1/24/25 | 89SS | 20 hrs | Rp30.500.001 |
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |
| 93 | Research techniques (methodologies and data collection) training | External Expertise | 10 days | Mon 1/27/25 | Fri 2/7/25 | 89,90 | 20 hrs | Rp16.350.000 |
| 94 | Strategic analysis | External | 10 days | Mon 1/27/25 | Fri 2/7/25 | 93SS | 25 hrs | Rp20.237.500 |



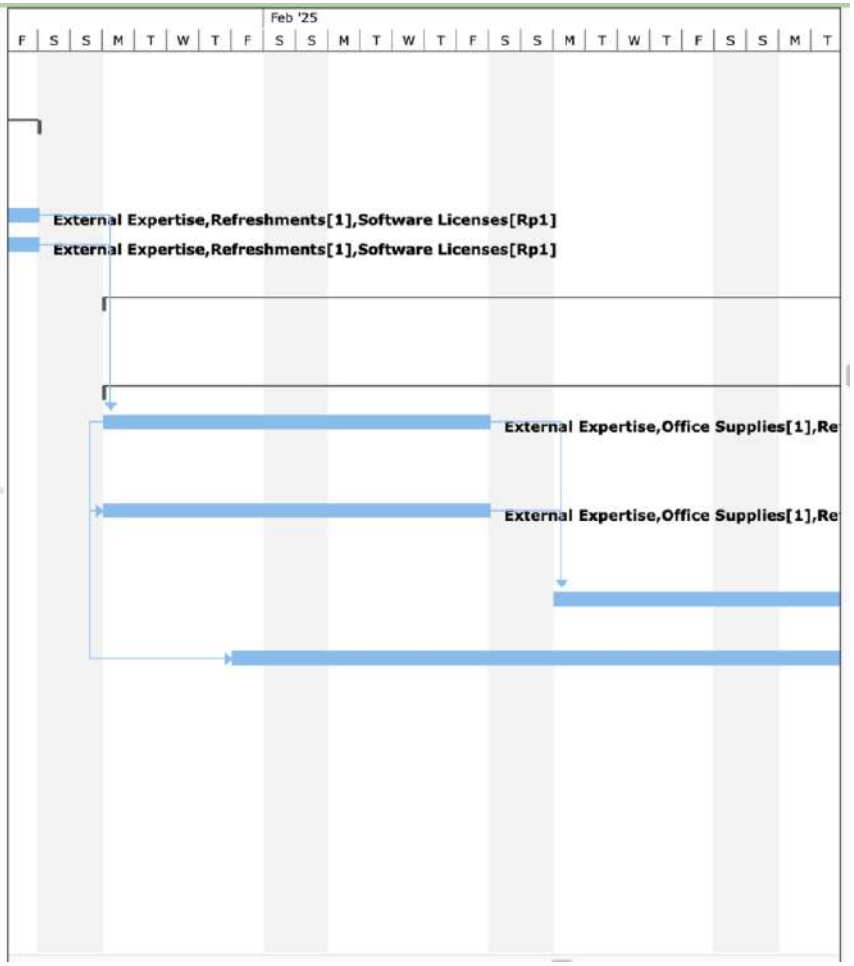
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 83 | **Processes and control systems implementation in off taker analysis** | | **40 days** | **Mon 12/2/24** | **Fri 1/24/25** | | **125 hrs** | **Rp143.675.003** |
| 84 | **Standard operation procedures** | | **20 days** | **Mon 12/2/24** | **Fri 12/27/24** | | **35 hrs** | **Rp7.175.000** |
| 85 | Financial analysis | Consulta | 10 days | Mon 12/2/24 | Fri 12/13/24 | 81,82 | 25 hrs | Rp5.125.000 |
| 86 | Reputation evaluation and compliance | Consulta nt, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |
| 88 | CRM systems | External | 10 days | Mon 12/30/2 | Fri 1/10/25 | 86 | 30 hrs | Rp45.500.001 |
| 89 | Business intelligence | External | 10 days | Mon 1/13/25 | Fri 1/24/25 | 88 | 40 hrs | Rp60.500.001 |
| 90 | Database management system | External Expertise | 10 days | Mon 1/13/25 | Fri 1/24/25 | 89SS | 20 hrs | Rp30.500.001 |
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |
| 93 | Research techniques (methodologies and data collection) training | External Expertise , | 10 days | Mon 1/27/25 | Fri 2/7/25 | 89,90 | 20 hrs | Rp16.350.000 |
| 94 | Strategic analysis (SWOT and PESTLE) training | External Expertise , | 10 days | Mon 1/27/25 | Fri 2/7/25 | 93SS | 25 hrs | Rp20.237.500 |
| 95 | Report writing training | External | 10 days | Mon 2/10/25 | Fri 2/21/25 | 93,94 | 15 hrs | Rp12.462.500 |
| 96 | On-the-job training | External | 15 days | Mon 2/24/25 | Fri 3/14/25 | 95 | 75 hrs | Rp40.875.000 |
| 97 | Regular feedback and monitor performance | BOD,Co nsu ltan | 31 days | Fri 1/31/25 | Fri 3/14/25 | 93SS+4 days | 14 hrs | Rp3.756.667 |
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |



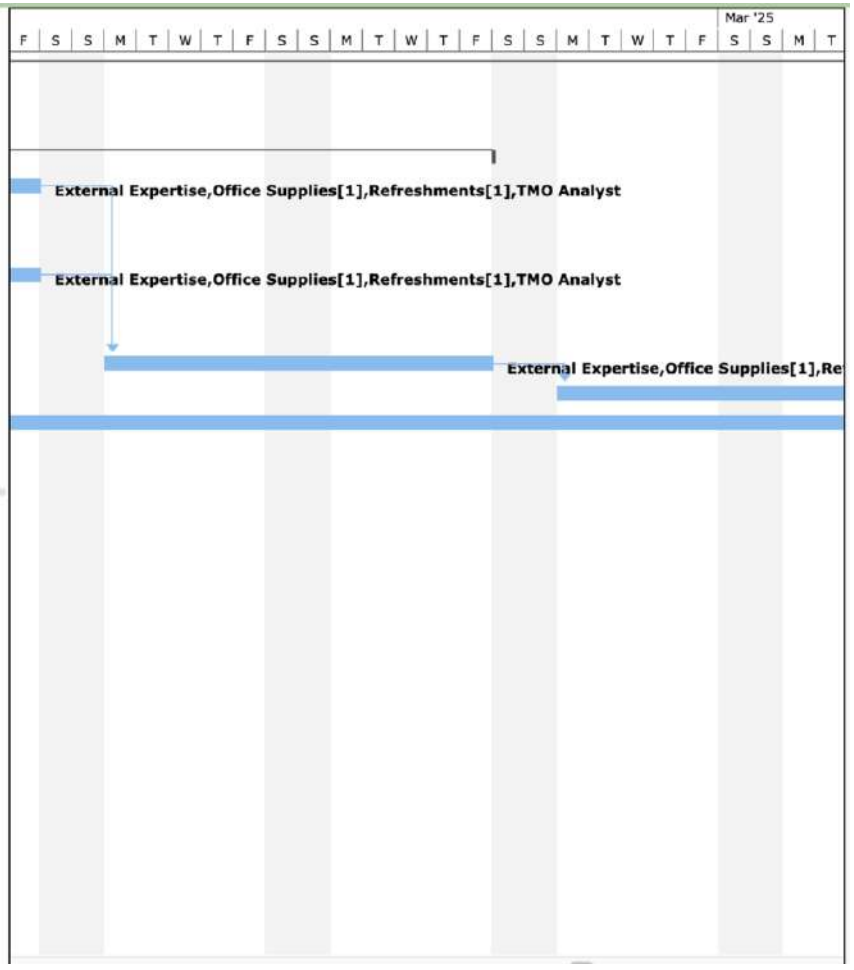
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 86 | Reputation evaluation and compliance | Consultant, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |
| 88 | CRM systems | External | 10 days | Mon 12/30/2 | Fri 1/10/25 | 86 | 30 hrs | Rp45.500.001 |
| 89 | Business intelligence | External | 10 days | Mon 1/13/25 | Fri 1/24/25 | 88 | 40 hrs | Rp60.500.001 |
| 90 | Database management system | External Expertise | 10 days | Mon 1/13/25 | Fri 1/24/25 | 89SS | 20 hrs | Rp30.500.001 |
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |
| 93 | Research techniques (methodologies and data collection) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 89,90 | 20 hrs | Rp16.350.000 |
| 94 | Strategic analysis (SWOT and PESTLE) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 93SS | 25 hrs | Rp20.237.500 |
| 95 | Report writing training | External | 10 days | Mon 2/10/25 | Fri 2/21/25 | 93,94 | 15 hrs | Rp12.462.500 |
| 96 | On-the-job training | External | 15 days | Mon 2/24/25 | Fri 3/14/25 | 95 | 75 hrs | Rp40.875.000 |
| 97 | Regular feedback and monitor performance | BOD,Consultan | 31 days | Fri 1/31/25 | Fri 3/14/25 | 93SS+4 days | 14 hrs | Rp3.756.667 |
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |
| 99 | **Guidelines and template** | | **10 days** | **Mon 3/17/25** | **Fri 3/28/25** | | **46 hrs** | **Rp9.430.000** |
| 100 | Identify objectives and opportunities | Consultant, | 2 days | Mon 3/17/25 | Tue 3/18/25 | 96,97 | 10 hrs | Rp2.050.000 |
| 101 | Analyse and summarize findings | Consultant, | 2 days | Wed 3/19/25 | Thu 3/20/25 | 100 | 10 hrs | Rp2.050.000 |
| 102 | Structure | Consulta | 2 days | Fri 3/21/25 | Mon 3/24/25 | 101 | 10 hrs | Rp2.050.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 86 | Reputation evaluation and compliance | Consultant, | 10 days | Mon 12/16/24 | Fri 12/27/24 | 85 | 10 hrs | Rp2.050.000 |
| 87 | **Tools and software implementation** | | **20 days** | **Mon 12/30/24** | **Fri 1/24/25** | | **90 hrs** | **Rp136.500.003** |
| 88 | CRM systems | External | 10 days | Mon 12/30/2 | Fri 1/10/25 | 86 | 30 hrs | Rp45.500.001 |
| 89 | Business intelligence | External | 10 days | Mon 1/13/25 | Fri 1/24/25 | 88 | 40 hrs | Rp60.500.001 |
| 90 | Database management system | External Expertise | 10 days | Mon 1/13/25 | Fri 1/24/25 | 89SS | 20 hrs | Rp30.500.001 |
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |
| 93 | Research techniques (methodologies and data collection) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 89,90 | 20 hrs | Rp16.350.000 |
| 94 | Strategic analysis (SWOT and PESTLE) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 93SS | 25 hrs | Rp20.237.500 |
| 95 | Report writing training | External | 10 days | Mon 2/10/25 | Fri 2/21/25 | 93,94 | 15 hrs | Rp12.462.500 |
| 96 | On-the-job training | External | 15 days | Mon 2/24/25 | Fri 3/14/25 | 95 | 75 hrs | Rp40.875.000 |
| 97 | Regular feedback and monitor performance | BOD,Consultan | 31 days | Fri 1/31/25 | Fri 3/14/25 | 93SS+4 days | 14 hrs | Rp3.756.667 |
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |
| 99 | **Guidelines and template** | | **10 days** | **Mon 3/17/25** | **Fri 3/28/25** | | **46 hrs** | **Rp9.430.000** |
| 100 | Identify objectives and opportunities | Consultant, | 2 days | Mon 3/17/25 | Tue 3/18/25 | 96,97 | 10 hrs | Rp2.050.000 |
| 101 | Analyse and summarize findings | Consultant, | 2 days | Wed 3/19/25 | Thu 3/20/25 | 100 | 10 hrs | Rp2.050.000 |
| 102 | Structure | Consulta | 2 days | Fri 3/21/25 | Mon 3/24/25 | 101 | 10 hrs | Rp2.050.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |
| 93 | Research techniques (methodologies and data collection) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 89,90 | 20 hrs | Rp16.350.000 |
| 94 | Strategic analysis (SWOT and PESTLE) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 93SS | 25 hrs | Rp20.237.500 |
| 95 | Report writing training | External | 10 days | Mon 2/10/25 | Fri 2/21/25 | 93,94 | 15 hrs | Rp12.462.500 |
| 96 | On-the-job training | External | 15 days | Mon 2/24/25 | Fri 3/14/25 | 95 | 75 hrs | Rp40.875.000 |
| 97 | Regular feedback and monitor performance | BOD,Consultan | 31 days | Fri 1/31/25 | Fri 3/14/25 | 93SS+4 days | 14 hrs | Rp3.756.667 |
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |
| 99 | **Guidelines and template** | | **10 days** | **Mon 3/17/25** | **Fri 3/28/25** | | **46 hrs** | **Rp9.430.000** |
| 100 | Identify objectives and opportunities | Consultant, | 2 days | Mon 3/17/25 | Tue 3/18/25 | 96,97 | 10 hrs | Rp2.050.000 |
| 101 | Analyse and summarize findings | Consultant, | 2 days | Wed 3/19/25 | Thu 3/20/25 | 100 | 10 hrs | Rp2.050.000 |
| 102 | Structure | Consulta | 2 days | Fri 3/21/25 | Mon 3/24/25 | 101 | 10 hrs | Rp2.050.000 |
| 103 | Present | Consulta | 2 days | Tue 3/25/25 | Wed 3/26/25 | 102 | 8 hrs | Rp1.640.000 |
| 104 | Templates for business case document | Consultant, | 2 days | Thu 3/27/25 | Fri 3/28/25 | 103 | 8 hrs | Rp1.640.000 |
| 105 | Centralized repository (SharePoint) | Impact Center 5, | 4 days | Mon 3/31/25 | Thu 4/3/25 | 104 | 12 hrs | Rp2.460.000 |
| 106 | Tool integration (Power BI and Excel) | Consultant, | 15 days | Fri 4/4/25 | Thu 4/24/25 | 105 | 45 hrs | Rp9.225.000 |
| 107 | **Process and Tools in pitch** | | **28 days** | **Fri 4/25/25** | **Tue 6/3/25** | | **126 hrs** | **Rp45.163.335** |



