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ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

MA Program in Project Management

Assessment of Project feasibility study practice and challenges: The case of Industrial Project Services (IPS)

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June, 2023

Assessment of Project feasibility study practice and challenges: The case of Industrial Project Services (IPS)

By

Kaleb Simon

A Project Research Work in Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management

Advisor

Teklegiorgis Assefa (PHD)

June, 2023

Addis Ababa, Ethiopia

LETTER OF CERTIFICATION

I am certifying the work performed by Kaleb Simon, under my supervision, in partial fulfillment of the requirements for the Masters of Arts in Project Management degree entitled Assessment of Project feasibility study practice and Challenges: The Case of Industrial Project Services (IPS). Hence, I Suggest that the student has fulfilled the criteria and can, therefore, submit the Project research work to the department.

Name of advisor: _____

Signature: _____

Date: _____

Approval by board of examiners

Project Research Work Title: Assessment of Project feasibility study practice and challenges: The case of Industrial Project Services (IPS).

Approved by: Name and signature of members of the Advisor and Examining Board members

_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date

Declaration

I, Kaleb Simon, hereby declare that the study I have conducted is entirely my own original work. It has not been submitted to a university or other institution for the purpose of earning a degree or for any other reason. I further guarantee that all information sources used in this work have been properly acknowledged.

Name: _____

Signature: _____

Date: _____

Acknowledgment

I am deeply thankful for the support and guidance of many people who have contributed to the completion of this research project. Foremost, I would like to express my gratitude to God for providing me with the strength, wisdom, and inspiration to undertake this research work.

I would also like to thank my advisor, Teklegiorgis Assefa (PHD), for his valuable guidance, mentorship, and constructive criticism. His insights and expertise have been instrumental in shaping my research ideas, improving my research methodology, and ensuring my study's integrity.

My family deserves special recognition for their unconditional love, understanding, and encouragement throughout this journey. They have stood by me through thick and thin and have been my unwavering source of inspiration and motivation. Without their support, this research work would not have been possible.

I am also grateful to my colleagues, friends, and research participants who generously shared their time, expertise, and knowledge. Their contributions have helped enrich my research work and have broadened my perspective on the topic.

Finally, I would like to express my appreciation to all those who have contributed to my academic and personal growth over the years. Your support has been instrumental in shaping the person I am today, and I am forever grateful for your generosity and kindness.

Abbreviations and acronyms

IPS: Industrial Project Services

RII: Relative Importance Index

SPSS: Statistical Package for Social Sciences

PMI: Project Management Institute

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Abstract

An effective feasibility study ensures the viability and practicability of a proposed project. Even when a feasibility study has been conducted and theoretically proven viable, projects may not succeed. In IPS, among 50 projects whose feasibility was studied, then implemented and status known, 11 projects faced variances in cost, 27 projects faced variances in time and cost, and 12 projects failed to achieve their objectives. As a result, the feasibility study by itself should be reviewed independently for its practice, and challenges. Thus, this project research work is to assess the project feasibility study practice and challenges in the case of Industrial Project Services (IPS). An extensive literature review identified 7 kinds of feasibility studies, 5 elements to be considered to ensure the quality of projects feasibility study practice, and 5 challenges that are usually faced during project feasibility studies. Primary and secondary sources were used to gather data, and a descriptive research design was applied. Qualitative and quantitative research approaches were utilized to collect and analyze data. A total of 39 judgmentally selected respondents, whose activities are directly related to the project feasibility study, participated in the study. The data collected through a close-ended questionnaire was analyzed quantitatively using SPSS version 26, and the data collected through interviews, an open-ended questionnaire, and feasibility study reports were analyzed qualitatively. The analysis results revealed that the firm has given more emphasis to technical, financial, and market feasibility study practices. In contrast, less attention is given to the legal, economic, operational, and scheduling feasibility study practices. As a result activities such as evaluating various scheduling techniques relevant to a specific project, estimating operational costs, and measuring how well a proposed method solves problems and meets requirements were rarely considered during the study. The most significant element that ranked first among the elements to be considered to ensure the quality of projects feasibility study practice was the le*vel of experience and expertise of the Feasibility Study Team members. Furthermore, among the challenges faced by the firm during the feasibility study, gathering and analyzing all the necessary data was the major challenge that ranked first. Lastly, two major recommendations were forwarded. First, the firm should at least arrange an additional independent team/expertise for project scheduling, legal and operational feasibility studies. Secondly, financial and market feasibility study practices should be improved.*

Key Words: Project Feasibility Study, Practices, Challenges

Chapter One
Introduction

1.1 Background of the Study

All Project managers and stakeholders want to operate a successful project. However, these are confronted with serious reality. This reality is that future is full of uncertainty; hence not all projects are viable. Therefore, before undertaking/launching any project potential feasibility of a specific project should be conducted. It provides a blueprint to determine the feasibility of a business endeavor or a planned project and will help to identify any potential challenges and obstacles that could impede the success of the project (Ndalahwa, 2020).

The project life cycle in traditional Project Management includes planning, launching, monitoring and controlling, and closing. These are the critical phases that must sequentially be applied for any project to succeed. Prior to moving on to the next phase of the project development life cycle, a feasibility study is conducted in the initial phase. According to UNIDO project cycle model before the investment phase of the project, in pre-investment phase, afeasibility study should be conducted. A project feasibility study is a method to foresee outcomes; it is an inquiry, analysis, or assessment of a planned scheme and potential gains, and analyzes the viability and practicability of a proposed project, which is a crucial task before any further action can be performed. On the other hand, it affects the choice of action an investor, financier, or organization management will take (Mukherjee and Roy, 2017).

The required basic components of a feasibility study to be considered may vary based on the type of project. But in general feasibility study may contain technical, financial, economic, Market, operational, scheduling, and legal or environmental analysis for a project. Each of them should be defined and critically examined accordingly. This will result in securing funding from the resources.

Sometimes projects with undertaken feasibility study and theoretically proven to be viable, fail to succeed. This indicates that the feasibility study by itself should be assessed and the challenges should be identified. It has been noticed that a number of projects be unsuccessful because of their incorrect facts or incorrect assumptions. Therefore, the basic features in any feasibility

study practice must be ensuring that they are working with accurate information, exact statement, and the latest financial records (Mukherjee and Roy, 2017).

Project feasibility study practice may vary from organization to organization, team to team and projects to projects. But all of them at least should contain and consider the basics of feasibility study. In other hand, project feasibility study faces various challenges that also depend on the specific project and the environment organization operates.

Therefore, this paper focuses on assessing and analyzing the practice and challenges of project feasibility study in organizational level, Industrial project Services (IPS).

1.2 Background of the organization

Industrial Project Services is a government organization located at Bole sub city, Addis Ababa, Ethiopia. It is the pioneer consultancy house with proven capability and capacity in consultancy and training services. It was established in 1982 and since then IPS has successfully carried out more than 125 pre-feasibility and feasibility studies to public and private organizations in manufacturing and service sectors. In addition it has been taking care of more than 20 large sectoral and resource potential assessments, project identification, selection and profile preparation to regional governments and sectoral organizations. Furthermore, Environmental and social impact assessment studies of four industrial parks, and rubber plantation and natural rubber processing plant were undertaken by IPS. More than 10 implementation services in cement, beverage, metal, sugar and gold mining projects, more than 130 organization and management study services to public enterprises, government institutions and private organizations, more than 190 asset and business valuation services to public and private clients covering plant machinery and equipment, building and civil works as well as vehicles, providing wide range of need based training services for thousands of trainees from more than 40 government and non-government organizations and conducting export and local market studies to more than 20 public and private organizations were also among the basic and regular tasks of IPS.

1.3 Statement of the Problem

Industrial project services (IPS) have conducted feasibility study for more than 125 public and private organizations in manufacturing and service sectors. They have been doing it for more than 30 years. But some of the projects studied and considered as viable were unsuccessful and failed to achieve their objective. Some efforts were made to identify the causes and reasons and are considered to be political and economic instability of the country, but it needs detailed assessment of the feasibility study practice and challenges of IPS.

Feasibility study is expected to reduce risks that will come and increase the practicability of the project. However, if the practice of the feasibility study is not based on relevant, recent and real time information, then it lacks to indicate the feasibility of the project and results in unexpected challenges and risks. In such case the practice either may not considered all the components of the feasibility study or the practice and procedures are not based on reliable information.

In IPS more than 125 pre-feasibility and feasibility studies of various projects were conducted. Among them 32 projects were not launched yet, 11 projects faced variances in cost, 27 projects faced variances in time and cost, and 12 projects failed to achieve their objectives. Only 14 projects status was confirmed and they were successfully implemented within budget, schedule and quality. The statuses of the remaining projects are unknown.

Once after projects are considered to be feasible, the reason they fall behind schedule, over budget, and behind quality can be caused by either the lack of practices, poor management of the elements to be considered to ensure quality of project feasibility study practice, or the inability to handle the challenges encountered during the feasibility study. Hence, it requires a detailed study of the practices, factors, and challenges of a project feasibility study.

Therefore, this paper is proposed to assess the feasibility study practice and challenges of Industrial project services in order to see the gap and challenges in their practice to fill it with appropriate solutions.

1.4 Basic Research Questions

This Project work will answer the following three basic questions.

- ✓ How does IPS conduct various proposed projects' feasibility study with respect to the international feasibility study practice?
- ✓ What are the elements to be considered to ensure the quality of projects feasibility study practice?
- ✓ What are the challenges the IPS is facing during conducting feasibility study?

1.5 Objectives of the Study

General Objective of the Study

The general objective of the study is to assess the project feasibility study practice and challenges in Industrial Project Services.

Specific Objective of the Study

Specific objectives of the study will include the following issues:

- ✓ To assess the feasibility study practice of IPS with respect to the international feasibility study practice
- ✓ To assess the elements to be considered to ensure the quality of project's feasibility study practice
- ✓ To assess the challenges of feasibility study practice in IPS

1.6 Significance of the Study

Project is a unique and one time activity that require proper viability, practicability or feasibility study to foresee and identify all the possible risks with mitigation strategies before launching it. Lack of those studies will affect the whole life cycle of the project implementation activity.

Therefore, the significance of this study is to contribute ideas to help project feasibility study team of IPS to improve their practices, to identify the elements to be considered to ensure the quality of projects feasibility study practice, and to identify challenges and provide ways or techniques to handle those challenges, to help other government and non-government

organizations to learn from and improve the practices and challenges of the feasibility study, and will form a basis on which academic researchers can do further study on project feasibility study practice and challenges.

1.7 Scope and Limitation of the Study

In project management the first phase of a project life cycle is project identification and selection that includes project feasibility study. Therefore, this study mainly focused on analyzing the practice of project feasibility study in Industrial project services. The study also assessed the challenges related to each type of project feasibility study.

Therefore, based on the availability of resources and data, and respondents' willingness the scope of this study focused on the vital components of the project life cycle, project feasibility study. Specifically the study limited its scope only to analyzing the practice of feasibility study in IPS by including factors that affect the quality of project feasibility study, and the challenges of the project feasibility study practice. The feasibility study reports and respondents were chosen on purpose from IPS, and a descriptive research design was used.

It was difficult to determine the status of various projects after their feasibility study and after they were implemented, and that was a limitation of the project. In addition, because the study was conducted within one organization, a precise generalization was difficult.

1.8 Organization of the Study

The first chapter included the background of the study, background of the organization, statement of the problem, research questions, objectives, the significance, and scope and limitation of the study. The second chapter included theoretical and empirical literature review, studies conducted by different researchers. The third chapter presented the research methodology, description of the study area, research Design and Approach, Population, Sampling and Sampling Technique, Data types, sources and methods of data collection, Research Materials, Methods of data analysis, Validity and Reliability and Ethical Considerations. The fourth chapter was comprised of data analysis, Interpretation, and discussion. Finally the fifth chapter included summary, conclusion, and recommendation.

1.9 Definition of terms

Assessment: A process of evaluating the feasibility of a project based on predetermined criteria and objectives (Turner et al., 2019).

Project: A planned undertaking to achieve specific goals within a defined timeframe and budget (PMI, 2017).

Feasibility study: A comprehensive analysis of a proposed project to determine its viability and practicability (Tukel & Rom, 2015).

Practice: The application of established methods and techniques in conducting feasibility study, (Khosrowpour & Owolabi, 2019).

Challenges: Obstacles or difficulties that may arise during the feasibility study process(Gibbons, 2019).

Chapter Two
Literature Review

2.1 Introduction

The purpose of this part of the study was to explore studies and research articles related to project feasibility studies, the practice, and the challenges encountered in conducting them. The review covered various aspects of project feasibility studies, including financial, technical, economic, legal, operational, Scheduling and market feasibility. The literature review also analyzed how different organizations conduct feasibility studies, the methods and tools used, and the outcomes of such studies. Furthermore, the review highlighted the challenges that organizations face in conducting feasibility studies. Ultimately, a literature review of assessment of project feasibility study practice and challenges aimed to provide insights into how organizations can better conduct feasibility studies to increase the success rate of their projects.