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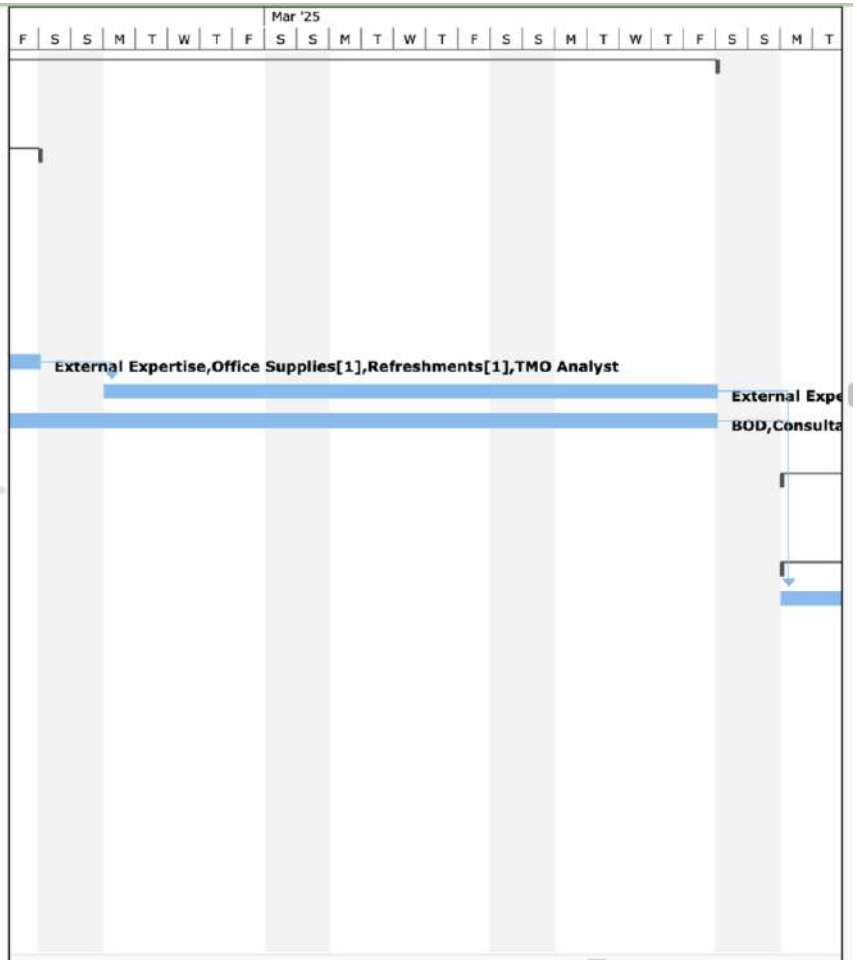
|---|---|---|---|---|---|---|---|---|
| 91 | **Training and capacity building in market and subsector assessment** | | **35 days** | **Mon 1/27/25** | **Fri 3/14/25** | | **149 hrs** | **Rp93.681.667** |
| 92 | **Training** | | **20 days** | **Mon 1/27/25** | **Fri 2/21/25** | | **60 hrs** | **Rp49.050.000** |
| 93 | Research techniques (methodologies and data collection) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 89,90 | 20 hrs | Rp16.350.000 |
| 94 | Strategic analysis (SWOT and PESTLE) training | External Expertise, | 10 days | Mon 1/27/25 | Fri 2/7/25 | 93SS | 25 hrs | Rp20.237.500 |
| 95 | Report writing training | External | 10 days | Mon 2/10/25 | Fri 2/21/25 | 93,94 | 15 hrs | Rp12.462.500 |
| 96 | On-the-job training | External | 15 days | Mon 2/24/25 | Fri 3/14/25 | 95 | 75 hrs | Rp40.875.000 |
| 97 | Regular feedback and monitor performance | BOD,Consultan | 31 days | Fri 1/31/25 | Fri 3/14/25 | 93SS+4 days | 14 hrs | Rp3.756.667 |
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |
| 99 | **Guidelines and template** | | **10 days** | **Mon 3/17/25** | **Fri 3/28/25** | | **46 hrs** | **Rp9.430.000** |
| 100 | Identify objectives and opportunities | Consultant, | 2 days | Mon 3/17/25 | Tue 3/18/25 | 96,97 | 10 hrs | Rp2.050.000 |
| 101 | Analyse and summarize findings | Consultant, | 2 days | Wed 3/19/25 | Thu 3/20/25 | 100 | 10 hrs | Rp2.050.000 |
| 102 | Structure | Consulta | 2 days | Fri 3/21/25 | Mon 3/24/25 | 101 | 10 hrs | Rp2.050.000 |
| 103 | Present | Consulta | 2 days | Tue 3/25/25 | Wed 3/26/25 | 102 | 8 hrs | Rp1.640.000 |
| 104 | Templates for business case document | Consultant, | 2 days | Thu 3/27/25 | Fri 3/28/25 | 103 | 8 hrs | Rp1.640.000 |
| 105 | Centralized repository (SharePoint) | Impact Center 5, | 4 days | Mon 3/31/25 | Thu 4/3/25 | 104 | 12 hrs | Rp2.460.000 |
| 106 | Tool integration (Power BI and Excel) | Consultant, | 15 days | Fri 4/4/25 | Thu 4/24/25 | 105 | 45 hrs | Rp9.225.000 |
| 107 | **Process and Tools in pitch** | | **28 days** | **Fri 4/25/25** | **Tue 6/3/25** | | **126 hrs** | **Rp45.163.335** |