2.2 Theoretical Review of the Literature

2.2.1 Project

A project is a temporary endeavor undertaken to fulfill objectives which are an outcome toward which work is directed, a strategic position to be attained, a purpose to be attained, a result to be attained, a product to be produced, or a service to be provided by creating deliverables that can be any unique and verifiable product, result, or capability to perform a service that is required to complete a process, phase, or project. There are two main reasons why projects are initiated: internal business needs and external influences. It is often these needs or influences that lead to the creation of a needs analysis, feasibility study, business case, or a description of the situation addressed by the project (PMI, 2017).

According to (Avison et.al, 2009) project "is a complex, non-routine, one-time effort limited by time, budget, resources, and performance specifications designed to meet customer needs". This definition of a project implies that project is an activity which is bounded by varies constraints. Therefore every project should be assessed of the practicability with respect to time, resource and performance specifications.

Different organizations define projects differently. However, if we look closely for areas in common, we can discover common features across all projects, since all projects involve change, have time constraints, possess unique features, and have clear objectives. These features must be considered when studying a project's feasibility and its challenges (Jurg et.al, 2015).

2.2.2 Project Feasibility Study

The feasibility study is a procedure to predict outcome of an investigation, examination, or assessment of a planned scheme along with possible gain. It is also a systematic plan and analysis of a project's sustainability. During the feasibility study, marketing, production, technical issues, operational, environmental and organizational, and management aspects, and financial implications are considered. Essentially, a feasibility study evaluates and assesses a proposed project or business. In any Project prior to taking further action, this is a crucial step. In addition, it influences the decision or course of action of an investor, financier, or organization manager (Ndalahwa, 2020).

According to Heraldo et.al (2020) feasibility study is the initial consideration that must be done before running a business or project. This study also forms the basis for decisions, so that neither any party would be harmed. The feasibility study also consists of risk identification. All the possible risks that might occur during the problem are considered and that highly minimizes the risks.

A feasibility study is an essential activity before investing in any project. The reason behind this is that it identifies the merits and demerits of projects and provides a cost-benefit analysis of undertaking a specific project. On the other hand, it creates a platform that can be used to make informed decisions about a specific project. It also highlights any difficulties in carrying out the plan or project. Additionally, a feasibility study considers all pertinent elements that must be taken into account when the project or plan is put into action.

A feasibility study does not aim to provide an exact solution to any problem related to a project design and layout. Its purpose is rather to give a sense of its intended scope. During scoping, different aspects of the organization and its implementation costs and desired benefits are estimated accurately (Mukherjee and Roy, 2017).

Project feasibility study practice may vary from Organization to organization and project to project. However, the areas of the project feasibility study practices broadly consider Technical Feasibility, Financial Feasibility, Economic Feasibility, Legal Feasibility, Operational Feasibility, Scheduling feasibility and Market Feasibility. According to Mukherjee and Roy (2017) a project feasibility study should at least include Technical, Economic, Operational, Legal, and Scheduling studies conducted by an independent team and expertise. According to Jeniffer (2021), a project feasibility study should include Technical, Economic, Legal, and market studies. In addition, according to Julia (2022) a project feasibility study practice should include Technical, Financial, Operational, and market studies.

2.2.2.1 Technical Feasibility Study

Technical feasibility is a process of determining if the specific project has all the technical resources and expertise to meet at least the minimum project requirements. Factors to be considered during technical feasibility study include identifying the Resources i.e. human capital, equipment, and technology which will be required for executing the project, Technical Expertise; if not available the study should identify any additional expertise required and the best way to acquire it, assessment of Technical Risk - risks associated with the project, such as operational risks, security risks, and compliance risks (Jennifer, 2021).

Technical feasibility is associated with technological evolution. A team of engineers or technical experts studies the entire project and technical aspects in this field. This study allows said organizations to assess their performance properly. Industrial possessions may assemble capabilities, and based on the results, it is determined whether the technical team can convert the idea into reality (Mukherjee and Roy, 2017).

According to Schwender et.al (2015) technical feasibility study is an evaluation of the technical aspects of a proposed project or system to determine whether the project is technically achievable, viable and cost-effective. The study investigates the technical capabilities of the proposed project within the context of its environment, infrastructure, regulatory and compliance requirements, and technology trends.

The main objective of a technical feasibility study is to provide a detailed analysis of the project's technical requirements, including: Technical goals and objectives, Technical specifications and requirements, Hardware and software requirements, Technical resources and expertise, and associated technical risks and challenges.

The study provides an opportunity to identify potential risks and challenges, such as technology constraints, regulatory compliance requirements or technical issues that might impact the development or implementation of the project. These risks and challenges can be addressed and mitigated in the early stages of project planning to ensure a smooth and successful implementation.

To ensure the success of a technical feasibility study, it is important to involve a cross-functional team with expertise in all relevant areas, such as IT, engineering, operations and finance. This team can work together to evaluate all aspects of the project and provide a comprehensive assessment of its technical feasibility. In addition, a technical feasibility study can also help to identify potential opportunities for innovation and optimization. By analyzing the project from a technical perspective, teams can identify potential efficiencies or enhancements that can be made to improve the project's overall performance, increase its value or reduce overall costs. Ultimately, a technical feasibility study is a critical tool that enables project teams to assess the viability of their project from a technical perspective. By taking a holistic approach to project planning, teams can ensure that their projects are built on a solid technological foundation, ensuring their success over the long term (Schwender et.al, 2015).

Overall, a technical feasibility study is a crucial step in the project planning process, providing critical insights into the feasibility of a proposed project from a technological perspective. By understanding the potential risks and challenges, and identifying strategies to mitigate them, project teams can make informed decisions about how best to move forward with their project, ensuring its success and minimizing the chances of costly errors down the line.

2.2.2.2 Financial Feasibility Study

Prior to the start of the project, a financial feasibility study must be conducted pertaining to the price of the scheme, and all expenditures involved. This study further improves project reliability. The decision-makers can decide whether the planned scheme will be processed later

or now according to the financial conditions of the organization. This evaluation process also studies the price benefits of the proposed scheme (Bridgwater, 1995).

According to Mukherjee and Roy (2017) financial feasibility study is an assessment of the financial viability of a planned project. The study is conducted to determine if the project is profitable and sustainable over long period of time. The financial feasibility study includes a review of the financial projections, funding requirements, cash flow expectations, and profitability of the project. The study will also assess the financial risks associated with the project.

Overall, the financial feasibility study includes financial projections which are a detailed analysis of the revenue and expense projections with expected revenues or benefits, costs, and cash flow for the project. It also includes funding requirement analysis that involves assessment of the funding requirements for the project, involving the sources of funding and amount of capital needed to finance the project and the potential funding sources such as equity, debt, grants, or crowd funding. In addition, financial feasibility includes return on investment analysis, an assessment of the potential return on investment for the project, and financial risks, identifying and assessing financial risks associated with the project and organization specific with proposed risk mitigation. It also includes calculations such as net present value, internal rate of return, payback period and break even analysis to determine the financial risk and return of the project.

2.2.2.3 Economic Feasibility Study

Economic feasibility study assesses the commercial viability of the project by considering the broader economic impact of the project. It involves determining the overall benefits to the economy, including the potential impact on employment local industry, taxes, and community development (Al-Muharrami, 2019).

According to Gruneberg (1997) Economic appraisals recognize that market prices are not always reflective of the total cost. When it comes to the economics of construction projects, the goal is to ensure that the built structure meets its objectives and aims. Economic appraisals include financial and non-financial considerations, whereas financial assessments only consider financial aspects. Viability in economic terms is therefore broader than viability in financial terms. In addition, economic feasibility study practice considers negative externalities like pollution,

deforestation and displacement, which are considered as costs and positive externalities like generating employment that are considered as benefits.

In general, economic feasibility study includes cost-benefit analysis or economic impact analysis to measure the positive and negative monetary effects of the project on the economy of the specific country where the project is undertaken.

2.2.2.4 Legal Feasibility Study

A legal feasibility study is an analysis of the legal aspects of a proposed project. The primary purpose of a legal feasibility study is to identify any legal issues or concerns that may arise during the course of the project, and to assess the likelihood of success in light of these issues. A legal feasibility study typically involves a review of applicable laws and regulations, including zoning and land use restrictions, environmental laws, labor laws, and intellectual property laws. The study may also involve an assessment of potential legal liabilities, such as product liability or negligence claims. The results of a legal feasibility study can help inform decision-making and risk management strategies for the project (Mukherjee and Roy, 2017).

According to Brodley (1975) the main components of a legal feasibility study include: Identification of legal requirements: This involves researching federal, state, and local laws and regulations that apply to the proposed project; Analysis of legal risks: This involves identifying any potential legal risks that could arise from the proposed project, such as liability, compliance, and contract issues; Assessment of intellectual property: This involves examining existing patents, trademarks, and copyrights that may affect the proposed project; Evaluation of environmental regulations: This involves investigating any environmental regulations that may apply to the project; Examination of contracts: This involves reviewing any contracts that may be involved in the proposed project, such as leases and supplier contracts. The findings of the legal feasibility study are then used to determine whether the project is legally viable in the jurisdiction in question.

Over all, a legal feasibility study is an assessment of whether a proposed project can be legally implemented in a specific jurisdiction. It is a critical step in the project appraisal process for any project. The study determines whether the idea complies with the relevant laws, regulations, and other legal requirements, and examines potential legal risks and challenges. It is necessary to

conduct a legal feasibility study to determine whether or not the proposed project is in conflict with legal requirements at the national or international level. Any violation of legal requirements is decided by the Protection Acts. This is also a planned approach.

2.2.2.5 Operational Feasibility Study

The Operational Feasibility Study examines proposed methods and determines whether or not they fulfill all project requirements. To recognize and resolve troubles, it forecasts all possible schemes. In addition, this study may assess and verify whether the project plans guarantee the method development is feasible. The operational feasibility study is also an assessment of whether a proposed project is practical, viable, and sustainable in terms of operation. It examines the feasibility of implementing the proposed project from an operational perspective. The main objective of this study is to determine whether the proposed project can be successfully completed within the available resources, technology, and time frame (Pollock et.al 2013).

According to Fareed (2023) if the system is developed in accordance with rules, regulations, laws, organizational culture, etc., and then it is considered operationally feasible. Therefore, operational feasibility is a measure of how well a proposed system solves problems and meets requirements while taking advantage of opportunities identified during scope definition.

According to John (2007) the key components of operational feasibility study are: Evaluation of the project's resources: This includes analyzing and determining the availability of resources such as personnel, equipment, funding, and technologies necessary to successfully implement the proposed project; Analysis of the project's existing infrastructure: This involves reviewing the existing systems, structures, and processes that will need to support the proposed project or business idea; Examination of the project's timeline: This includes assessing the overall time required, phases of the project, and deadlines for completion; Examination of potential risks: This involves identifying potential risks involved in the project and determining how to address these risks, as well as contingency plans if necessary; Analysis of the project's impact: This involves determining the potential impact of the proposed project on the existing systems, structures, and processes; Assessment of operational costs: This involves estimating the operational costs of the project such as maintenance, repairs, labor, and other operational expenses.

In general, the results of the operational feasibility study are then used to determine whether the proposed project is operationally viable and whether it is worth proceeding with the project.

2.2.2.6 Scheduling Feasibility Study

Scheduling feasibility study is an important task for project managers in various industries such as construction, manufacturing, and software development. The literature on scheduling feasibility study has focused on different aspects, including the development of scheduling models, the identification of critical path activities, and the evaluation of different scheduling techniques.

One of the key issues in scheduling feasibility study is the development of scheduling models. Several scheduling models have been proposed to estimate project duration, resource requirements, and activity sequencing. The critical path method (CPM) is one of the most widely used scheduling models, which uses a network diagram to identify the critical path activities that need to be completed on time to ensure project completion. Another popular scheduling model is the program evaluation and review technique (PERT), which is based on probabilistic estimates of activity duration (Dobson, 1987).

Identifying critical path activities is also an important aspect of scheduling feasibility study. Critical path activities are those activities that have the highest impact on the project duration and must be completed on time to avoid delays in project completion. Different scheduling models use various techniques to identify critical path activities, including activity network analysis, float analysis, and critical ratio analysis (Pollock et.al, 2013).

Scheduling feasibility study also involves the evaluation of different scheduling techniques. Several scheduling techniques have been developed over the years, including bar charts and line-of-balance scheduling. Each technique has its advantages and disadvantages, and project managers need to evaluate their suitability based on project requirements, resource availability, and other factors (Shen et.al, 2010).

In conclusion, scheduling feasibility study is an important aspect of project management that involves the development of scheduling models, identification of critical path activities, and evaluation of different scheduling techniques. The literature on scheduling feasibility study has

provided valuable insights into these issues, which can help project managers to develop effective schedules that meet project objectives and stakeholder expectations.

2.2.2.6 Market Feasibility Study

If the project is a business project that has deliverables to be introduced to the market the market feasibility study should be conducted, including supply-demand balance study, before making any significant investments.

According to Julia(2022) the market feasibility study is an evaluation of how your team expects the project's deliverables to perform in the market. This part of the study includes a market analysis, market competition breakdown, and sales projections.

Furthermore, a market feasibility study is an analysis of the viability of a proposed project based on various factors such as the demand, competition, and potential profitability of the project. Steps in conducting a market feasibility study include: Defining the project: Clearly define the scope and objectives of the project, including what products or services will be offered, the target market, and the location of the project; Conducting market research: Identify the potential customers and their needs, preferences, and behaviors and analyze the market size, growth potential, and trends by gathering information on the competition, including their strengths and weaknesses; Determining the project's unique selling proposition: Identify what sets the project apart from its competitors and how it can meet the needs of the target market; Making recommendations: Provide recommendations on the viability of the project and any changes or adjustments that may be needed to ensure its success (Research and market, 2019).