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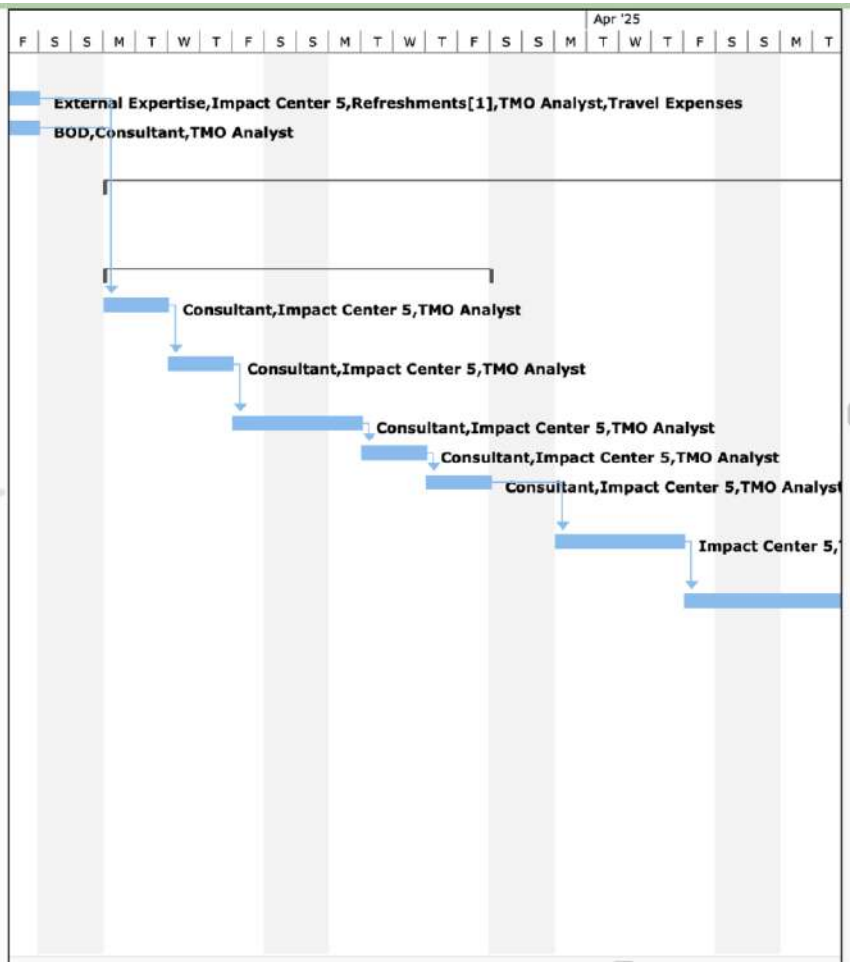
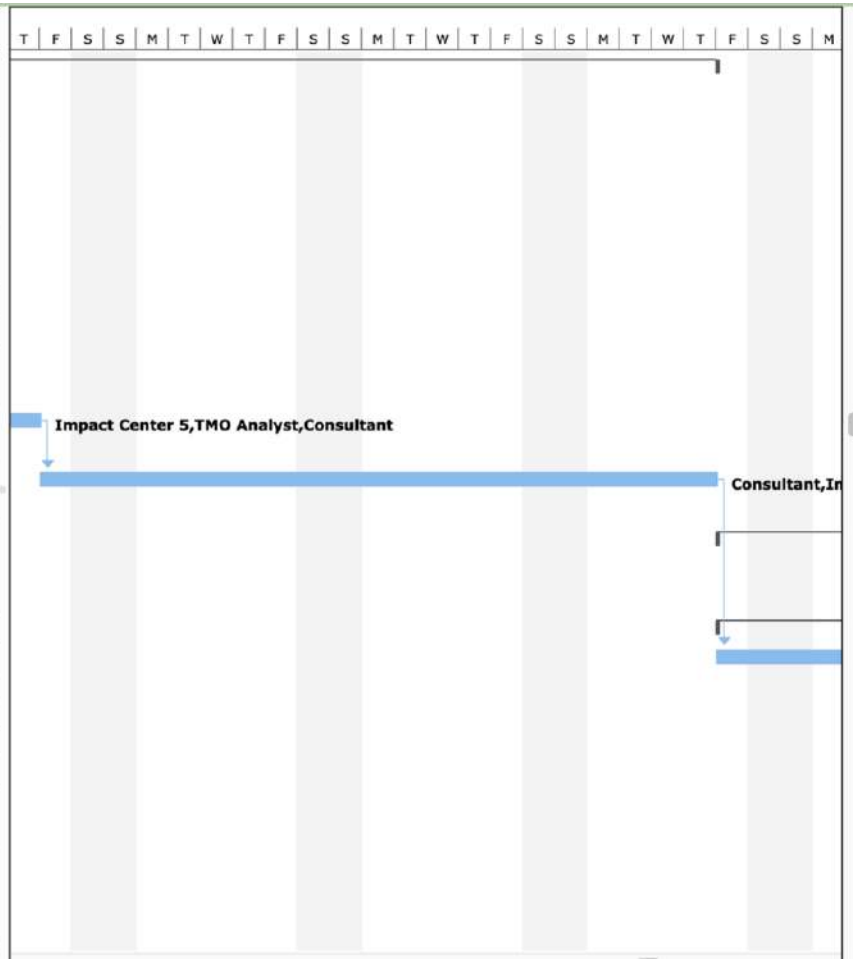
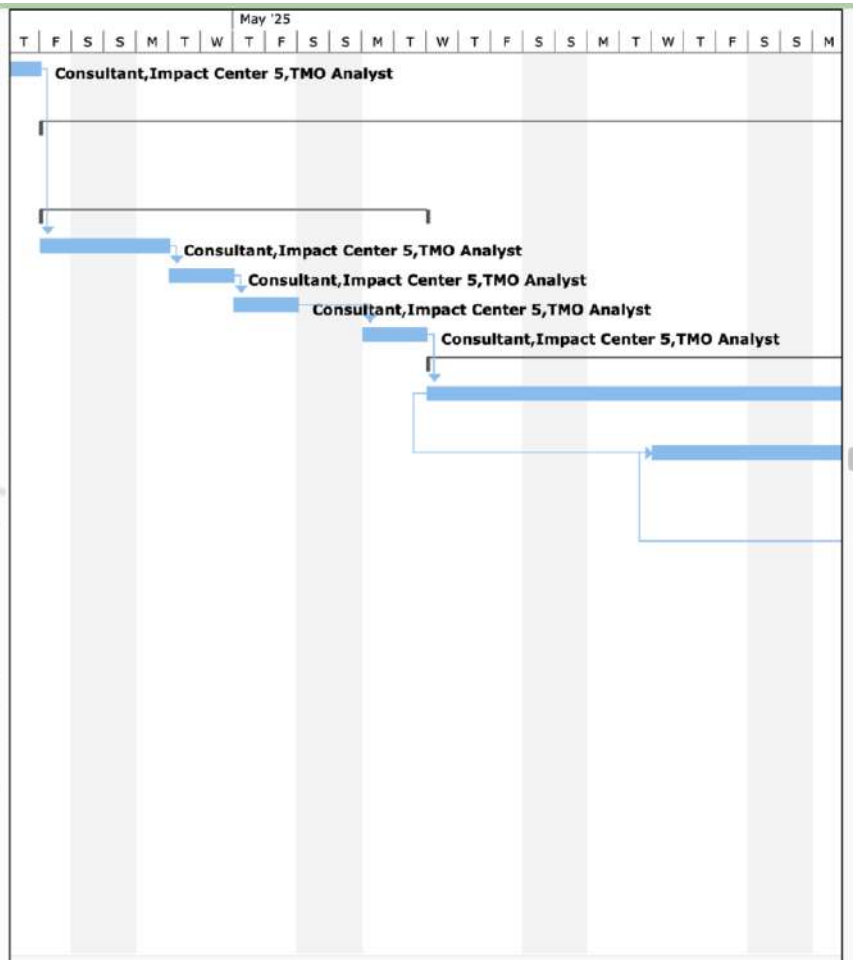
|---|---|---|---|---|---|---|---|---|
| | Report writing training | External | 10 days | Mon 2/10/25 | Fri 2/21/25 | 93,94 | 15 hrs | Rp12.462.500 |
| 96 | On-the-job training | External | 15 days | Mon 2/24/25 | Fri 3/14/25 | 95 | 75 hrs | Rp40.875.000 |
| 97 | Regular feedback and monitor performance | BOD,Consultan | 31 days | Fri 1/31/25 | Fri 3/14/25 | 93SS+4 days | 14 hrs | Rp3.756.667 |
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |
| 99 | **Guidelines and template** | | **10 days** | **Mon 3/17/25** | **Fri 3/28/25** | | **46 hrs** | **Rp9.430.000** |
| 100 | Identify objectives and opportunities | Consultant, | 2 days | Mon 3/17/25 | Tue 3/18/25 | 96,97 | 10 hrs | Rp2.050.000 |
| 101 | Analyse and summarize findings | Consultant, | 2 days | Wed 3/19/25 | Thu 3/20/25 | 100 | 10 hrs | Rp2.050.000 |
| 102 | Structure | Consulta | 2 days | Fri 3/21/25 | Mon 3/24/25 | 101 | 10 hrs | Rp2.050.000 |
| 103 | Present | Consulta | 2 days | Tue 3/25/25 | Wed 3/26/25 | 102 | 8 hrs | Rp1.640.000 |
| 104 | Templates for business case document | Consultant, | 2 days | Thu 3/27/25 | Fri 3/28/25 | 103 | 8 hrs | Rp1.640.000 |
| 105 | Centralized repository (SharePoint) | Impact Center 5, | 4 days | Mon 3/31/25 | Thu 4/3/25 | 104 | 12 hrs | Rp2.460.000 |
| 106 | Tool integration (Power BI and Excel) | Consultant, | 15 days | Fri 4/4/25 | Thu 4/24/25 | 105 | 45 hrs | Rp9.225.000 |
| 107 | **Process and Tools in pitch deck development and report development** | | **28 days** | **Fri 4/25/25** | **Tue 6/3/25** | | **126 hrs** | **Rp45.163.335** |
| 108 | **Guideline** | | **8 days** | **Fri 4/25/25** | **Tue 5/6/25** | | **56 hrs** | **Rp11.480.000** |
| 109 | Storylining | Consulta | 2 days | Fri 4/25/25 | Mon 4/28/25 | 106 | 12 hrs | Rp2.460.000 |
| 110 | Structuring | Consulta | 2 days | Tue 4/29/25 | Wed 4/30/25 | 109 | 12 hrs | Rp2.460.000 |
| 111 | Designing | Consulta | 2 days | Thu 5/1/25 | Fri 5/2/25 | 110 | 16 hrs | Rp3.280.000 |
| 112 | Visuailizing | Consulta | 2 days | Mon 5/5/25 | Tue 5/6/25 | 111 | 16 hrs | Rp3.280.000 |
| 113 | **Tools** | | **20 days** | **Wed 5/7/25** | **Tue 6/3/25** | | **70 hrs** | **Rp33.683.335** |
| 114 | Graphic design software (Adobe | External Expertise | 10 days | Wed 5/7/25 | Tue 5/20/25 | 112 | 30 hrs | Rp16.650.001 |