Overall, a market feasibility study is an essential step in evaluating the potential success of a project and should be conducted before making any significant investments.

2.2.3 Elements to be considered to ensure the Quality of Project's Feasibility Study Practice

There are various elements to be considered to ensure the quality of project's feasibility study practice. Some of these elements are: The clarity of the project objectives: The feasibility study should have a clear and concise statement of the project's objectives so that the study can be focused and provide accurate recommendations; the availability of data sources: The data sources that are used in the feasibility study should be reliable and relevant to the project

objectives. The data should be collected from various sources, such as market research reports, government statistics, and company financial data; the experience and expertise of the feasibility study team: The team responsible for conducting the feasibility study should have the necessary experience and expertise to evaluate the project's technical, financial, economic, legal, operational and market feasibility. The team should be able to identify potential risks and limitations of the project; The accuracy of financial projections: The assumptions used in the financial projections should be based on realistic market conditions and industry trends; The level of stakeholder involvement: The feasibility study should involve stakeholders at various stages of the study to ensure that their input and feedback are incorporated into the study. All these elements should be considered and addressed adequately to ensure a high-quality feasibility study (Anees, 2018).

According to Sawsan et.al (2019) the quality of a project feasibility study is mainly determined by the quality, experience, and expertise of the team members undertaking the study. Their technical knowledge and understanding of all feasibility study elements matter. If multiple teams are involved in a study, the quality will improve. Each area of the project feasibility study should be carried out by an independent subject expertise team. This will result in a high-quality Project Feasibility Study. The technical and operational feasibility study should be carried out by the technical expertise of that specific project, the financial and economic feasibility study should be carried out by the finance and economic experts, a legal feasibility study should be carried out by the legal expertise and market feasibility study should be carried out by the market expert. If a single team is involved in the study of the feasibility of a specific project, it should at least contain one subject expertise for each category of the project feasibility study.

2.2.4 Challenges of Project Feasibility Study

According to Krieger (2016) challenges associated with project feasibility studies, include: Data gathering and analysis: One of the biggest challenges of conducting a feasibility study is collecting and analyzing accurate data. This requires detailed research and analysis to ensure that all the necessary information is gathered and used to make informed decisions; Uncertainty: Project feasibility studies are often conducted in the early stages of a project where there is limited information available. This uncertainty can make it difficult to accurately assess the feasibility of the project, including its potential costs, benefits, and risks.

Furthermore, Project feasibility study challenges also include: Cost and resource constraints: Project feasibility study can be costly and time-consuming. Organizations may not have the resources or budget to complete a comprehensive feasibility study, which can limit the accuracy of the findings; Stakeholder involvement: Feasibility studies must take into account the perspectives and needs of stakeholders, including customers, suppliers, employees, and investors. However, it can be challenging to gather and address all stakeholder concerns and interests; Complex decision-making: Feasibility studies involve complex decision-making that requires a thorough understanding of the business, industry, and market. The decision-making process can often be delayed or derailed by competing priorities, differing opinions, and conflicting data (Shen et.al, 2010).

2.3 Empirical Review of the Literature

Project feasibility study is an essential exercise for every organization that seeks to undertake a new project. In recent years, there has been a growing interest in the practice of project feasibility study and the challenges associated with it. This empirical literature review seeks to explore some of the recent literature on project feasibility study practice and challenges.

The study Conducted by Fresenebet (2020) have depicted that among five broad classifications of feasibility study, NGOs give more attention to technical and economic feasibility than the government organization. Whereas government organization gives more focus on the operational and legal feasibility study. But in both organizations Schedule feasibility gets little attention than the rest of the feasibility studies. Because schedule feasibility has given less attention most of NGO's and government projects fail to deliver projects on time.

Another study conducted by seweagegnew (2018) identified the following nine feasibility study parameters: "*Issues of primary engineering design, alternative projects for competition while selecting the project, clearness of sites of the project, effects of the project on the local community, availability of resources, knowing the total cost of the project, attainableness of time schedule of the activities, the economic capacity of the country in relation to the project and financial soundness of the projects".* According to his findings most activities were deemed ineffective by respondents across all feasibility parameters. He added that it is particularly difficult to select a winning project due to the lack of similar projects in competition. The

researcher also depicted that according to respondents; it was unclear what impact the projects would have on local communities, and it is difficult to determine whether the projects were feasible because the detailed costs weren't clear, they weren't within the economy's capacity, and the costs were over the country's capacity. In short, feasibility studies were not being conducted properly.

As part of the study by Yidnekachew (2021), a feasibility study analysis was also conducted. Using the results of the organizational practice, he concluded the organization collects primary and secondary data effectively by involving relevant stakeholders. However, the interviewee neither acknowledges nor mentions a tool for comparing the effectiveness and efficiency of different project ideas. He also indicated that the only assessment undertaken was cost per beneficiary, often a requirement of donors. The researcher added that, based on the results, primary and secondary data were collected to engage stakeholders and understand the problem further. Besides, Grant funded projects do not practice presenting assessment data, validating and developing a consent form with wider stakeholders. In conclusion, he pointed out that the stakeholder analysis practice and feasibility study had an aggregate mean of 3.0 and 2.68 respectively. These shows there were problems understanding stakeholders and doing a proper feasibility study.

Sawsan et.al (2019) study on Iraqi construction projects indicated that an improper feasibility study may increase tasks by almost double. He selected 7 tasks in a project with the proper feasibility study and tested how the number of tasks would change with the abused practice of feasibility study. He found that the tasks would become 15 with a faulty feasibility study. Finally, he concluded by pointing out where the abuse of the feasibility study practice leads to: cost and time overruns, the environmental impact has a negative impact on the time and cost of the project which leads to an increase in the time and the cost.

One of the critical factors that determine the success of project feasibility study is the ability to gather and analyze accurate data. According to a study by Meskendahl and Killen (2018), the data collection stage is critical in the feasibility study process, and it requires competent professionals to gather and analyze data. This study suggests that the use of advanced

technologies such as big data analytics and artificial intelligence is essential in collecting and analyzing data accurately.

Moreover, project feasibility study presents significant challenges in terms of stakeholder management. According to a study by Ahmed et al. (2019), stakeholder management is a significant challenge in a feasibility study because stakeholders have varied interests and expectations. This study suggests that effective stakeholder analysis and communication are critical in addressing the challenges of stakeholder management in feasibility study.

Another essential aspect of project feasibility study is risk assessment. A study by Agyapong et al. (2020) suggests that identifying and assessing risks is a critical aspect of feasibility study. This study proposes that using a comprehensive risk management approach that includes risk identification, analysis, and mitigation is essential in addressing the risks associated with project implementation.

Finally, the success of a feasibility study depends on the ability of project planners to incorporate environmental and social factors in their analysis. A study by Lofthouse and Wilson (2019) indicates that social and environmental factors weigh heavily in the decision-making process of project implementation. This study emphasizes the importance of considering environmental and social factors in feasibility study to ensure sustainable project implementation.

In conclusion, project feasibility study is an essential exercise in project planning, and it presents several challenges. The literature reviewed in this paper suggests that gathering and analyzing accurate data, stakeholder management, risk assessment, and consideration of social and environmental factors are critical in ensuring successful feasibility study. Organizations need to pay close attention to these factors to avoid costly mistakes during project implementation.

Chapter Three
Research Methodology

This section of the research concentrated on the research design, research study area, target population, sampling technique, data source and data collection tools and techniques that will be used in this study.

3.1 Description of the study area

The study was conducted in Addis Ababa, Ethiopia at Industrial Project Services (IPS). A feasibility study is one of the primary duties and responsibilities of IPS, and this study focused on the firm's feasibility study practice and its challenges. Throughout its history, the company has conducted more than 125 pre-feasibility and feasibility studies for public and private organizations.

3.2 Research Design and Approach

This study mainly focused on the challenges and practices associated with IPS feasibility studies. It answered the 'what' questions of the project feasibility study. To evaluate project feasibility study practices and challenges, the study used a descriptive research design. Some people misunderstand descriptive research design as mere description. On the contrary, an effective descriptive research design is fundamental to the research enterprise. It has added immeasurably to our understanding of the enterprise's shape and nature. In addition to answering what questions, an effective descriptive research design will also provoke the why questions of an explanatory research design (David, 2001).

To analyze the collected data, qualitative and quantitative research approaches were used. A quantitative research approach was used to analyze data collected through close-ended questions and a qualitative research approach was applied to evaluate data gathered through open-ended questions and interviews.

3.3 Population, Sampling and Sampling Technique

The study only targeted on the Industrial Project Services (IPS) located in Addis Ababa, Ethiopia. There are six departments and 116 employees in the firm. However, the study only focused on three of these departments: the Engineering, Marketing, and Administration departments of the firm. In those departments, there are 56 employees. 21 personnel are from the administration department, including the CEO, 7 from the marketing department, and the remaining 28 are from the engineering department.

Sampling is a strategy used to select elements from a population, and sample design addresses two basic issues: (1) how elements of the population will be selected and (2) how many elements will be included. Purposive or judgmental sampling, which was applied in this study, involves the use of the researcher's knowledge of the population in terms of research goals (Patrick, 2008).

Among 21 employees of the administration department, 7 who have direct involvement in the project feasibility study were selected using the purposive or judgmental sampling technique. All employees in the marketing and engineering departments were selected. From each department, 1 respondent was used for a pilot test. Therefore, the total sample size was 39.

3.4 Data types, sources and methods of data collection

3.4.1 Data types and sources of data

Data required to conduct research can be collected using primary or secondary data sources (Catherine, 2007). This study used both primary and secondary data. Primary data was collected through questionnaires, which was prepared and distributed accordingly to Industrial Project Services (IPS) purposively selected participants. In addition, interview questions, to 3 top level position holders and 4 technical personnel, were also used to collect primary data. There are more than 700 copies of the pre-feasibility and feasibility study records found in the library of Industrial Project Services (IPS) and among them the selected 16 feasibility studies reports were used as a secondary data.

3.4.2 Methods of data collection

Questionnaires designed to collect primary data were emailed to the sample unit, and hard copies were given based on the participants' willingness. Personal (face-to-face) and phone

interviews were also scheduled with some of the aforementioned stakeholders to address crucial issues and obtain their perspectives and experiences. The interviews were standardized, open-ended interviews that could be conveniently examined and contrasted.

3.5 Research Materials

Google Survey form builder is an open-source online application made available by Google Corporation (Firesenbet, 2020). The study distributed the questionnaires designed using Google Surveys form builder via email to respondents based on their choice and willingness to complete them. Hard copies of the questionnaire were also provided to those who want to complete them in person. For data from email, responses were automatically recorded in Excel format by this form builder.

3.6 Methods of data analysis

Data analysis in the study included both qualitative and quantitative analysis. Close-ended questions from questionnaires were analyzed quantitatively by Statistical Package for Social Sciences version 26 (SPSS V26). Descriptive statistics such as frequency and percentage were used to evaluate and describe the basic or demographic information of the respondents. Central tendency metrics such as mean and standard deviation were applied to evaluate the practice and challenges of the project feasibility study. In addition, Relative Importance Index (RII) was used to rank the elements to be considered to ensure the quality of projects feasibility study practice and challenges of project feasibility study. Qualitative data analyses were used to analyze open-ended questions in relation to the study under consideration. In addition, the analyzed data were presented using percentages, mean, and standard deviation and frequency tables.

$$\text{RII} = \frac{5n5 + 4n4 + 3n3 + 2n2 + 1n1}{A*N}$$

n5 = Numbers of respondents for strongly agree

n4 = Numbers of respondents for agree

n3 = Numbers of respondents for neutral

n2 = Numbers of respondents for disagree

n1 = Numbers of respondents for strongly disagree

A (Highest Weight) = 5

N (Total number of respondents) = 39

3.7 Validity and Reliability

To improve the research's validity and reliability, questionnaire preparations were divided into multiple parts. First, a comprehensive literature review on feasibility study practices, factors influencing the quality of the project feasibility study, and project feasibility study challenges were conducted to provide an initial foundation for selecting items to include in the questionnaire and preparing a questionnaire (Face Validity). Second, a pilot study was done. The questionnaire was distributed to the aforementioned stakeholders, who were not included in the final sample respondents. They were given an outline of the study's theoretical framework and requested to engage in the investigation. They reviewed and answered the questions accordingly and also commented on the subjects in particular and on the questionnaire in general (Content Validity). Third, the final questionnaire was created and distributed to purposefully or judgmentally selected samples. Fourth, after gathering the necessary data, the reliability and validity were tested by using cronbach's alpha and Pearson correlation coefficients. Finally, the questionnaire was reissued to the seven selected personnel who had previously completed the questionnaire and were included in the sample size to ensure consistency and test reliability.

3.8 Ethical Considerations

The freedom to choose, the right to safety, the right to be informed, and the right to privacy and confidentiality are all ethical issues when conducting research and collecting data (Akaranga and Makau, 2016).

Every participant selected for the study was asked whether they were willing to participate. The questionnaire did not contain any names referring to a respondent in order to protect that individual from physical or psychological harm. In addition, all respondents were informed about all aspects of a research task and how data and results would be used. It was only for academic purposes and was used within that organization. Furthermore, confidentiality concerns were taken seriously. During the reporting of the findings, no names, codes, or individual respondents were identified.

Chapter 4
Data analysis, Interpretation and Discussions

In this chapter, the data collected was analyzed and findings were generated. The study contains total sample size of 39. The questionnaires and interview questions were distributed accordingly to 39 staffs of Industrial project Services (IPS). All of them were returned back, which makes response rate 100 percent.

The survey contained four major sections: 1) Demographic Information about the respondents, 2) project feasibility practice, which contains 7 subsections (Technical feasibility, financial feasibility, Economic feasibility, legal feasibility, operational feasibility, Scheduling feasibility and market feasibility), 3) The elements to be considered to ensure the quality of projects feasibility study practice, and 4) Challenges of project feasibility study practice.

With the exception of demographic information and a few inquiries, Likert scaling is used. Scale value 5 indicates Strongly Agree, 4 imply Agree, 3 imply Neutral, 2 indicates Disagree, and 1 indicates Strongly Disagree.

4.1 Demographic Information about Respondents

To collect demographic Information about the respondents the parameters like Gender, Age, level of Education, project feasibility study work experience, number of years in organization, and current position in organization were used.

Table 1 demographic information of respondents

Attributes	Description	Frequency	Percent	Valid Percent
Gender	M	28	71.8	71.8
	F	11	28.2	28.2
Age	20-30	4	10.3	10.3
	30-40	29	74.4	74.4
	40-50	4	10.3	10.3
	>50	2	5.1	5.1

Level Of Education	Diploma	0	0	0
	Degree	18	46.2	46.2
	Masters	21	53.8	53.8
	PHD	0	0	0
Project Feasibility Study Work Experience	<1	3	7.7	7.7
	1-5	18	46.2	46.2
	5-10	15	38.5	38.5
	>10	3	7.7	7.7
Number of years in organization	<1	3	7.7	7.7
	1-5	18	46.2	46.2
	5-10	15	38.5	38.5
	>10	3	7.7	7.7
Current Position in an Organization	Low Level	3	7.7	7.7
	Middle Level	24	61.5	61.5
	Managerial Level	9	23.1	23.1
	Top Level	3	7.7	7.7
Total		39	100	100

Source: own survey 2023

Of the 39 respondents who are part of the project feasibility study practice, 28 (71.8%) are male and 11 (28.2%) are female. This indicates that most IPS project feasibility study team members are male. In terms of their age, four (10.3%) respondents are between 20-30 years old, 29 (74.4%) between 30-40 years old, four (10.3%) between 40-50 years old, and only two (5.1%) are over 50. This implies most respondents are adults. Regarding their level of education, there are no Diploma or Ph.D. holders among respondents. Instead, 18 (46.2 %) are Degree holders, and 21 (53.8) are Master's holders.

When we look at their Project Feasibility Study Work Experience, 3 (7.7%) respondents have less than one year of experience, 18 (46.2%) have one to five years of experience, 15 (38.5%) have five to ten years of experience and only 3 (7.7%) have more than ten years of experience. The results show that the majority of respondents are seniors. Taking a look at the number of years respondents worked in that organization, 3 (7.7%) worked for less than a year, 18 (46.2%)

worked for one to five years, 15 (38.5%) worked for five to ten years, and 3 (7.7%) worked for more than 10 years in an organization.

In terms of their current position, 3 respondents (7.7%) are in low-level positions, 24 (61.5%) are in middle-level positions, 9 (23.1%) are in managerial positions, and 3 (7.7%) hold top-level positions. This indicates that the majority of respondents hold middle-level positions in an organization.

In general, their demographic information indicates that most of the respondents are seniors having educational qualifications degree and above, and adult. This added a significant value to the responses gathered.

4.2 Project Feasibility Study Practice

This section of the analysis includes items in project technical feasibility study practice. These items include financial feasibility study practice, economic feasibility study practice, legal feasibility study practice, operation feasibility study practice, scheduling feasibility study practice, and market feasibility study practice.

4.2.1 Project Technical Feasibility Study Practice

This subsection of the analysis contains the practices included in the project technical feasibility study.

Before analyzing and interpreting economic feasibility study data, the validity and reliability of the data were tested using Pearson correlations and Cronbach's alpha.

Table 2 Project Technical Feasibility study questionnaire Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.712	0.717	4

Source: own survey 2023

The cronbach's alpha acceptance value is greater than 0.7. It can be seen from the table 2, the cronbach's alpha of the items was 0.712. Therefore, the questionnaires provided to collect data for technical feasibility study practice were reliable.

Table 3 Project Technical Feasibility study questionnaire validity test

Correlations						
		Technical risks associated with the project are identified and analyzed	Technical viability of a project is studied within the context of the environment	Technical viability of a project is studied within the context of the regulatory and compliance requirements	Resources i.e. human capital, equipment, and technology which will be required for executing the project, are identified and analyzed	Total Technical
Technical risks associated with the project are identified and analyzed	Pearson Correlation	1	.424**	.336*	.596**	.789**
	Sig. (2-tailed)		0.007	0.037	0	0
	N	39	39	39	39	39
Technical viability of a project is studied within the context of the environment	Pearson Correlation	.424**	1	.344*	.412**	.741**
	Sig. (2-tailed)	0.007		0.032	0.009	0
	N	39	39	39	39	39
Technical viability of a project is studied within the context of the regulatory and compliance requirements	Pearson Correlation	.336*	.344*	1	0.213	.657**
	Sig. (2-tailed)	0.037	0.032		0.192	0
	N	39	39	39	39	39
Resources, human capital, equipment, and	Pearson Correlation	.596**	.412**	0.213	1	.754**
	Sig. (2-tailed)	0	0.009	0.192		0

technology which will be required for executing the project, are identified and analyzed	N	39	39	39	39	39
Total Technical	Pearson Correlation	.789**	.741**	.657**	.754**	1
	Sig. (2-tailed)	0	0	0	0	
	N	39	39	39	39	39
** Correlation is significant at the 0.01 level (2-tailed).						
* Correlation is significant at the 0.05 level (2-tailed).						

Source: own survey 2023

The critical value (r) read from the table at significance level of 5% and DF (Degree of freedom) =37, (DF= N-2), is 0.3160.

For an Item to be valid their obtained value must be greater than the critical value. It can be seen from table 3 above that all the obtained rxy (Pearson correlations) are greater than critical value r, which is 0.3160. In addition the significances for the items were all in acceptable range, less than 0.05.

In general, based on the test results indicated in table 3 it can be said that the questionnaires provided to collect data for technical feasibility study practice were valid.

Table 4 Project Technical Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project Technical Feasibility Study is part of the practice of the feasibility study in an organization.	Yes	39	100	1.00	0.000
	No	0	0		
	Not clearly known	0	0		
There is an independent and cross functional team/Expertise for Project Technical Feasibility Study	Yes	39	100	1.00	0.000
	No	0	0		
	Not clearly known	0	0		
Technical risks associated with the project are identified and	Strongly agree	23	59.0	4.54	0.600

analyzed	Agree	14	35.9		
	Neutral	2	5.1		
	Disagree	0	0		
	Strongly disagree	0	0		
Technical viability of a project is studied within the context of the environment	Strongly agree	12	30.8	4.18	0.644
	Agree	22	56.4		
	Neutral	5	12.8		
	Disagree	0	0		
	Strongly disagree	0	0		
Technical viability of a project is studied within the context of the regulatory and compliance requirements	Strongly agree	13	33.3	4.18	0.683
	Agree	20	51.3		
	Neutral	6	15.4		
	Disagree	0	0		
	Strongly disagree	0	0		
Resources, human capital, equipment, and technology which will be required for executing the project, are identified and analyzed	Strongly agree	17	43.6	4.33	0.662
	Agree	18	46.2		
	Neutral	4	10.3		
	Disagree	0	0		
	Strongly disagree	0	0		

Source: own survey 2023

The first two questions respondents asked about the project's technical feasibility study were whether the technical feasibility study is part of their feasibility study practice with an independent team/expert. All the respondents agreed that a technical feasibility study is part of the practice of feasibility study in the firm. There is an independent team/expertise for the technical feasibility study. The response mean was 1 and the standard deviation was 0.000. The next question respondents asked was if the technical risks associated with the project were identified and analyzed during technical feasibility. Of 39 respondents, 23 (59%) strongly agreed and 14 (35.9%) agreed. The response mean was 4.54 with a standard deviation of 0.600. This

implies that identifying and analyzing technical risks associated with the project is among the major activities of firm's project technical feasibility study.

The next question the respondents asked was if the technical viability of a project is studied within the context of the environment. In addition, they asked about it within the context of regulatory and compliance requirements. 12 (30.8%) of the respondents strongly agreed and 22 (56.4%) agreed that the technical viability of a project is studied within the context of the environment. The remaining 5 (12.8%) were neutral. The response mean was 4.18 and the standard deviation was 0.644. Regarding the technical viability of a project in the context of regulatory and compliance requirements, 13 (33.3%) strongly agreed, 20 (51.3%) agreed, and only 6 (15.4%) were neutral. Its mean was 4.18 and its standard deviation was 0.683. This indicates that during the technical feasibility study IPS technical team considers studying the technical viability of a project within the context of environmental, regulatory, and compliance requirements.

The respondents were also asked if resources i.e. human capital, equipment, and technology required for executing the project, were identified and analyzed. 17 (43.6%) strongly agreed, 18 (46.2%) agreed and only 4 (10.3%) were neutral. The response mean was 4.33 and the standard deviation was 0.662. No respondents disagreed or strongly disagreed on the issue. The technical committee of IPS, therefore, usually identifies and analyzes the required resources.

In general, the response results depicted that the technical feasibility study team of the organization is undertaking the required activities accordingly.

4.2.2 Project Financial Feasibility Study Practice

This subsection of the analysis contains the practices included in the project financial feasibility study.

Before analyzing and interpreting financial feasibility study data, the validity and reliability of the data were tested using Pearson correlations and Cronbach's alpha.

Table 5 Project Financial Feasibility study questionnaire Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.916	0.916	2

Source: own survey 2023

Cronbach's alpha accepted value is greater than 0.7. As shown in Table 5, the items' Cronbach's alpha was 0.916. Thus, the financial feasibility study questionnaires provided for data collection were reliable.

Table 6 Project Financial Feasibility study questionnaire Validity test

Correlations				
		Financial risks associated with the project are identified and analyzed	A detailed analysis of the revenue and expense projections with expected revenues or benefits, costs, and cash flow are conducted	Total Financial
Financial risks associated with the project are identified and analyzed	Pearson Correlation	1	0.845**	0.962**
	Sig. (2-tailed)		0.000	0.000
	N	39	39	39
A detailed analysis of the revenue and expense projections with expected revenues or benefits, costs, and cash flow are conducted	Pearson Correlation	0.845**	1	0.959**
	Sig. (2-tailed)	0.000		0.000
	N	39	39	39
Total Financial	Pearson Correlation	0.962**	0.959**	1
	Sig. (2-tailed)	0.000	0.000	
	N	39	39	39
** Correlation is significant at the 0.01 level (2-tailed).				

Source: own survey 2023

The critical value (r) read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2), is 0.3160.

For an item to be valid obtained value must be greater than the critical value. It can be seen from the table above that both Pearson correlation coefficients (rxy), 0.962 and 0.959, are greater than the critical value r, which is 0.3160. In addition, the significances for the items were all in the acceptable range, 0.00, less than 0.01.

According to the results in the table above, the questionnaires that were used to collect data for financial feasibility studies were valid according to the test results.

Table 7 Project Financial Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project Financial Feasibility Study is part of the practice of the feasibility study in an organization.	Yes	39	100	1.00	0.000
	No	0	0		
	Not clear	0	0		
There is an independent team/Expertise for Project Financial Feasibility Study	Yes	39	100.0	1.00	0.000
	No	0	0		
	Not clear	0	0.0		
Financial risks associated with the project are identified and analyzed	Strongly agree	0	0.0	3.05	0.857
	Agree	15	38.5		
	Neutral	11	28.2		
	Disagree	13	33.3		
	Strongly disagree	0	0		
A detailed analysis of the revenue and expense projections with expected revenues or benefits, costs, and cash flow are conducted	Strongly agree	8	20.5	3.74	0.818
	Agree	14	35.9		
	Neutral	16	41.0		
	Disagree	1	2.6		
	Strongly disagree	0	0		
Financial calculations that are usually applied during financial feasibility Study	Net Present Value	10	25.6		
	Internal rate of return	4	10.3		
	Payback period	14	35.9		
	Break even analysis	5	12.8		
	Others	6	15.4		

Source: own survey 2023

The first two questions respondents asked about the project's financial feasibility study were whether the financial feasibility study is part of their feasibility study practice with an independent team/expert. All respondents agreed that the firm conducts a financial feasibility study as part of its feasibility study service, and an independent team is involved in the financial feasibility study. Their mean was 1 and a standard deviation was 0.000 from the response data.

Next, respondents were asked about identifying financial risks and analyzing them. Of 39 respondents, 13 (33.33%), disagreed, 11 (28.2%) were neutral, and 15 (38.5%) agreed. The response mean was 3.05 and the standard deviation was 0.857. The respondents' response with significant deviation indicates that IPS financial feasibility study practice is not to the expected level with respect to identifying and analyzing financial risks associated the proposed project in study.