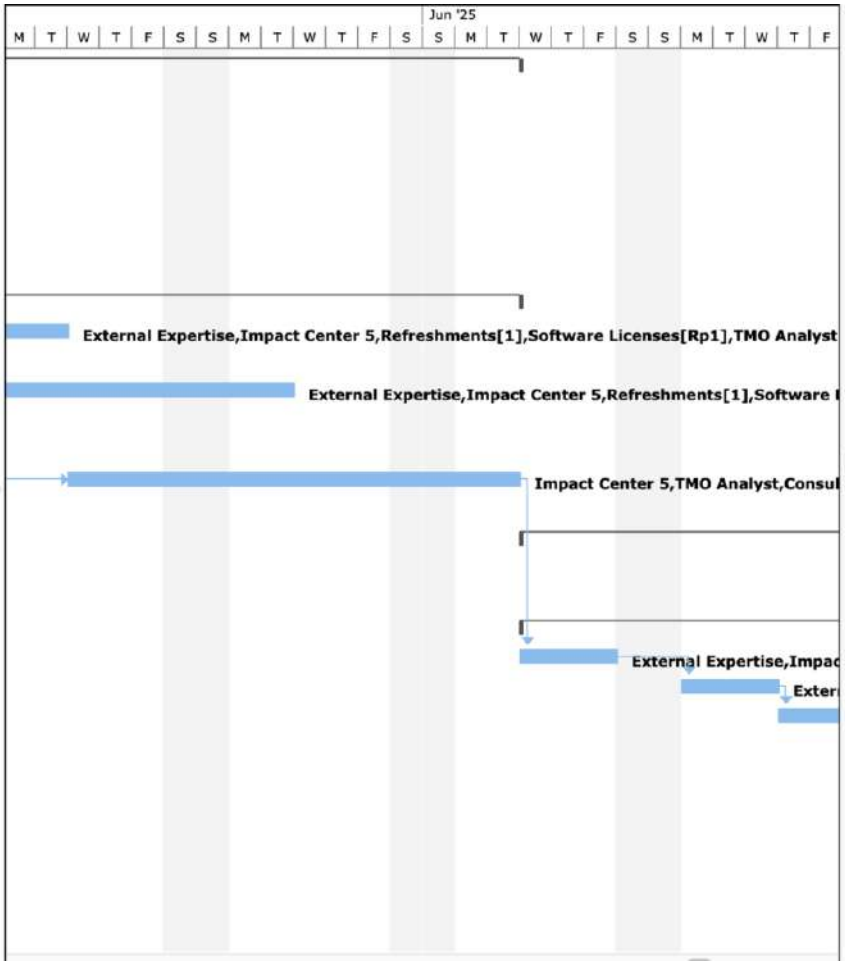
| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 98 | **Process and tool development in business case development** | | **29 days** | **Mon 3/17/25** | **Thu 4/24/25** | | **103 hrs** | **Rp21.115.000** |
| 99 | **Guidelines and template** | | **10 days** | **Mon 3/17/25** | **Fri 3/28/25** | | **46 hrs** | **Rp9.430.000** |
| 100 | Identify objectives and opportunities | Consulta nt, | 2 days | Mon 3/17/25 | Tue 3/18/25 | 96,97 | 10 hrs | Rp2.050.000 |
| 101 | Analyse and summarize findings | Consulta nt, | 2 days | Wed 3/19/25 | Thu 3/20/25 | 100 | 10 hrs | Rp2.050.000 |
| 102 | Structure | Consulta | 2 days | Fri 3/21/25 | Mon 3/24/25 | 101 | 10 hrs | Rp2.050.000 |
| 103 | Present | Consulta | 2 days | Tue 3/25/25 | Wed 3/26/25 | 102 | 8 hrs | Rp1.640.000 |
| 104 | Templates for business case document | Consulta nt, | 2 days | Thu 3/27/25 | Fri 3/28/25 | 103 | 8 hrs | Rp1.640.000 |
| 105 | Centralized repository (SharePoint) | Impact C enter 5, | 4 days | Mon 3/31/25 | Thu 4/3/25 | 104 | 12 hrs | Rp2.460.000 |
| 106 | Tool integration (Power BI and Excel) | Consulta nt, | 15 days | Fri 4/4/25 | Thu 4/24/25 | 105 | 45 hrs | Rp9.225.000 |
| 107 | **Process and Tools in pitch deck development and report development** | | **28 days** | **Fri 4/25/25** | **Tue 6/3/25** | | **126 hrs** | **Rp45.163.335** |
| 108 | **Guideline** | | **8 days** | **Fri 4/25/25** | **Tue 5/6/25** | | **56 hrs** | **Rp11.480.000** |
| 109 | Storylining | Consulta | 2 days | Fri 4/25/25 | Mon 4/28/25 | 106 | 12 hrs | Rp2.460.000 |
| 110 | Structuring | Consulta | 2 days | Tue 4/29/25 | Wed 4/30/25 | 109 | 12 hrs | Rp2.460.000 |
| 111 | Designing | Consulta | 2 days | Thu 5/1/25 | Fri 5/2/25 | 110 | 16 hrs | Rp3.280.000 |
| 112 | Visuailizing | Consulta | 2 days | Mon 5/5/25 | Tue 5/6/25 | 111 | 16 hrs | Rp3.280.000 |
| 113 | **Tools** | | **20 days** | **Wed 5/7/25** | **Tue 6/3/25** | | **70 hrs** | **Rp33.683.335** |
| 114 | Graphic design software (Adobe Creative Cloud, Canva, | External Expertise , | 10 days | Wed 5/7/25 | Tue 5/20/25 | 112 | 30 hrs | Rp16.650.001 |
| 115 | Data visualization (Tableau, Microsoft Power BI, Google Data Studio) | External Expertise , | 10 days | Wed 5/14/25 | Tue 5/27/25 | 114SS+5 days | 25 hrs | Rp13.958.334 |
| 116 | Document management | Impact C | 10 days | Wed 5/21/25 | Tue 6/3/25 | 115SS+5 | 15 hrs | Rp3.075.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 106 | Tool integration (Power BI and Excel) | Consultant, | 15 days | Fri 4/4/25 | Thu 4/24/25 | 105 | 45 hrs | Rp9.225.000 |
| 107 | **Process and Tools in pitch deck development and report development** | | **28 days** | **Fri 4/25/25** | **Tue 6/3/25** | | **126 hrs** | **Rp45.163.335** |
| 108 | **Guideline** | | **8 days** | **Fri 4/25/25** | **Tue 5/6/25** | | **56 hrs** | **Rp11.480.000** |
| 109 | Storylining | Consulta | 2 days | Fri 4/25/25 | Mon 4/28/25 | 106 | 12 hrs | Rp2.460.000 |
| 110 | Structuring | Consulta | 2 days | Tue 4/29/25 | Wed 4/30/25 | 109 | 12 hrs | Rp2.460.000 |
| 111 | Designing | Consulta | 2 days | Thu 5/1/25 | Fri 5/2/25 | 110 | 16 hrs | Rp3.280.000 |
| 112 | Visuailizing | Consulta | 2 days | Mon 5/5/25 | Tue 5/6/25 | 111 | 16 hrs | Rp3.280.000 |
| 113 | **Tools** | | **20 days** | **Wed 5/7/25** | **Tue 6/3/25** | | **70 hrs** | **Rp33.683.335** |
| 114 | Graphic design software (Adobe Creative Cloud, Canva, | External Expertise | 10 days | Wed 5/7/25 | Tue 5/20/25 | 112 | 30 hrs | Rp16.650.001 |
| 115 | Data visualization (Tableau, Microsoft Power BI, Google Data Studio) | External Expertise, | 10 days | Wed 5/14/25 | Tue 5/27/25 | 114SS+5 days | 25 hrs | Rp13.958.334 |
| 116 | Document management system (Microsoft SharePoint) | Impact Center 5, | 10 days | Wed 5/21/25 | Tue 6/3/25 | 115SS+5 days | 15 hrs | Rp3.075.000 |
| 117 | **Decision support system in partnership shortlisting and outreach** | | **21 days** | **Wed 6/4/25** | **Wed 7/2/25** | | **99 hrs** | **Rp41.295.004** |
| 118 | **Tools and software** | | **12 days** | **Wed 6/4/25** | **Thu 6/19/25** | | **57 hrs** | **Rp32.685.004** |
| 119 | Criteria evaluation | External | 3 days | Wed 6/4/25 | Fri 6/6/25 | 116 | 15 hrs | Rp8.575.001 |
| 120 | Partner analysis | External | 3 days | Mon 6/9/25 | Wed 6/11/25 | 119 | 15 hrs | Rp8.575.001 |
| 121 | Negotiation | External | 3 days | Thu 6/12/25 | Mon 6/16/25 | 120 | 15 hrs | Rp8.575.001 |
| 122 | Relationship manageme | External | 3 days | Tue 6/17/25 | Thu 6/19/25 | 121 | 12 hrs | Rp6.960.001 |
| 123 | **Guideline** | | **6 days** | **Fri 6/20/25** | **Fri 6/27/25** | | **24 hrs** | **Rp4.920.000** |
| 124 | Identify criteria evaluati | Consulta | 2 days | Fri 6/20/25 | Mon 6/23/25 | 122 | 6 hrs | Rp1.230.000 |
| 125 | Evaluation process | Consulta | 2 days | Tue 6/24/25 | Wed 6/25/25 | 124 | 8 hrs | Rp1.640.000 |
| 126 | Negotiation and relationship | Consulta | 2 days | Thu 6/26/25 | Fri 6/27/25 | 125 | 10 hrs | Rp2.050.000 |