In addition, respondents were asked if a detailed analysis of revenue and expense projections with expected revenues or benefits, costs, and cash flow was conducted. 14 (35.9%) agreed and 8 (20.5%) strongly agreed. Only one respondent disagreed and the remaining 16 (41%) were neutral. The mean was 3.74 and the standard deviation was 0.818. As it can be seen from the results from the responses, Even though, the practice of analyzing revenue and expense projections with expected revenues or benefits, costs, and cash flow in detail is among the activities of the financial feasibility study practice of a firm, it needs to be revised.

The respondents were also asked about financial calculations usually applied during a financial feasibility study. 14 respondents (35.9%) chose the payback period, while 10 (25.6%) chose the net present value, and the remaining respondents chose 4 (10.3%) internal rates of return, 5 (12.8%) break-even analyses, and 6 (15.4%) others. It clearly shows that net present value and payback period are the most commonly used financial calculations in the firm.

In Summary the financial feasibility team of the organization focused on the financial calculations. In contrast, activities such as analyzing revenue and expense projections with expected revenues or benefits, costs, and cash flow in detail are rarely practiced.

4.2.3 Project Economic Feasibility Study Practice

This subsection of the analysis contains the practices included in the project economic feasibility study. Data validity and reliability were tested using Pearson correlations and Cronbach's alpha before analyzing and interpreting economic feasibility study results.

Table 8 Project Economic Feasibility study questionnaire Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.803	0.816	5

Source: own survey 2023

Cronbach's alpha accepted value is greater than 0.7. As shown in Table 8, the items' Cronbach's alpha was 0.803. Thus, the economic feasibility study questionnaires provided for data collection were reliable.

Next, the reliability of the questionnaire data is tested. The detailed test reports were shown in table below.

Table 9 Project Economic Feasibility study questionnaire Validity test

Correlations							
		Economic risks associated with the project are identified and analyzed	The potential impact of the project on employment local industry are studied	The potential impact of the project on community developme nt are studied	The potential impact of the project on the society and environme nt are studied	Positive and negative monetary effects of the project on the economy of the country are considered.	Total Econo mic
Economic risks associated with the project are identified and analyzed	Pearson Correlation	1	.644**	.613**	.436**	.384*	.799**
	Sig. (2-tailed)		0	0	0.006	0.016	0
	N	39	39	39	39	39	39
The potential impact of the project on employment local industry are studied	Pearson Correlation	.644**	1	.560**	.399*	0.272	.737**
	Sig. (2-tailed)	0		0	0.012	0.094	0
	N	39	39	39	39	39	39

The potential impact of the project on community Development are studied	Pearson Correlation	.613**	.560**	1	.699**	.389*	.849**
	Sig. (2-tailed)	0	0		0	0.014	0
	N	39	39	39	39	39	39
The potential impact of the project on the society and environment are studied	Pearson Correlation	.436**	.399*	.699**	1	0.305	.739**
	Sig. (2-tailed)	0.006	0.012	0		0.059	0
	N	39	39	39	39	39	39
Positive and negative monetary effects of the project on the economy of the country are considered.	Pearson Correlation	.384*	0.272	.389*	0.305	1	.664**
	Sig. (2-tailed)	0.016	0.094	0.014	0.059		0
	N	39	39	39	39	39	39
Total Economic	Pearson Correlation	.799**	.737**	.849**	.739**	.664**	1
	Sig. (2-tailed)	0	0	0	0	0	
	N	39	39	39	39	39	39
** Correlation is significant at the 0.01 level (2-tailed).							
* Correlation is significant at the 0.05 level (2-tailed).							

Source: own survey 2023

The critical value (r) read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2), is 0.3160.

For an item to be valid obtained value must be greater than the critical value. It can be seen from the table that all the Pearson correlation coefficients (rxy) 0.799, 0.737, 0.849, 0.739, and 0.664 are greater than the critical value r, which is 0.3160. In addition, the significances for the items were all in the acceptable range, 0.00, less than 0.05.

On the basis of the test results listed above, it is clear that the questionnaires provided for gathering data for economic feasibility studies were valid.

Table 10 Project Economic Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project Economic Feasibility Study is part of the practice of the feasibility study in an organization	Yes	39	100	1.00	0.000
	No	0	0		
	Not clearly known	0	0		
There is an independent team/Expertise for Project Technical Feasibility Study	Yes	0	0	2.00	0.000
	No	39	100		
	Not clearly known	0	0		
Economic risks associated with the project are identified and analyzed	Strongly agree	0	0	2.67	0.701
	Agree	5	12.8		
	Neutral	16	41.0		
	Disagree	18	46.2		
	Strongly disagree	0	0		
The potential impact of the project on employment in local industry are studied	Strongly agree	0	0	2.44	0.680
	Agree	2	5.1		
	Neutral	15	38.5		
	Disagree	20	51.3		
	Strongly disagree	2	5.1		
The potential impact of the project on community Development are studied	Strongly agree	0	0	2.74	0.715
	Agree	6	15.4		
	Neutral	17	43.6		
	Disagree	16	41.0		
	Strongly disagree	0	0		
The potential impact of the project on the society and environment are studied	Strongly agree	3	7.7	3.56	0.718
	Agree	18	46.2		
	Neutral	16	41.0		
	Disagree	2	5.1		
	Strongly disagree	0	0		

Positive and negative monetary effects of the project on the economy of the country are considered.	Strongly agree	0	0	2.56	0.912
	Agree	5	12.8		
	Neutral	18	46.2		
	Disagree	10	25.6		
	Strongly disagree	6	15.4		

Source: own survey 2023

Two of the first questions respondents asked about the project's economic feasibility study were whether the study was part of their practice of conducting feasibility studies with an independent expert or team. All respondents agreed that the firm conducts an economic feasibility study as part of its feasibility study practice. However, there is no independent team involved in the economic feasibility study. According to the open-ended questionnaire, In IPS, the financial team conducts economic feasibility studies.

Next, respondents were asked if the economic risks associated with the project were identified and analyzed. The response mean was 2.67 and the standard deviation was 0.701. 18 (46.2%) of the respondents disagreed, 16 (41%) were neutral, and only 5 (12.8%) agreed. In this case, IPS did not usually identify and analyze economic risks during economic feasibility studies.

The next two questions the respondents asked were if the potential impact of the project on employment in local industry, and the potential impact of the project on the community development are studied. The response means' were 2.44 and 2.74 with standard deviations of 0.680and 0.715 respectively. Therefore, the firm economic feasibility studies do not usually consider the impact of the project on employment in local industry, and community development.

The respondents were also asked if the potential impact of the project on the society and environment are studied. Of the respondents 3 (7.7%) strongly agreed, 18 (46.2%) agreed, and only 2 (5.1%) disagreed. The remaining 16 (41%) were neutral. The response mean was 3.56 and the standard deviation was 0.718. According to the results despite the fact that the firm does not have an independent team to examine the economic feasibility of projects, it considers the potential impact of the project on the society and environment to some extent.

In addition, the respondents were asked if the positive and negative monetary effects of the project on the economy of the country are considered during the project's economic feasibility study. Of the respondents 10 (25.6%) disagreed, 6 (15.4%) strongly disagreed, 18 (46.2%) were neutral and only 5 (12.8%) agreed. The response mean was 2.56 with standard deviation of 0.912. This implies that the positive and negative monetary effects of the projects on the economy of the country are not usually considered in the economic feasibility study practice of the firm. Hence, the firm needs to fill the resulting gap in its economic feasibility studies practice.

4.2.4 Project Legal Feasibility Study Practice

This subsection of the analysis contains the practices included in the project Legal feasibility study.

Data validity and reliability were tested using Pearson correlations and Cronbach's alpha before analyzing and interpreting Legal feasibility study results.

Table 11 Project Legal Feasibility study questionnaire Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.905	0.909	4

Source: own survey 2023

Cronbach's alpha accepted value is greater than 0.7. As shown in Table 11, the items' Cronbach's alpha was 0.905. Thus, the legal feasibility study questionnaires provided for data collection were reliable.

Next, the reliability of the questionnaire data is tested. The detailed test reports were shown in table below.

Table 12 Project Legal Feasibility study questionnaire Validity test

Correlations						
		Legal risks associated with liability, compliance, and contract issues of the project are identified and analyzed	All applicable Federal and local laws and regulations related to that specific project are studied	Intellectual property such as examining existing patents, trademarks, and copyrights that may affect the proposed project are studied	Environmental regulations that may apply to the project are investigated	Total Legal
Legal risks associated with liability, compliance, and contract issues of the project are identified and analyzed	Pearson Correlation	1	.801**	.722**	.652**	.905**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	39	39	39	39	39
All applicable Federal and local laws and regulations related to that specific project are studied	Pearson Correlation	.801**	1	.821**	.563**	.895**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000
	N	39	39	39	39	39
Intellectual property such as examining existing patents, trademarks, and copyrights that may affect the proposed project are studied	Pearson Correlation	.722**	.821**	1	.730**	.913**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	39	39	39	39	39
Environmental regulations that may apply to the project are investigated	Pearson Correlation	.652**	.563**	.730**	1	.832**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	39	39	39	39	39

Total Legal	Pearson Correlation	.905**	.895**	.913**	.832**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	39	39	39	39	39
** Correlation is significant at the 0.01 level (2-tailed).						

Source: own survey 2023

The critical value (r) read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2), is 0.3160.

For an item to be valid obtained value must be greater than the critical value. It can be seen from the table above that all the Pearson correlation coefficients (rxy) 0.905, 0.895, 0.913, and 0.832 are greater than the critical value r, which is 0.3160. In addition, the significances for the items were all in the acceptable range, 0.00, which less than 0.01.

On the basis of the test results listed above, it is clear that the questionnaires provided for gathering data for legal feasibility studies were valid.

Table 13 Project Legal Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project Legal Feasibility Study is part of the practice of the feasibility study in an organization.	Yes	30	76.9	1.46	0.854
	No	0	0		
	Not clearly known	9	23.1		
There is an independent team/Expertise for Project Legal Feasibility Study	Yes	0	0	2.00	0.000
	No	39	100.0		
	Not clearly known	0	0		
Legal risks associated with liability, compliance, and contract issues of the project are identified and analyzed	Strongly agree	3	7.7	3.41	1.019
	Agree	19	48.7		
	Neutral	11	28.2		
	Disagree	3	7.7		
	Strongly disagree	3	7.7		

All applicable Federal and local laws and regulations related to that specific project are studied	Strongly agree	1	2.6	2.72	0.887
	Agree	5	12.8		
	Neutral	18	46.2		
	Disagree	12	30.8		
	Strongly disagree	3	7.7		
Intellectual property such as examining existing patents, trademarks, and copyrights that may affect the proposed project are studied	Strongly agree	0	0	2.44	0.788
	Agree	4	10.3		
	Neutral	12	30.8		
	Disagree	20	51.3		
	Strongly disagree	3	7.7		
Environmental regulations that may apply to the project are investigated	Strongly agree	0	0	3.15	0.933
	Agree	18	46.2		
	Neutral	11	28.2		
	Disagree	8	20.5		
	Strongly disagree	2	5.1		

Source: own survey 2023

Two of the first questions respondents asked about the project's legal feasibility study were whether the study was part of their practice of conducting feasibility studies with an independent expert or team. The majority of respondents, 30 (76.9%), agreed that the firm conducts a legal feasibility study as part of its feasibility study practice. Only 9 (23.1%) respondents were neutral. However, there is no independent team involved in the legal feasibility study. According to the open-ended questionnaire, in IPS, the technical team conducts legal feasibility studies.

Next, respondents were asked whether legal risks associated with liability, compliance, and contract issues of the project were identified and analyzed. Of the respondents 19 (48.7%) agreed, 11 (28.2%) were neutral, 3 (7.7%) strongly agreed, 3 (7.7%) strongly disagreed and 3 (7.7%) disagreed. The response mean was 3.41 and the standard deviation was 1.019. Based on the results it can be said that identifying and analyzing legal risks associated with liability, compliance, and contract issues of the project are included in the firm’s legal feasibility study practice, but a response results have a significant difference. Therefore, even though the firm applies the practice during the study it is not to the required level.

The respondents were also asked if all applicable Federal and local laws and regulations related to that specific project were studied. The majority, 18 (46.2%), of the respondents were neutral, 12 (30.8%) disagreed, 3 (7.7%) strongly disagreed, and only 5 (12.8%) and 1 (2.6%) agreed and strongly agreed respectively. The mean and standard deviation of the responses were 2.72 and 0.887 respectively. It indicates that all applicable Federal and local laws and regulations related to that specific project are not usually considered while studying projects' legal feasibility.

Further, the respondents were asked if existing patents, trademarks, and copyrights that may affect the proposed project were examined. No respondents strongly agreed on the issue and only 4 (10.3%) agreed. The majority, 20 (51.3%) and 3 (7.7%) of respondents disagreed and strongly disagreed respectively. The remaining 12(30.8%) respondents were neutral. The response mean was 2.44 and the standard deviation was 0.788. With little deviation, most of the respondent's responses depicted that the practice of studying Intellectual properties such as examining existing patents, trademarks, and copyrights that may affect the proposed project is hardly included in the firm’s legal feasibility study practice.

Lastly, respondents were asked whether environmental regulations applicable to the project were examined. The results with a moderate deviation show that the practice is considered during the firm's legal feasibility study practice, but not to the expected level. Its mean was 3.15and its standard deviation was 0.933. 18 (46.2%) agreed, 2 (5.1%) strongly agreed, 11 (28.2%) were neutral, 8 (20.5%) disagreed and 2 (5.1%) strongly disagreed.

4.2.5 Project Operational Feasibility Study Practice

Practices included in the operational feasibility study of the project are discussed in this section.

Data validity and reliability were tested using Pearson correlations and Cronbach's alpha before analyzing and interpreting operational feasibility study results.

Table 14 Project Operational Feasibility study questionnaire Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
0.824	5

Source: own survey 2023

As it can easily be seen from the table above the cronbach's Alpha was 0.824, which is an acceptable value. The cronbach's Alpha value greater than 0.7 is considered to be acceptable, therefore, the questionnaires used to collect operational feasibility practice were reliable.

Table 15 Project Operational Feasibility study questionnaire Validity test

Correlations							
		Operational risks associated with the project are identified and analyzed	Proposed methods are examined whether or not they fulfill all project requirements.	How well a proposed project solves problems and meets requirements are measured	The existing systems, structures, and processes that will need to support the proposed project are reviewed.	The operational costs of the project such as maintenance, repairs, labor, and other operational expenses are estimated	Total Operational
Operational risks associated with the project are identified and analyzed	Pearson Correlation	1	0.311	.575**	.368*	.532**	.747**
	Sig. (2-tailed)		0.054	0.000	0.021	0.000	0.000
	N	39	39	39	39	39	39
Proposed methods are examined whether or not they fulfill all project requirements.	Pearson Correlation	0.311	1	.463**	.384*	.379*	.676**
	Sig. (2-tailed)	0.054		0.003	0.016	0.017	0.000
	N	39	39	39	39	39	39
How well a proposed project solves problems and meets requirements are measured	Pearson Correlation	.575**	.463**	1	.648**	.606**	.882**
	Sig. (2-tailed)	0.000	0.003		0.000	0.000	0.000
	N	39	39	39	39	39	39

The existing systems, structures, and processes that will need to support the proposed project are reviewed.	Pearson Correlation	.368*	.384*	.648**	1	.564**	.774**
	Sig. (2-tailed)	0.021	0.016	0.000		0.000	0.000
	N	39	39	39	39	39	39
The operational costs of the project such as maintenance, repairs, labor, and other operational expenses are estimated	Pearson Correlation	.532**	.379*	.606**	.564**	1	.679**
	Sig. (2-tailed)	0.000	0.017	0.000	0.000		0.000
	N	39	39	39	39	39	39
Total Operational	Pearson Correlation	.747**	.676**	.882**	.774**	.679**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	39	39	39	39	39	39
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: own survey 2023

The table above is a validity test result which indicates that all rxy(Pearson correlation coefficient) values 0.747, 0.676, 0.882, 0.774, 0.679 are above the critical value, 0.3160. The critical value (r) read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2). In addition, the significance level are all less than 0.01. This in general implies that the questionnaires were valid.

Table 16 Project operational Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project operational Feasibility Study is part of the practice of the feasibility study in an organization.	Yes	39	100	1.00	0.000
	No	0	0		
	Not clearly known	0	0		
There is an independent team/Expertise for Project operational Feasibility Study	Yes	0	0	2.00	0.000
	No	39	100		
	Not clearly known	0	0		
Operational risks associated with the project are identified and analyzed	Strongly agree	0	0	2.79	0.656
	Agree	5	12.8		
	Neutral	21	53.8		
	Disagree	13	33.3		
	Strongly disagree	0	0		
Proposed methods are examined whether or not they fulfill all project requirements.	Strongly agree	0	0	3.54	0.555
	Agree	22	56.4		
	Neutral	16	41.0		
	Disagree	1	2.6		
	Strongly disagree	0	0		
How well a proposed project solves problems and meets requirements are measured	Strongly agree	0	0	2.59	0.677
	Agree	4	10.3		
	Neutral	15	38.5		
	Disagree	20	51.3		
	Strongly disagree	0	0		
The existing systems, structures, and processes that will need to support the proposed project are reviewed.	Strongly agree	0	0	2.44	0.598
	Agree	2	5.1		
	Neutral	13	33.3		
	Disagree	24	61.5		
	Strongly disagree	0	0		

The operational costs of the project such as maintenance, repairs, labor, and other operational expenses are estimated	Strongly agree	0	0	2.41	0.549
	Agree	1	2.6		
	Neutral	14	35.9		
	Disagree	24	61.5		
	Strongly disagree	0	0		

Source: own survey 2023

Two of the first questions respondents asked about the project's operational feasibility study were whether the study was part of their practice of undertaking feasibility studies with an independent expert or team. All respondents agreed that the firm conducts an operational feasibility study as part of its feasibility study practice. However, there is no independent team involved in the operational feasibility study. According to the data collected by open-ended questionnaires and interview questions in IPS, the technical team conducts operational feasibility studies. Indeed, the absence of an independent operational feasibility team will affect the quality of their feasibility study practice.

Next, respondents were asked whether operational risks associated with the projects were identified and analyzed. The response mean was 2.79 and its standard deviation was 0.656. Among respondents, 13 (33.3%) disagreed, 14 (35.9%) were neutral, and only five (12.8%) were in agreement. As a result, Operational risks associated with projects are rarely identified and analyzed in IPS. This will leave a hole in their feasibility study practice.

The respondents were also asked if the proposed methods were examined and whether or not they fulfilled all project requirements. None of them disagreed or strongly disagreed with the issue. The majority of respondents, 22 (56.4%), agreed with the issue. 16 (41%) of respondents were neutral. The response mean was 3.54 and its standard deviation was 0.555. We conclude from the results that the proposed methods are usually evaluated for their ability to meet the project requirements during a firm’s feasibility study.

In addition, respondents were asked whether they measure how well a proposed project solves problems and meets requirements. Except for 4 (10.3%), who agreed, the majority of respondents, 20 (51.3%) disagreed and the remaining 15 (38.5%) were neutral. Its mean was

2.59 and the standard deviation was 0.677. This implies that the proposed project's success in solving problems and meeting requirements was rarely measured by the firm. This will again leave a hole in the total feasibility study report.

The respondents' response to the question of whether the existing systems, structures, and processes that will need to support the proposed project are reviewed implies that the practice is seldom included in their feasibility study. Its mean was 2.44 and the standard deviation was 0.598. None of the respondents strongly agreed, only 1 (2.6%) agreed, and 14 (35.9%) were neutral. The remaining majority of respondents 24 (61.5%) disagreed. The absence of this practice will significantly reduce the effectiveness and quality of the firm's feasibility study report.

Lastly, the respondents were asked whether the operational costs of the project such as maintenance, repairs, labor, and other operational expenses are estimated. None of the respondents strongly agreed on the issue, and only 1 (2.6%) agreed, and 14 (35.9%) were neutral. The remaining 24 (61.5%) respondents disagreed on the issue. The response mean was 2.41 and the standard deviation was 0.549. With a small deviation, the respondents agreed that the issue is rarely included in their feasibility study practice, which will make the report incomplete.

4.2.6 Project Scheduling Feasibility Study Practice

Practices included in the Scheduling feasibility study of the project are discussed in this section.

Data validity and reliability were tested using Pearson correlations and Cronbach's alpha before analyzing and interpreting scheduling feasibility study results.

Table 17 Project Scheduling Feasibility study questionnaire Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
0.750	3

Source: own survey 2023

It is shown in the table above that the cronbach’s Alpha was 0.750, which is an acceptable value. The cronbach’s Alpha value greater than 0.7 is considered to be acceptable, therefore, the questionnaires used to collect scheduling feasibility practice were reliable.

Table 18 Project Scheduling Feasibility study questionnaire Validity test

Correlations					
		Scheduling models are developed	Various scheduling techniques relevant to a specific project are evaluated	Critical path activities are identified and assessed	Total Scheduling
Scheduling models are developed	Pearson Correlation	1	.584**	.462**	.857**
	Sig. (2-tailed)		0.000	0.003	0.000
	N	39	39	39	39
Various scheduling techniques relevant to a specific project are evaluated	Pearson Correlation	.584**	1	.462**	.829**
	Sig. (2-tailed)	0.000		0.003	0.000
	N	39	39	39	39
Critical path activities are identified and assessed	Pearson Correlation	.462**	.462**	1	.765**
	Sig. (2-tailed)	0.003	0.003		0.000
	N	39	39	39	39
Total Scheduling	Pearson Correlation	.857**	.829**	.765**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	39	39	39	39
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: own survey 2023

The validity test result that can be seen from table above indicates that all rxy(Pearson correlation coefficient) values 0.857, 0.829, and 0.765 are above the critical value, 0.3160. The critical value (r) read from the table at a significance level of 5% and DF (Degree of freedom) of

37, (DF= N-2). In addition, the significance level are all less than 0.01. This in general implies that the questionnaires were valid.

Table 19 Project Scheduling Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project Scheduling Feasibility Study is part of the practice of the feasibility study in an organization	Yes	27	69.2	1.62	0.935
	No	0	0		
	Not clearly known	12	30.8		
There is an independent team/Expertise for Project Scheduling Feasibility Study	Yes	0	0	2.00	0.000
	No	39	100.0		
	Not clearly known	0	0		
Scheduling models are developed	Strongly agree	0	0	2.72	0.826
	Agree	8	20.5		
	Neutral	13	33.3		
	Disagree	17	43.6		
	Strongly disagree	1	2.6		
Various scheduling techniques relevant to a specific project are evaluated	Strongly agree	0	0	2.36	0.707
	Agree	2	5.1		
	Neutral	13	33.3		
	Disagree	21	53.8		
	Strongly disagree	3	7.7		
Critical path activities are identified and assessed	Strongly agree	0	0	2.26	0.677
	Agree	1	2.6		
	Neutral	12	30.8		
	Disagree	22	56.4		
	Strongly disagree	4	10.3		

Source: own survey 2023

The majority of respondents' response indicates that Project Scheduling Feasibility Study is part of the practice of feasibility study in an organization. 27 (69.2%) responded yes and the remaining few were neutral. The response mean was 1.62 and its standard deviation was 0.935. In contrast, all respondents answered no to the question; there is an independent team/expertise for the Project Scheduling Feasibility Study.

Looking at the next question, respondents were asked whether scheduling models were developed during the scheduling feasibility study. The majority, 17 (43.6%), of respondents disagreed, 1 (2.6%) strongly disagreed, 13 (33.3%) were neutral, and only 8 (20.5%) agreed. Looking at the mean and standard deviation of a response it was 2.72 and 0.826 respectively. This implies that, even though there is a significant deviation in the response, the firm in their scheduling feasibility study practice rarely considers developing scheduling models.

Respondents were also asked whether various scheduling techniques relevant to a specific project were evaluated. Of the respondents only 2 (5.1%) agreed and 13 (33.3%) were neutral. The remaining 21 (53.8%) and 3 (7.7%) disagreed and strongly disagreed respectively. Its mean was 2.36and its standard deviation was 0.707. Based on the results it can be concluded that the practice of evaluating various scheduling techniques relevant to specific projects was seldom considered during the firm's scheduling feasibility study practice.

Finally, respondents were asked whether Critical Path activities are identified and assessed. None of the respondents strongly agreed on the issue and only 1 (2.6%) agreed. 11 (28.2%) were neutral and the remaining 22 (56.4%) and 4 (10.3%) disagreed and strongly disagreed respectively. Its mean and standard deviation were 2.26 and 0.677 respectively. In other words, when assessing project scheduling feasibility, the firm does not usually identify and assess critical path activities.

According to the responses from open-ended questionnaires and interview questions, it was seen that the scheduling feasibility study usually focuses on the practicability of the projects over a defined period of time by using lessons learned. Hence, there is no independent team/expertise to undertake the study. It is conducted by the technical feasibility study team. The project implementation following the feasibility study exhibited the negative effect of not considering scheduling feasibility study.

4.2.6 Project Market Feasibility Study Practice

This subsection of the analysis contains the practices included in the project Market feasibility study.

Pearson correlations and Cronbach's alpha were used to test the validity and reliability of the collected data respectively.

Table 20 Project Market Feasibility study questionnaire Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.720	0.725	5

Source: own survey 2023

As shown in the table above the cronbach's Alpha was 0.720, which is an acceptable value. The cronbach's Alpha value greater than 0.7 is considered to be acceptable, therefore, the questionnaires used to collect market feasibility practice were reliable.