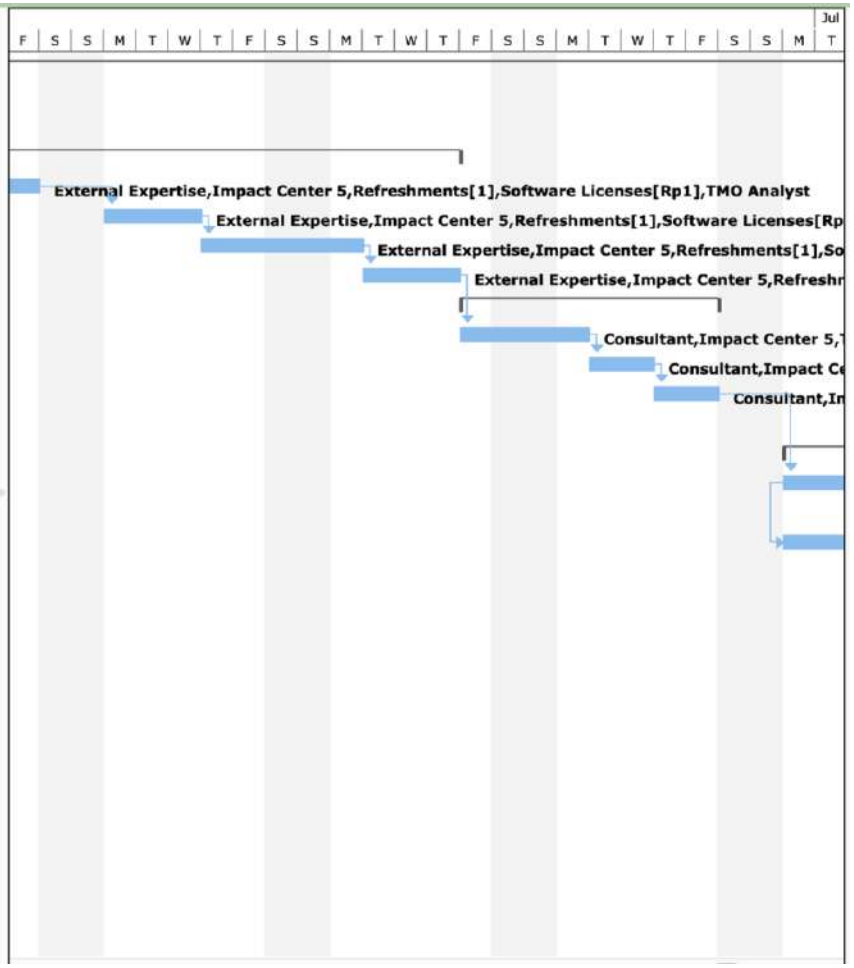


| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 107 | **Process and Tools in pitch deck development and report development** | | **28 days** | **Fri 4/25/25** | **Tue 6/3/25** | | **126 hrs** | **Rp45.163.335** |
| 108 | **Guideline** | | **8 days** | **Fri 4/25/25** | **Tue 5/6/25** | | **56 hrs** | **Rp11.480.000** |
| 109 | Storylining | Consulta | 2 days | Fri 4/25/25 | Mon 4/28/25 | 106 | 12 hrs | Rp2.460.000 |
| 110 | Structuring | Consulta | 2 days | Tue 4/29/25 | Wed 4/30/25 | 109 | 12 hrs | Rp2.460.000 |
| 111 | Designing | Consulta | 2 days | Thu 5/1/25 | Fri 5/2/25 | 110 | 16 hrs | Rp3.280.000 |
| 112 | Visuailizing | Consulta | 2 days | Mon 5/5/25 | Tue 5/6/25 | 111 | 16 hrs | Rp3.280.000 |
| 113 | **Tools** | | **20 days** | **Wed 5/7/25** | **Tue 6/3/25** | | **70 hrs** | **Rp33.683.335** |
| 114 | Graphic design software (Adobe Creative Cloud, Canva, | External Expertise | 10 days | Wed 5/7/25 | Tue 5/20/25 | 112 | 30 hrs | Rp16.650.001 |
| 115 | Data visualization (Tableau, Microsoft Power BI, Google Data Studio) | External Expertise, | 10 days | Wed 5/14/25 | Tue 5/27/25 | 114SS+5 days | 25 hrs | Rp13.958.334 |
| 116 | Document management system (Microsoft SharePoint) | Impact Center 5, | 10 days | Wed 5/21/25 | Tue 6/3/25 | 115SS+5 days | 15 hrs | Rp3.075.000 |
| 117 | **Decision support system in partnership shortlisting and outreach** | | **21 days** | **Wed 6/4/25** | **Wed 7/2/25** | | **99 hrs** | **Rp41.295.004** |
| 118 | **Tools and software** | | **12 days** | **Wed 6/4/25** | **Thu 6/19/25** | | **57 hrs** | **Rp32.685.004** |
| 119 | Criteria evaluation | External | 3 days | Wed 6/4/25 | Fri 6/6/25 | 116 | 15 hrs | Rp8.575.001 |
| 120 | Partner analysis | External | 3 days | Mon 6/9/25 | Wed 6/11/25 | 119 | 15 hrs | Rp8.575.001 |
| 121 | Negotiation | External | 3 days | Thu 6/12/25 | Mon 6/16/25 | 120 | 15 hrs | Rp8.575.001 |
| 122 | Relationship manageme | External | 3 days | Tue 6/17/25 | Thu 6/19/25 | 121 | 12 hrs | Rp6.960.001 |
| 123 | **Guideline** | | **6 days** | **Fri 6/20/25** | **Fri 6/27/25** | | **24 hrs** | **Rp4.920.000** |
| 124 | Identify criteria evaluati | Consulta | 2 days | Fri 6/20/25 | Mon 6/23/25 | 122 | 6 hrs | Rp1.230.000 |
| 125 | Evaluation process | Consulta | 2 days | Tue 6/24/25 | Wed 6/25/25 | 124 | 8 hrs | Rp1.640.000 |
| 126 | Negotiation and relationship management | Consulta nt, | 2 days | Thu 6/26/25 | Fri 6/27/25 | 125 | 10 hrs | Rp2.050.000 |
| 127 | **Template** | | **3 days** | **Mon 6/30/25** | **Wed 7/2/25** | | **18 hrs** | **Rp3.690.000** |
| 128 | Matrix potential | Consulta | 3 days | Mon 6/30/25 | Wed 7/2/25 | 126 | 9 hrs | Rp1.845.000 |