Table 21 Project Market Feasibility study questionnaire Validity test

Correlations							
		Market research is conducted	Supply demand balance in the market is studied	Market competition breakdown is done accordingly	Sales projections are conducted	Project's unique selling proposition are determined	Total market
Market research is conducted	Pearson Correlation	1	.712**	0.217	.558**	0.204	.770**
	Sig. (2-tailed)		0.000	0.184	0.000	0.213	0.000
	N	39	39	39	39	39	39
Supply demand balance in the market is studied	Pearson Correlation	.712**	1	0.314	.346*	0.050	.692**
	Sig. (2-tailed)	0.000		0.052	0.031	0.762	0.000
	N	39	39	39	39	39	39
Market competition breakdown is done accordingly	Pearson Correlation	0.217	0.314	1	0.217	.626**	.691**
	Sig. (2-tailed)	0.184	0.052		0.184	0.000	0.000
	N	39	39	39	39	39	39

Sales projections are conducted	Pearson Correlation	.558**	.346*	0.217	1	0.204	.682**
	Sig. (2-tailed)	0.000	0.031	0.184		0.212	0.000
	N	39	39	39	39	39	39
Project's unique selling proposition are determined	Pearson Correlation	0.204	0.050	.626**	0.204	1	.613**
	Sig. (2-tailed)	0.213	0.762	0.000	0.212		0.000
	N	39	39	39	39	39	39
Total market	Pearson Correlation	.770**	.692**	.691**	.682**	.613**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	39	39	39	39	39	39
*. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: own survey 2023

The validity test result that can be seen from table above indicates that all rxy(Pearson correlation coefficient) values 0.770, 0.692, 0.691, 0.682, 0.613 and 0.613 are above the critical value, 0.3160. The critical value (r) read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2). In addition, the significance level are all less than 0.01. This in general implies that the questionnaires were valid.

Table 22 Project Market Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation
Project Market Feasibility Study is part of the practice of the feasibility study in an organization	Yes	39	100.0	1.00	0.000
	No	0	0		
	Not clearly known	0	0.0		
There is an independent team/Expertise for Project Market Feasibility Study	Yes	39	100.0	1.00	0.000
	No	0	0.0		
	Not clearly known	0	0.0		

Market research is conducted	Strongly agree	0	0	3.64	0.584
	Agree	27	69.2		
	Neutral	10	25.6		
	Disagree	2	5.1		
	Strongly disagree	0	0		
Supply demand balance in the market is studied	Strongly agree	0	0	3.51	0.644
	Agree	23	59.0		
	Neutral	13	33.3		
	Disagree	3	7.7		
	Strongly disagree	0	0		
Market competition breakdown is done accordingly	Strongly agree	0	0	2.36	0.628
	Agree	2	5.1		
	Neutral	11	28.2		
	Disagree	25	64.1		
	Strongly disagree	1	2.6		
Sales projections are conducted	Strongly agree	0	0	3.46	0.682
	Agree	22	56.4		
	Neutral	13	33.3		
	Disagree	4	10.3		
	Strongly disagree	0	0		
Project's unique selling proposition are determined	Strongly agree	0	0	2.36	0.668
	Agree	3	7.7		
	Neutral	9	23.1		
	Disagree	26	66.7		
	Strongly disagree	1	2.6		

Source: own survey 2023

The first two questions respondents asked about the project's market feasibility study were whether the market feasibility study is part of their feasibility study practice with an independent team/expert. All respondents agreed that a market feasibility study is part of the firm's feasibility study practice. An independent team/expertise conducts the market feasibility study. The

response mean was 1 and the standard deviation was 0.000. This definitely increases the quality of the market feasibility study report.

The next question respondents asked was if Market research is conducted during market feasibility study. None of the respondents strongly disagreed, only 2 (5.1%) disagreed and 10 (25.6) were neutral on the issue. The remaining 27 (69.2%) respondents agreed. The response mean was 3.64 with a standard deviation of 0.584. This implies that conducting the market research associated with that specific project is among the major activities of firm's project market feasibility study.

The respondents were also asked whether Supply demand balance in the market is studied. The majority of respondents, 23 (59%) agreed. The remaining 13 (33.3%) were neutral and only 3 (7.7%) disagreed on the issue. Its mean and standard deviation were 3.51 and 0.644 respectively. This shows that the marketing team in the firm studies supply demand balance in the market of a project on the study. This will highly add a measurable value to the quality of the firm's feasibility study practice.

Further, respondents were asked if the market competition was broken down appropriately. Its mean was 2.36 and the standard deviation was 0.628. The majority of respondents, 25 (64.1%) disagreed and 1 (2.6%) strongly disagreed. The remaining 11 (28.2%) were neutral and only 2 (5.1%) agreed. Thus, we conclude that it is unusual for a firm's market feasibility study team to break down market competition.

The next question respondents asked was whether sales projections are conducted in their market feasibility studies. Only 4 (10.3%) disagreed and 13 (33.3%) were neutral, but the remaining 22 (56.4%) agreed with the issue. The response mean was 3.46 and its standard deviation was 0.682. This implies that preparing sales projections for projects being studied is usually practiced by firms during their market feasibility study practice.

Lastly, the respondents were asked whether Project's unique selling proposition are determined. The responses clearly indicated, with a mean of 2.36 and a standard deviation of 0.668, that determining a project's unique selling proposition is rarely practiced in the firm. Of the 39 respondents, none strongly agreed and only 3 (7.7%) agreed with the issue. The remaining 26 (66.7%) disagreed, 1 (2.6%) strongly disagreed and only 9 (23.1%) were neutral.

4.2.7 Responses from Interview, Open-ended questionnaire and feasibility study reports

According to the Interview respondents' response and the observation the firm's engineering department is comprised of technical feasibility study expertise, the market department is comprised of market feasibility study expertise, and the Administrative department is comprised of management and financial expertise.

As depicted by the interview respondents the practice of feasibility study in the firm is done by the technical team, financial team, and market feasibility study team by applying methods, tools, and techniques such as SWOT analysis, to identify strengths, weaknesses, opportunities, and threats related to the project, technical analysis, financial analysis, risk analysis, and market research. The interview respondents added that most of the project feasibility study practices in the firm focus on technical and financial feasibility study practices by focusing on activities such as assessing resources, evaluating technologies and analyzing technical designs. For these reason the technical and financial teams are overloaded with multiple tasks.

Most of the interview respondents raised the issue of lack of independent teams/expertise for scheduling feasibility study practice is causing time variances when projects get implemented; Because activities such as developing scheduling models, evaluating various scheduling techniques relevant to specific projects, identifying and assessing critical path activities are rarely considered. According to their responses it contributed to the time variances that have occurred in 27 projects and this in turn cause cost variance.

Among 7 interview respondents 5 (71.5%) forwarded that the practice of project feasibility in the firm included indentifying risks, evaluating the projects' technical viability and practicability, performing expense and revenue projections and conducting market research. The remaining 2 (28.5%) added that their feasibility study practices included analyzing the environmental factors and measuring the social impact.

The Interview respondent added that lack of independent team/expertise for legal and economic feasibility study is also affecting the quality of feasibility study practice with respect to socio-economic aspects.

The responses collected from an open-ended questionnaire indicated that activities such as assessing the social and cultural acceptability, the local community's perception, and evaluating the long-term sustainability of the project are usually considered during their feasibility studies.

As it was seen from the review of 16 feasibility study reports, in 9 the same copies of part of the studies were found. This greatly reduces the report's quality.

4.3 Discussions on the Project Feasibility Study Practice

According to questionnaires and interviews, the Industrial Projects Service (IPS) feasibility study practice contains three independent departments: Technical (Engineering), financial, and marketing. The remaining economic, legal, operational, and scheduling issues are handled by the financial, technical, technical, and technical departments respectively.

When looking at the firm's feasibility study practice with respect to international practice, it lacks the following items:

1) No independent team/expertise for Economic, Legal, Operational and scheduling part of the feasibility study. Project feasibility study practice may vary from Organization to organization and project to project. However, the areas of the project feasibility study practices broadly consider Technical Feasibility, Financial Feasibility, Economic Feasibility, Legal Feasibility, Operational Feasibility, Scheduling feasibility and Market Feasibility. According to Mukherjee and Roy (2017) a project feasibility study should at least include Technical, Economic, Operational, Legal, and Scheduling studies conducted by an independent team and expertise. According to Jeniffer (2021), a project feasibility study should include Technical, Economic, Legal, and market studies. In addition, according to Julia (2022) a project feasibility study practice should include Technical, Financial, Operational, and market studies. According to most of the scholars an operational feasibility study can be conducted by a technical feasibility study team and an economic feasibility study can be conducted by financial feasibility study team members.

Most of the interview respondents raised the issue of a lack of independent teams/expertise for scheduling feasibility study is causing time variance when project get implemented. This in turn

cause cost variance. The Interview respondent added that lack of independent team/expertise for legal and economic feasibility study is also affecting the quality of feasibility study practice.

Therefore, when we evaluate the firm's team arrangement according to the international feasibility study practice, IPS needs at least two more independent teams/experts named Scheduling and Legal feasibility study teams.

2) Lack of focus on the following some items in each part of feasibility study practice; when studying the financial feasibility of a proposed project the team financial feasibility study practice is not to the expected level with respect to identifying and analyzing financial risks associated with the proposed project in the study. This in turn, according to interview respondent, is causing cost variance in projects' during implementation. In addition, even though the practice of analyzing revenue and expense projections with expected revenues or benefits, costs, and cash flow in detail is among the activities of the financial feasibility study practice, it needs to be revised.

Looking at a firm's economic feasibility study practice of a proposed project, it rarely takes into account identifying and analyzing economic risks, and also the economic feasibility study practice of the firm does not often take into account studying the impact of the project on employment in local industry, and community development. In addition, the positive and negative monetary effects of the projects on the country's economy are not usually considered in the firm's economic feasibility study practice. Three of the interview respondents pointed out that not considering the above factors in detail when conducting economic feasibility study negatively affected the quality of the projects when get implemented.

According to respondent's response and secondary data, the firm rarely considers studying all applicable Federal and local laws and regulations related to that specific project while conducting a project's legal feasibility study. In addition, the practice of studying intellectual properties such as examining existing patents, trademarks, and copyrights that may affect the proposed project is not included in the firm's legal feasibility study practice.

Furthermore, as it is depicted from the questionnaire responses, secondary data collected, and interview questions responses, the firm hardly focuses on identifying and analyzing operational risks, seldom measures how well a proposed method solves problems and meets requirements,

rarely reviews the existing systems, structures, and processes that will need to support the current project, and hardly estimates the operational costs of the project such as maintenance, repairs, labor, and other operational expenses. In addition, the firm's Scheduling feasibility study practice rarely considers developing scheduling models, and seldom takes into account evaluating various scheduling techniques relevant to specific projects. It also usually excludes identifying and assessing critical path activities. Looking at the firm's market feasibility study practice it rarely includes market competition breakdown, and determining a project's unique selling proposition during the study.

According to the interview respondents, the tools and techniques usually applied in the their feasibility study practice include SWOT analysis, to identify strength, weakness, opportunities and threats related to the project, technical analysis, financial analysis, risk analysis and market research.

As the secondary data revealed, there exists redundancy or copy and paste on the reports from one to the other, which significantly reduces the quality of the study.

In IPS more than 125 pre-feasibility and feasibility studies of various projects were conducted. Among them 11 projects faced variances in cost, 27 projects faced variances in time and cost, and 12 projects failed to achieve their objectives. Only 14 projects' were confirmed, and they were successfully implemented within budget, schedule, and quality. The status of the remaining projects is unknown.

In general, based on the above information from secondary data, and respondents response from the questionnaire and interview, it can be seen that the lack of required independent teams/expertise for feasibility study practices such as scheduling led the firm to rarely consider developing scheduling models, to seldom take into account evaluating various scheduling techniques relevant to specific projects, and to usually exclude identifying and assessing critical path activities. This contributed to the time variances that have occurred in 27 projects.

In addition, Lack of independent team/expertise for operational feasibility study let the firm to hardly focus on identifying and analyzing operational risks, to seldom measure how well a proposed method solves problems and meets requirements, to rarely review the existing systems, structures, and processes that will need to support the current project, and to hardly estimate the operational costs of the project such as maintenance, repairs, labor, and other operational

expenses. This also contributed to the 27 projects which faced variances in time and cost, 11 projects which faced variances in cost and 12 projects which failed to achieve their objectives. Moreover, redundancy or copy and paste activities seen in the feasibility study report significantly reduces feasibility study quality.

Furthermore, even though the firm has independent team/expertise for market feasibility study, it rarely includes market competition breakdown, and determining a project's unique selling proposition activities during the study. This further contributed to the 12 projects which failed to achieve their objectives.

4.4 Elements to be considered to ensure the Quality of Project's Feasibility Study Practice

This subsection of the analysis contains the Elements to be considered to ensure the Quality of Project's Feasibility Study Practice.

The validity and reliability of the collected data were tested by using Pearson correlation coefficients and Cronbach's alpha respectively.

Table 23 Elements to be considered to ensure the Quality of Project's Feasibility Study Practice questionnaire Reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.745	0.756	5

Source: own survey 2023

The results Cronbach's Alpha which is 0.745 as indicated in the table above is more than the threshold value which is 0.7. Therefore, it can be said that the collected data about the elements to be considered to ensure the quality of projects feasibility study practice is reliable. The following table depicts the validity test result.