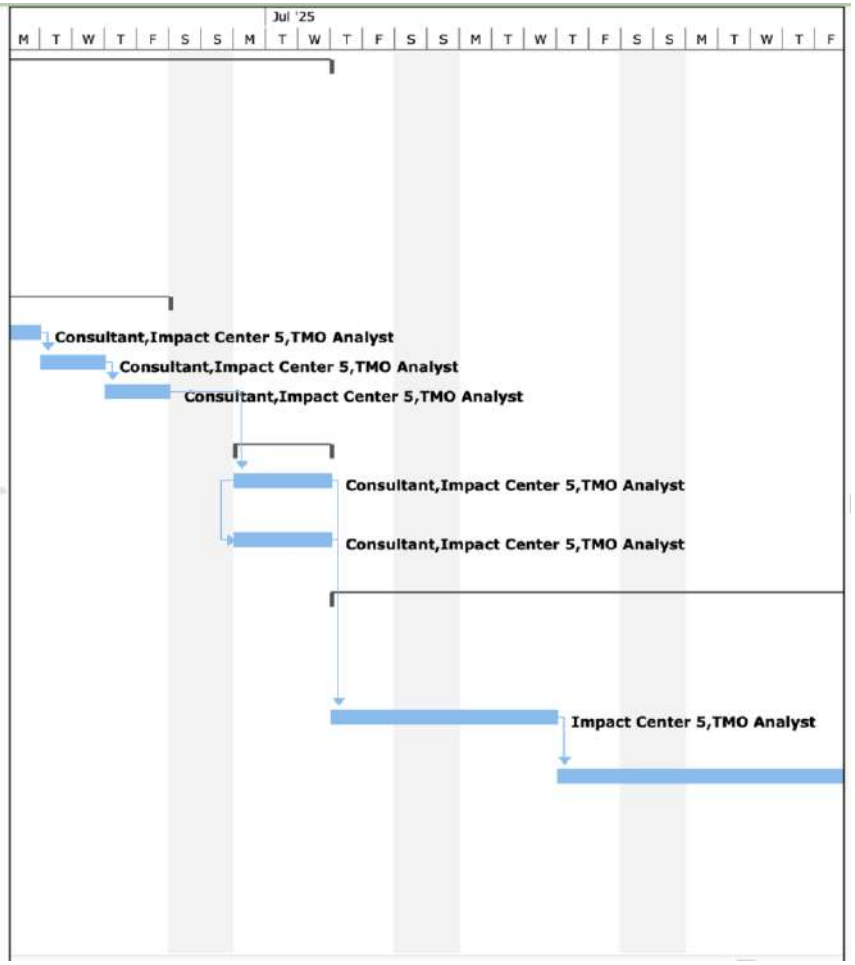


| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 113 | **Tools** | | **20 days** | **Wed 5/7/25** | **Tue 6/3/25** | | **70 hrs** | **Rp33.683.335** |
| 114 | Graphic design software (Adobe Creative Cloud, Canva, | External Expertise | 10 days | Wed 5/7/25 | Tue 5/20/25 | 112 | 30 hrs | Rp16.650.001 |
| 115 | Data visualization (Tableau, Microsoft Power BI, Google Data Studio) | External Expertise | 10 days | Wed 5/14/25 | Tue 5/27/25 | 114SS+5 days | 25 hrs | Rp13.958.334 |
| 116 | Document management system (Microsoft SharePoint) | Impact Center 5, | 10 days | Wed 5/21/25 | Tue 6/3/25 | 115SS+5 days | 15 hrs | Rp3.075.000 |
| 117 | **Decision support system in partnership shortlisting and outreach** | | **21 days** | **Wed 6/4/25** | **Wed 7/2/25** | | **99 hrs** | **Rp41.295.004** |
| 118 | **Tools and software** | | **12 days** | **Wed 6/4/25** | **Thu 6/19/25** | | **57 hrs** | **Rp32.685.004** |
| 119 | Criteria evaluation | External | 3 days | Wed 6/4/25 | Fri 6/6/25 | 116 | 15 hrs | Rp8.575.001 |
| 120 | Partner analysis | External | 3 days | Mon 6/9/25 | Wed 6/11/25 | 119 | 15 hrs | Rp8.575.001 |
| 121 | Negotiation | External | 3 days | Thu 6/12/25 | Mon 6/16/25 | 120 | 15 hrs | Rp8.575.001 |
| 122 | Relationship manageme | External | 3 days | Tue 6/17/25 | Thu 6/19/25 | 121 | 12 hrs | Rp6.960.001 |
| 123 | **Guideline** | | **6 days** | **Fri 6/20/25** | **Fri 6/27/25** | | **24 hrs** | **Rp4.920.000** |
| 124 | Identify criteria evaluati | Consulta | 2 days | Fri 6/20/25 | Mon 6/23/25 | 122 | 6 hrs | Rp1.230.000 |
| 125 | Evaluation process | Consulta | 2 days | Tue 6/24/25 | Wed 6/25/25 | 124 | 8 hrs | Rp1.640.000 |
| 126 | Negotiation and relationship management | Consulta nt, | 2 days | Thu 6/26/25 | Fri 6/27/25 | 125 | 10 hrs | Rp2.050.000 |
| 127 | **Template** | | **3 days** | **Mon 6/30/25** | **Wed 7/2/25** | | **18 hrs** | **Rp3.690.000** |
| 128 | Matrix potential partner evaluation | Consulta nt, | 3 days | Mon 6/30/25 | Wed 7/2/25 | 126 | 9 hrs | Rp1.845.000 |
| 129 | Checklist outreach potential partner | Consulta nt, | 3 days | Mon 6/30/25 | Wed 7/2/25 | 128SS | 9 hrs | Rp1.845.000 |
| 130 | **Decision support systems and analytical tools implementation in pre-FS and FS execution** | | **13 days** | **Thu 7/3/25** | **Mon 7/21/25** | | **39 hrs** | **Rp14.282.501** |
| 131 | Centralized repository for | Impact C | 5 days | Thu 7/3/25 | Wed 7/9/25 | 128,129 | 15 hrs | Rp862.500 |

| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 117 | **Decision support system in partnership shortlisting and outreach** | | **21 days** | **Wed 6/4/25** | **Wed 7/2/25** | | **99 hrs** | **Rp41.295.004** |
| 118 | **Tools and software** | | **12 days** | **Wed 6/4/25** | **Thu 6/19/25** | | **57 hrs** | **Rp32.685.004** |
| 119 | Criteria evaluation | External | 3 days | Wed 6/4/25 | Fri 6/6/25 | 116 | 15 hrs | Rp8.575.001 |
| 120 | Partner analysis | External | 3 days | Mon 6/9/25 | Wed 6/11/25 | 119 | 15 hrs | Rp8.575.001 |
| 121 | Negotiation | External | 3 days | Thu 6/12/25 | Mon 6/16/25 | 120 | 15 hrs | Rp8.575.001 |
| 122 | Relationship manageme | External | 3 days | Tue 6/17/25 | Thu 6/19/25 | 121 | 12 hrs | Rp6.960.001 |
| 123 | **Guideline** | | **6 days** | **Fri 6/20/25** | **Fri 6/27/25** | | **24 hrs** | **Rp4.920.000** |
| 124 | Identify criteria evaluati | Consulta | 2 days | Fri 6/20/25 | Mon 6/23/25 | 122 | 6 hrs | Rp1.230.000 |
| 125 | Evaluation process | Consulta | 2 days | Tue 6/24/25 | Wed 6/25/25 | 124 | 8 hrs | Rp1.640.000 |
| 126 | Negotiation and relationship management | Consulta nt, | 2 days | Thu 6/26/25 | Fri 6/27/25 | 125 | 10 hrs | Rp2.050.000 |
| 127 | **Template** | | **3 days** | **Mon 6/30/25** | **Wed 7/2/25** | | **18 hrs** | **Rp3.690.000** |
| 128 | Matrix potential partner evaluation | Consulta nt, | 3 days | Mon 6/30/25 | Wed 7/2/25 | 126 | 9 hrs | Rp1.845.000 |
| 129 | Checklist outreach potential partner | Consulta nt, | 3 days | Mon 6/30/25 | Wed 7/2/25 | 128SS | 9 hrs | Rp1.845.000 |
| 130 | **Decision support systems and analytical tools implementation in pre-FS and FS execution** | | **13 days** | **Thu 7/3/25** | **Mon 7/21/25** | | **39 hrs** | **Rp14.282.501** |
| 131 | Centralized repository for document and templates (SharePoint) | Impact C enter 5, | 5 days | Thu 7/3/25 | Wed 7/9/25 | 128,129 | 15 hrs | Rp862.500 |
| 132 | Tools and software implementation (Microsoft Project) | External Expertise | 8 days | Thu 7/10/25 | Mon 7/21/25 | 131 | 24 hrs | Rp13.420.001 |
| 133 | **Progress integration and support systems in market and subsector assessment** | | **19 days** | **Tue 7/22/25** | **Fri 8/15/25** | | **76 hrs** | **Rp16.086.667** |
| 134 | Integrate market analysis and project management | Consulta nt, | 11 days | Tue 7/22/25 | Tue 8/5/25 | 132 | 44 hrs | Rp9.020.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 117 | **Decision support system in partnership shortlisting and outreach** | | **21 days** | **Wed 6/4/25** | **Wed 7/2/25** | | **99 hrs** | **Rp41.295.004** |
| 118 | **Tools and software** | | **12 days** | **Wed 6/4/25** | **Thu 6/19/25** | | **57 hrs** | **Rp32.685.004** |
| 119 | Criteria evaluation | External | 3 days | Wed 6/4/25 | Fri 6/6/25 | 116 | 15 hrs | Rp8.575.001 |
| 120 | Partner analysis | External | 3 days | Mon 6/9/25 | Wed 6/11/25 | 119 | 15 hrs | Rp8.575.001 |
| 121 | Negotiation | External | 3 days | Thu 6/12/25 | Mon 6/16/25 | 120 | 15 hrs | Rp8.575.001 |
| 122 | Relationship manageme | External | 3 days | Tue 6/17/25 | Thu 6/19/25 | 121 | 12 hrs | Rp6.960.001 |
| 123 | **Guideline** | | **6 days** | **Fri 6/20/25** | **Fri 6/27/25** | | **24 hrs** | **Rp4.920.000** |
| 124 | Identify criteria evaluati | Consulta | 2 days | Fri 6/20/25 | Mon 6/23/25 | 122 | 6 hrs | Rp1.230.000 |
| 125 | Evaluation process | Consulta | 2 days | Tue 6/24/25 | Wed 6/25/25 | 124 | 8 hrs | Rp1.640.000 |
| 126 | Negotiation and relationship management | Consulta nt, | 2 days | Thu 6/26/25 | Fri 6/27/25 | 125 | 10 hrs | Rp2.050.000 |
| 127 | **Template** | | **3 days** | **Mon 6/30/25** | **Wed 7/2/25** | | **18 hrs** | **Rp3.690.000** |
| 128 | Matrix potential partner evaluation | Consulta nt, | 3 days | Mon 6/30/25 | Wed 7/2/25 | 126 | 9 hrs | Rp1.845.000 |
| 129 | Checklist outreach potential partner | Consulta nt, | 3 days | Mon 6/30/25 | Wed 7/2/25 | 128SS | 9 hrs | Rp1.845.000 |
| 130 | **Decision support systems and analytical tools implementation in pre-FS and FS execution** | | **13 days** | **Thu 7/3/25** | **Mon 7/21/25** | | **39 hrs** | **Rp14.282.501** |
| 131 | Centralized repository for document and templates (SharePoint) | Impact C enter 5, | 5 days | Thu 7/3/25 | Wed 7/9/25 | 128,129 | 15 hrs | Rp862.500 |
| 132 | Tools and software implementation (Microsoft Project) | External Expertise . | 8 days | Thu 7/10/25 | Mon 7/21/25 | 131 | 24 hrs | Rp13.420.001 |
| 133 | **Progress integration and support systems in market and subsector assessment** | | **19 days** | **Tue 7/22/25** | **Fri 8/15/25** | | **76 hrs** | **Rp16.086.667** |
| 134 | Integrate market analysis and project management | Consulta nt, | 11 days | Tue 7/22/25 | Tue 8/5/25 | 132 | 44 hrs | Rp9.020.000 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
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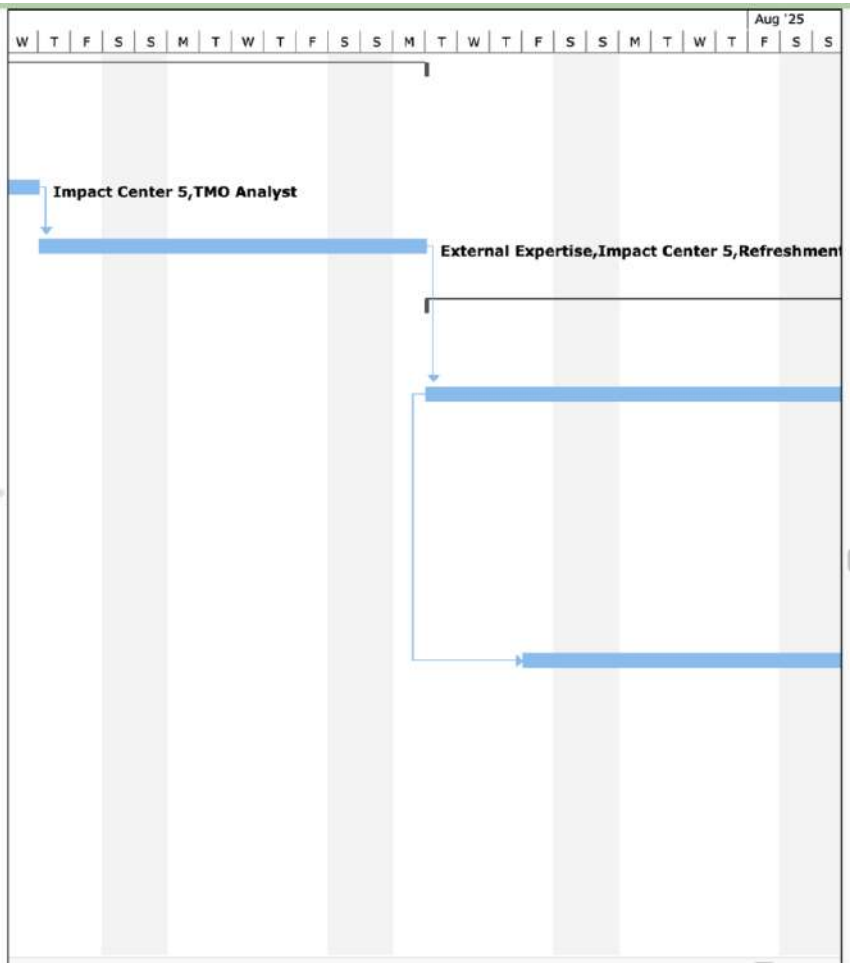
| 130 | **Decision support systems and analytical tools implementation in pre-FS and FS execution** | | **13 days** | **Thu 7/3/25** | **Mon 7/21/25** | | **39 hrs** | **Rp14.282.501** |
| 131 | Centralized repository for document and templates (SharePoint) | Impact Center 5, | 5 days | Thu 7/3/25 | Wed 7/9/25 | 128,129 | 15 hrs | Rp862.500 |
| 132 | Tools and software implementation (Microsoft Project) | External Expertise | 8 days | Thu 7/10/25 | Mon 7/21/25 | 131 | 24 hrs | Rp13.420.001 |
| 133 | **Progress integration and support systems in market and subsector assessment** | | **19 days** | **Tue 7/22/25** | **Fri 8/15/25** | | **76 hrs** | **Rp16.086.667** |
| 134 | Integrate market analysis and project management software (Microsoft Project and Power BI) | Consultant, | 11 days | Tue 7/22/25 | Tue 8/5/25 | 132 | 44 hrs | Rp9.020.000 |
| 135 | **Guideline and template** | | **8 days** | **Wed 8/6/25** | **Fri 8/15/25** | | **24 hrs** | **Rp4.920.000** |
| 136 | Data collecting | Consulta | 2 days | Wed 8/6/25 | Thu 8/7/25 | 134 | 6 hrs | Rp1.230.000 |
| 137 | Identifying and analyzing | Consultant, | 3 days | Fri 8/8/25 | Tue 8/12/25 | 136 | 9 hrs | Rp1.845.000 |
| 138 | Strategic-making recommendation | Consultant, | 3 days | Wed 8/13/25 | Fri 8/15/25 | 137 | 9 hrs | Rp1.845.000 |
| 139 | Regular evaluate performance metrics | BOD,Consultan | 16 days | Fri 7/25/25 | Fri 8/15/25 | 134SS+3 days | 8 hrs | Rp2.146.667 |



| ID | Action Plan | Resource Names | Duration | Start | Finish | Predecessors | Work | Cost |
|---|---|---|---|---|---|---|---|---|
| 130 | **Decision support systems and analytical tools implementation in pre-FS and FS execution** | | **13 days** | **Thu 7/3/25** | **Mon 7/21/25** | | **39 hrs** | **Rp14.282.501** |
| 131 | Centralized repository for document and templates (SharePoint) | Impact Center 5, | 5 days | Thu 7/3/25 | Wed 7/9/25 | 128,129 | 15 hrs | Rp862.500 |
| 132 | Tools and software implementation (Microsoft Project) | External Expertise | 8 days | Thu 7/10/25 | Mon 7/21/25 | 131 | 24 hrs | Rp13.420.001 |
| 133 | **Progress integration and support systems in market and subsector assessment** | | **19 days** | **Tue 7/22/25** | **Fri 8/15/25** | | **76 hrs** | **Rp16.086.667** |
| 134 | Integrate market analysis and project management software (Microsoft Project and Power BI) | Consultant, | 11 days | Tue 7/22/25 | Tue 8/5/25 | 132 | 44 hrs | Rp9.020.000 |
| 135 | **Guideline and template** | | **8 days** | **Wed 8/6/25** | **Fri 8/15/25** | | **24 hrs** | **Rp4.920.000** |
| 136 | Data collecting | Consulta | 2 days | Wed 8/6/25 | Thu 8/7/25 | 134 | 6 hrs | Rp1.230.000 |
| 137 | Identifying and analyzing | Consultant, | 3 days | Fri 8/8/25 | Tue 8/12/25 | 136 | 9 hrs | Rp1.845.000 |
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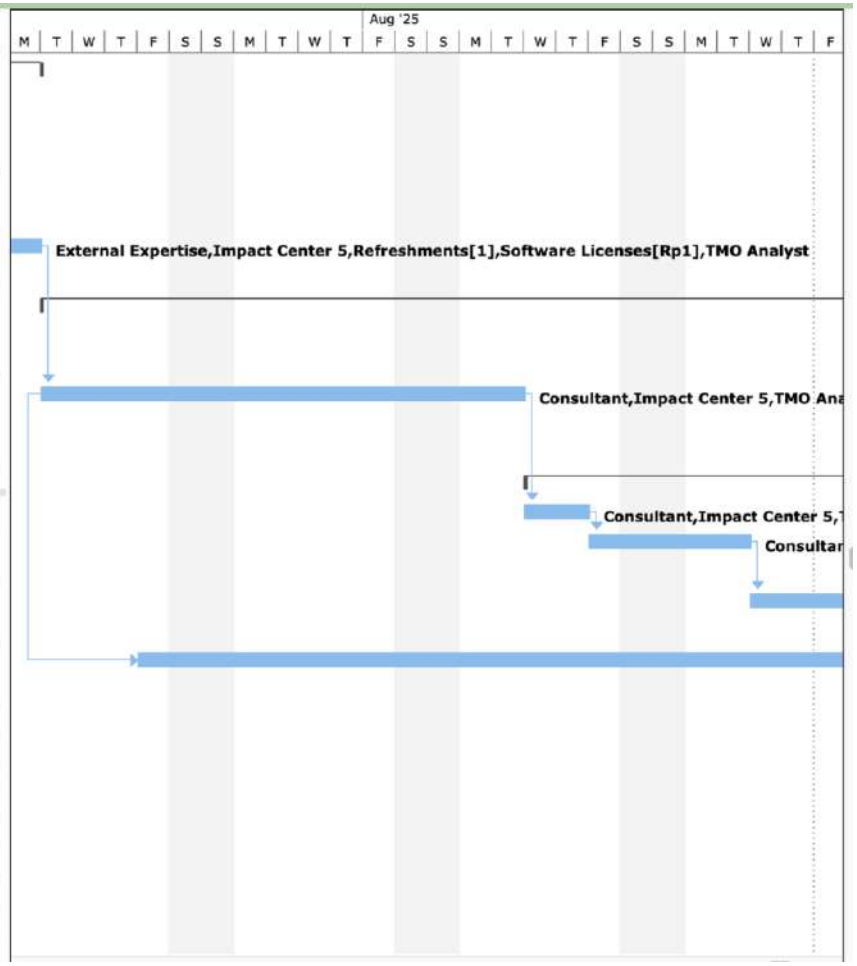

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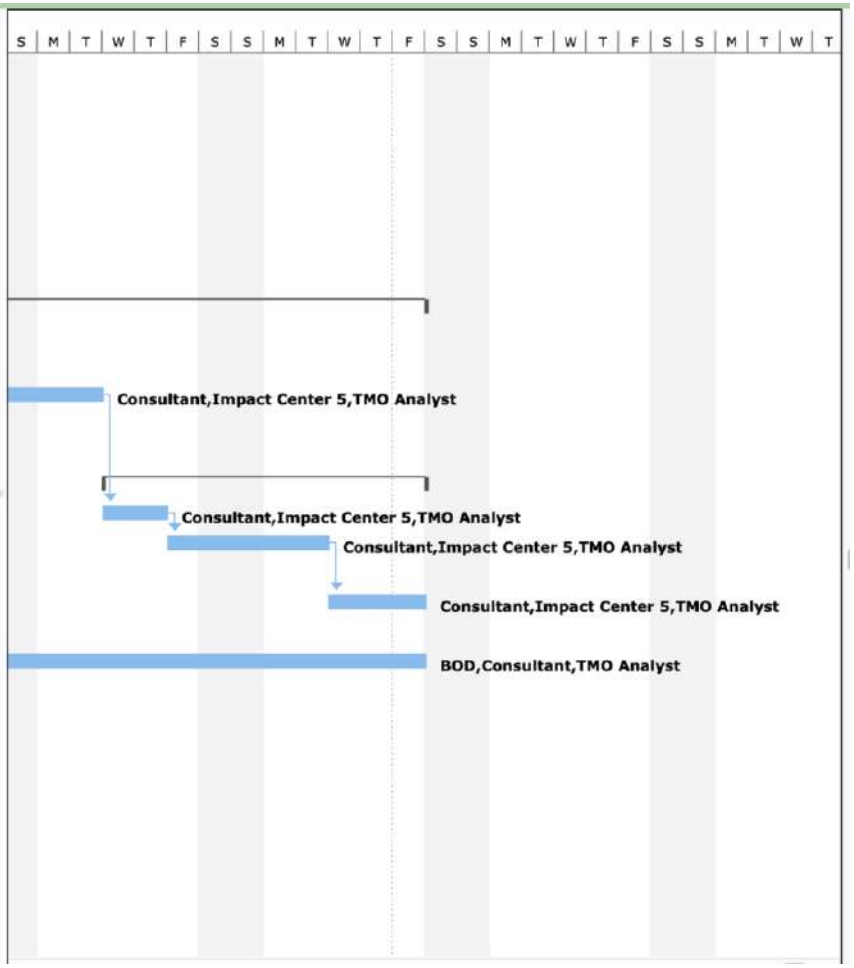

## E. Transcription Interview in the Test

### E-1 Interview Result Expert 1

Interviewee (initial): APA

Position: Division Head of Transformation Management Office

Day / Date: Monday / 02nd Sep 2023

Time / Location: 2 PM / Head Office of EPC Company

Interviewer : "Good afternoon, mbak! First of all, I'd like to thank you for taking the time to join this interview session again and again. Your expertise is invaluable to my research, once again, thank you."

APA : "Good afternoon! I'm glad to be here and happy to contribute however I can."

Interviewer : "So, Mbak, as you know that my undergraduate research is using design thinking, which consist of 5 stages, starting empathize, define, ideate, prototype, and test."

APA : "Oh, I see. I've remember that methodology while I was in student a few years ago. I'm too old for this, Nadia. Oh no."

Interviewer : "It's totally fine, Mbak. So, currently, I've reached this test phase, and I need you as the experts to give feedback regarding the prototype I've developed."

APA : "What kind of prototype you've developed, Nad?"

Interviewer : "I've recently developed a Gantt chart to guide our strategic plan implementation, specifically the action plan timeline and activities. My goal in developing this gantt chart is to ensure that our strategic plans are well-managed and effectively integrated into our day-to-day workings. Is it suitable for the prototype stage we use a gantt chart?"

APA : "Correct! A well-designed Gantt chart can be incredibly useful for managing the implementation of a strategic plan. It helps in visualising the timeline of activities and ensuring that everything is scheduled appropriately. So, yes, it's quite suitable for your prototype stage, especially if it's meant to improve strategic planning and execution."

Interviewer : "Thank you for the reassurance, Mbak! Based on my development of the Gantt chart, I used the sequencing of our action plan using the AHP and PROMETHEE methods based on your expert judgment as an expert and did

not forget to sequence by their urgency, impact, and cost. However, I'm a bit concerned about how adaptable it can be. In your experience, how flexible can a Gantt chart be when there are changes in the plan or delays in activities?"

APA : "Would you be able to share the chart with me? I'd need to look at how you've laid out the stages and the time allocated to each."

Interviewer : "Of course, let me share my screen (shares screen showing the gantt chart) Here, as you can see, I've allocated time for 18 action plans, with detailed activities in each action plan. We've also included buffer periods for unforeseen adjustments."

APA : "This looks well thought out. I like how you've allocated buffer time; that's crucial. Also, the budget you've set is a really good range since we probably expect the implementation of the strategy plan to spend less than estimated. It's so beneficial for us. We can set the rest of the budget to support our other initiative's implementation within sustainable business transformation. However, I'd suggest you align with the consultant's feedback sessions with your testing phase."

Interviewer : "That's a great suggestion; I haven't considered aligning the consultant's feedback with the testing phase. It makes sense to gather external insights more frequently at that stage."

APA : "Yes, it's a good practice to loop in external perspectives, especially when testing the Gantt chart. This can provide real-world feedback that might necessitate backtracking to previous stages. Integrating this feedback loop can enhance the iteration process and ultimately lead to a more refined final product."

Interviewer : "Fantastic advice. I'll definitely look into adjusting our chart. Before we conclude, is there any other advice you'd give to ensure the successful implementation of design thinking methodology, particularly in the context of using a Gantt chart for strategic planning?"

APA : "One thing to always remember is the need for flexibility. Design thinking is inherently iterative, so while a Gantt chart is an excellent tool for strategic planning, it should not restrict creativity and the natural evolution of ideas. Hopefully, the Gantt chart can bee continuously reviewed and be willing to

adjust theransformation timeline based on further feedback and new insights. And, of course, ensure that our company or the one who will manage this Gantt chart is involved in these adjusting moments to foster a sense of ownership and alignment with the process. However, overall, the Gantt chart results are approved by me, And I expect to execute your Gantt chart as soon as possible."

Interviewer : "Thank you, Mbak. That's a beautiful reminder. If I'm not mistaken, who is the person I should involve, the one who will be responsible? Is that Mas PA as a change management specialist?"

APA : "That's correct! He will manage the Gantt chart you've made to become our guide in the execution of the strategic plan we discussed a few times ago."

Interviewer : "Mbak, lastly, how do you ensure that using this Gantt chart doesn't become just another task but a tool that genuinely enhances our strategic plan implementation?"

APA : "To ensure that, Nadia, the Gantt chart should be integrated into our regular project management and review processes. Make it a central tool that's regularly consulted, updated, and discussed in team meetings. Encourage everyone to engage with it and understand its value beyond being just a schedule. It's about fostering a culture where planning and adaptability are seen as essential to successful execution. This way, the Gantt chart becomes a living document that truly supports the strategic plan."

Interviewer : "That's a valuable perspective, Mbak. Thank you so much for your time and insightful feedback. They will be that helpful for me."

APA : "You're welcome, Nadia! I'm glad I could help. Don't hesitate to reach out if you have more questions. And thank you so much for your hard efforts in making this Gantt Chart, I'm sure it will be a valuable asset to our transformation project! Good luck with your next steps ahead after graduating!"

Interviewer : "The one who says thank you is me, back. Thank you so much for helping me from last year until now, and see you Mbak!"

APA : "Alright, anytime Nadia. See you..."

**E-2 Interview Result Expert 2**

Interviewee (initial): SA

Position: Consultant Leader

Day / Date: Thursady / 05th Oct 2023

Time / Location: 9 AM / Head Office of EPC Company

| | | |
|---|---|---|
| Interviewer | : | "Hello! Good morning! I hope you're doing well." |
| SA | : | "Hello, morning Nadia. Hope you're doing well, too. Go ahead." |
| Interviewer | : | "As well, my research used a design thinking approach, and now I've reached the testing stage. I was hoping you could provide me feedback on my prototype results. I've made a Gantt chart as our strategic planning solution for the company. I shared the Gantt chart in our room text earlier. Have you had a chance to review it?" |
| SA | : | "Yes, Nadia, I've gone through the gantt chart. I must say, it's a comprehensive starting point. The breakdown of activities seems well thought out." |
| Interviewer | : | "I appreciate your feedback. We're keen on making sure it aligns with our goals and effectively captures all necessary activities. Are there specific areas we should adjust or add?" |
| SA | : | "For starters, it's crucial to incorporate a clear timeline for each activity. Some sections could benefit from more detailed deadlines to ensure accountability and tracking. And I've seen through the gantt is already included, so good job Nadia. Additionally, if we already execute the Gantt chart as our strategic planning, it is possible to add a column to include more metrics for success in each activity. It's one thing to complete an activity, but how we measure its success could provide more clarity and focus. However, it is not your responsibility since we keep being agile, so we'll do it if necessary." |
| Interviewer | : | "Wow, that's great. Thank you! How about the feedback mechanisms I've outlined? Do they suffice in terms of ensuring continuous improvement?" |
| SA | : | "Based on your chart, we can also look into integrating feedback loops; yes, you're right. This way, we can continuously evaluate and adapt our strategies based on real-world outcomes and insights. That's impressive, Nadia!" |

| | | |
|---|---|---|
| Interviewer | : | “Thank you so much for the appreciation!” |
| SA | : | “I suggest that while we are on our implementation, we can add a section on risk management, in which we can identify potential risks and having mitigation strategies ready could save us a lot of trouble down the line.” |
| Interviewer | : | “Wow, that's also possible. What do you think about the resource allocation presented in the chart?” |
| SA | : | “On that note, I did some calculations, and it seems like there might be a slight underestimation in the budget allocated if we look up the greatest external expertise. But it already fits with our current budget since we are probably, as consultants, trying to look for external expertise from our consulting firm so that it might minimize the budget allocation.” |
| Interviewer | : | “That makes a lot of sense. Anything else?” |
| SA | : | “That's all enough from me. You've done a great job both for your research and for giving us strategic planning in the Gantt chart. And for the reason that Mbak APA outlined, it makes sense, too, for our execution.” |
| Interviewer | : | “I'm glad to help. Thanks again for your feedback, review, and insights. Have a great day!” |
| SA | : | “My pleasure. Thank you so much, Nadia. See you...” |
| Interviewer | : | “See you...” |