Table 24 Elements to be considered to ensure the Quality of Project's Feasibility Study Practice questionnaire validity test

Correlations							
		Clear and concise statement of the project's objectives are obtained	Feasibility Study Team members have the required level of experience and expertise in all kinds of feasibility studies	Reliable, relevant and sufficient Data sources with respect to project objectives are identified	Assumptions and projections are based on recent and realistic facts	All the Stakeholders are involved to the required level during feasibility study	Total Factors
Clear and concise statement of the project's objectives are obtained	Pearson Correlation	1	.524**	.422**	0.188	0.232	.650**
	Sig. (2-tailed)		0.001	0.007	0.252	0.155	0.000
	N	39	39	39	39	39	39
Feasibility Study Team members have the required level of experience and expertise in all kinds of feasibility studies	Pearson Correlation	.524**	1	.426**	.422**	.325*	.743**
	Sig. (2-tailed)	0.001		0.007	0.007	0.043	0.000
	N	39	39	39	39	39	39
Reliable, relevant and sufficient Data sources with respect to project objectives are identified	Pearson Correlation	.422**	.426**	1	0.304	.622**	.763**
	Sig. (2-tailed)	0.007	0.007		0.060	0.000	0.000
	N	39	39	39	39	39	39
Assumptions and projections are based on recent and realistic facts	Pearson Correlation	0.188	.422**	0.304	1	.362*	.662**
	Sig. (2-tailed)	0.252	0.007	0.060		0.023	0.000

	N	39	39	39	39	39	39
All the Stakeholders are involved to the required level during feasibility study	Pearson Correlation	0.232	.325*	.622**	.362*	1	.735**
	Sig. (2-tailed)	0.155	0.043	0.000	0.023		0.000
	N	39	39	39	39	39	39
Total Factors	Pearson Correlation	.650**	.743**	.763**	.662**	.735**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	39	39	39	39	39	39
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: own survey 2023

The validity test result that can be seen from table above indicates that all rxy(Pearson correlation coefficient) values 0.650, 0.743, 0.763, 0.662 and 0.735 are above the critical value, 0.3160. The critical value (r) is read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2). In addition, the significance level are all less than 0.01. This indicates the questionnaires used to collect data were valid.

Table 25 Elements to be considered to ensure the Quality of Project's Feasibility Study Practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation	RII	Importance
Clear and concise statement of the project's objectives are obtained	Strongly agree	16	41.0	4.31	0.655	0.862	2
	Agree	19	48.7				
	Neutral	4	10.3				
	Disagree	0	0.0				
	Strongly disagree	0	0.0				
Feasibility Study Team members have the required level of experience and	Strongly agree	22	56.4	4.51	0.601	0.903	1
	Agree	15	38.5				
	Neutral	2	5.1				
	Disagree	0	0.0				

expertise in all kinds of feasibility studies	Strongly disagree	0	0.0				
Reliable, relevant and sufficient Data sources with respect to project objectives are identified	Strongly agree	10	25.6	4.18	0.556	0.836	3
	Agree	26	66.7				
	Neutral	3	7.7				
	Disagree	0	0.0				
	Strongly disagree	0	0.0				
Assumptions and projections are based on recent and realistic facts	Strongly agree	10	25.6	4.05	0.724	0.810	4
	Agree	22	56.4				
	Neutral	6	15.4				
	Disagree	1	2.6				
	Strongly disagree	0	0.0				
All the Stakeholders are involved to the required level during feasibility study	Strongly agree	5	12.8	3.72	0.759	0.744	5
	Agree	20	51.3				
	Neutral	12	30.8				
	Disagree	2	5.1				
	Strongly disagree	0	0.0				

Source: own survey 2023

With respect to the Elements to be considered to ensure the Quality of Project's Feasibility Study Practice, the respondents were asked to evaluate 5 elements. RII which is calculated based on the response results, indicates that having project feasibility study team members with the required level of experience and expertise in all kinds of feasibility studies ranked first with an RII value of 0.903, mean of 4.51, and standard deviation of 0.601. None of the respondents strongly disagreed or disagreed with the issue. In contrast, 22 (56.4%) strongly agreed and the remaining 15 (38.5%) agreed with the issue.

According to the respondents, the second-ranked element that affects the quality of the project feasibility study is obtaining a clear and concise statement of the project's objectives. Its RII value was 0.862, and its mean and standard deviation were 4.31 and 0.655 respectively. None of

the respondents strongly disagreed or disagreed with the issue. 19 (48.7%) agreed, 16 (41%) strongly agreed, and only 4 (10.3%) were neutral.

Next, the elements ranked third and fourth, according to the respondent's responses were identifying reliable, relevant, and sufficient data sources with respect to project objectives, and making assumptions and projections based on recent and realistic facts respectively. Their RII values were 0.836 and 0.810, their means were 4.18 and 4.05, and their standard deviations were 0.556 and 0.724. It can be seen that these elements ranked third and fourth with a very close difference in mean and RII.

Among the Elements to be considered to ensure the Quality of Project's Feasibility Study Practice, the one that ranked last according to the respondents' responses was involving all the stakeholders to the required level during the feasibility study. Despite being ranked last, 20 (51.3%) agreed, 5 (12.8%) strongly agreed, and only 2 (5.1%) disagreed. The remaining 12 (30.8%) were neutral. These values indicate that this element also significantly and considerably affects project feasibility study quality.

The responses collected from interview questions and open-ended questionnaires indicated that elements such as providing sufficient time to study each part of the project's feasibility study, tools and techniques applied to conduct the feasibility study, and willingness to invest in the feasibility study are among the elements that has to be considered to ensure the quality of the feasibility study practice. Interview respondents also pointed out that when stakeholders present project proposals for study, they usually define their own deadlines and urgency, which affects the feasibility studies' quality.

In general, Elements to be considered to ensure the Quality of Project's Feasibility Study Practice include Feasibility Study Team member's level of experience and expertise in all kinds of feasibility studies, clear and concise statement of the project's objectives, reliable; relevant and sufficient Data sources with respect to project objectives, assumptions and projections that are based on recent and realistic facts, stakeholders involvement to the required level, providing sufficient time to study each part of the study, and tools and techniques applied to conduct the feasibility study.

4.4 Challenges of Project Feasibility Study Practice

Challenges that are faced during project's feasibility study practice are discussed in this section.

The validity and reliability of the collected data were tested by using Pearson correlation coefficients and Cronbach's alpha respectively.

Table 26 Challenges of project feasibility study practice questionnaire reliability test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.808	0.813	5

Source: own survey 2023

The threshold value of Cronbach's Alpha is usually considered to be 0.7. The results Cronbach's Alpha was 0.808, as shown in the table above, which is above the threshold value. Therefore, it can be said that the collected data about the challenges of project feasibility study practice is reliable.

Table 27 Challenges of project feasibility study practice questionnaire validity test

Correlations							
		Gathering and analyzing all the necessary data used to make informed decisions are challenging	Uncertainty, occurred because a project often conducted in the early stages of a project where there is limited information available, is high	Gathering and addressing all stakeholder concerns and interest are challenging	Complex decision-making that requires a thorough understanding of the business, industry, and market are challenging	Project feasibility study can be costly and time-consuming.	Total Challenges
Gathering and analyzing all the necessary data used to make informed decisions are challenging	Pearson Correlation	1	.556**	.522**	.400*	.328*	.702**
	Sig. (2-tailed)		0.000	0.001	0.012	0.041	0.000
	N	39	39	39	39	39	39

Uncertainty, occurred because a project often conducted in the early stages of a project where there is limited information available, is high	Pearson Correlation	.556**	1	.418**	.533**	.575**	.808**
	Sig. (2-tailed)	0.000		0.008	0.000	0.000	0.000
	N	39	39	39	39	39	39
Gathering and addressing all stakeholder concerns and interest are challenging	Pearson Correlation	.522**	.418**	1	.352*	.374*	.695**
	Sig. (2-tailed)	0.001	0.008		0.028	0.019	0.000
	N	39	39	39	39	39	39
Complex decision-making that requires a thorough understanding of the business, industry, and market are challenging	Pearson Correlation	.400*	.533**	.352*	1	.597**	.787**
	Sig. (2-tailed)	0.012	0.000	0.028		0.000	0.000
	N	39	39	39	39	39	39
Project feasibility study can be costly and time-consuming.	Pearson Correlation	.328*	.575**	.374*	.597**	1	.782**
	Sig. (2-tailed)	0.041	0.000	0.019	0.000		0.000
	N	39	39	39	39	39	39
Total Challenges	Pearson Correlation	.702**	.808**	.695**	.787**	.782**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	39	39	39	39	39	39
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: own survey 2023

The validity test result that is indicated in the table above shows that all rxy(Pearson correlation coefficient) values 0.702, 0.808, 0.695, 0.787 and 0.782 are above the critical value, 0.3160. The

critical value (r) is read from the table at a significance level of 5% and DF (Degree of freedom) of 37, (DF= N-2). In addition, the significance level are all less than 0.01. This indicates the questionnaires used to collect data were valid.

Table 28 Challenges of project feasibility study practice

Attributes	Description	Frequency	Percent	Mean	Standard Deviation	RII	Importance
Gathering and analyzing all the necessary data used to make informed decisions are challenging	Strongly agree	20	51.3	4.49	0.556	0.897	1
	Agree	18	46.2				
	Neutral	1	2.6				
	Disagree	0	0.0				
	Strongly disagree	0	0.0				
Uncertainty, occurred because a project often conducted in the early stages of a project where there is limited information available, is high	Strongly agree	16	41.0	4.31	0.694	0.862	2
	Agree	20	51.3				
	Neutral	2	5.1				
	Disagree	1	2.6				
	Strongly disagree	0	0.0				
Gathering and addressing all stakeholder concerns and interest are challenging	Strongly agree	9	23.1	4.00	0.725	0.800	3
	Agree	22	56.4				
	Neutral	7	17.9				
	Disagree	1	2.6				
	Strongly disagree	0	0.0				
Complex decision-making that requires a thorough understanding of the business, industry, and market to identify and mitigate risks are challenging	Strongly agree	9	23.1	3.95	0.826	0.790	4
	Agree	22	56.4				
	Neutral	5	12.8				
	Disagree	3	7.7				
	Strongly disagree	0	0.0				

Project feasibility study can be costly and time-consuming.	Strongly agree	5	12.8	3.77	0.777	0.754	5
	Agree	23	59.0				
	Neutral	8	20.5				
	Disagree	3	7.7				
	Strongly disagree	0	0.0				

Source: own survey 2023

To assess the challenges of the project feasibility study, the respondents were asked 5 questions based on likert scale. RII, which is calculated based on the response results, indicated that gathering and analyzing all the necessary data used to make informed decisions are among the first ranked challenges with an RII value of 0.897, mean of 4.49, and standard deviation of 0.556. None of the respondents strongly disagreed or disagreed with the issue. In contrast, 22 (56.4%) strongly agreed and the remaining 15 (38.5%) agreed with the issue. The numbers indicate that the gathering and analyzing all the necessary data are the most challenges activities of project feasibility study in the firm.

According to the respondents, the second-ranked challenge that the firm usually faces was High Uncertainty that occurred because a project often conducted in the early stages of a project where there is limited information available. Its RII value was 0.862, and its mean and standard deviation were 4.31 and 0.694 respectively. None of the respondents strongly disagreed and only 1 (2.6%) disagreed with the issue. 20 (51.3%) agreed, 16 (41%) strongly agreed, and only 2 (5.1%) were neutral. This results imply that uncertainty is the most common challenge in the firm following the challenge of gathering and analyzing all the necessary data.

Next, according to the respondents, gathering and addressing all stakeholder concerns and interest are also among the main challenges and get ranked third. Its RII value was 0.800 and its mean and standard deviation were 4.00 and 0.725 respectively. The values indicate that majority of respondents agreed with the issue and it is a considerable challenge next to gathering and analyzing all the necessary data, and Uncertainty. 22 (56.4%) agreed, 9 (23.1%) strongly agreed, 7 (17.9%) were neutral and only 1 (2.6%) disagreed.

Finally, the challenges ranked fourth and fifth, according to the respondents' response, were Complex decision-making that requires a thorough understanding of the business, industry, and

market to identify and mitigate risks and Project feasibility study being costly and time-consuming respectively. Their RII values were 0.790 and 0.754. The mean with standard deviation of the challenges were 3.95 with 0.826, and 3.77 with 0.777 respectively. This indicates that with small deviation majority of the respondents agreed with the issue as they are a considerable challenge.

The responses collected from interview questions and open-ended questionnaires indicated that activities such as limited budget, financial constraints which could limit the depth of the study, establishing realistic objectives, unforeseen obstacles and complex technical requirements such as emerging technologies were also among the challenges of project feasibility study in the firm. Interview respondents also revealed that some stakeholders are not willing to invest much on feasibility study practices, which is becoming a great challenge.

In general, the challenges the firm faces during conducting feasibility study include gathering and analyzing all the necessary data, managing uncertainty, addressing all stakeholder concerns and interest, Complex decision-making that requires a thorough understanding of the business, industry, and market to identify and mitigate risks, limited budget, tight schedule, establishing realistic objectives, unforeseen obstacles and complex technical requirements such as emerging technologies. To handle those challenges the firm applies methods, as indicated by interview and open-ended questionnaire responses, such as using a structured a step by step approach or checklist, reviewing and refining the feasibility report, and using lessons learned.

This study suggests that to properly handle the challenges, competent professionals must be assigned to gather and analyze data, and the use of advanced technologies such as big data analytics and artificial intelligence is essential for collecting and analyzing data accurately. This study also suggests that effective stakeholder analysis and communication are critical in addressing stakeholder management challenges in feasibility studies. In addition, scenario analysis must also be involved by considering different possible outcomes based on different scenarios.

Chapter 5
Summary, Conclusion and Recommendation

5.1 Introduction

The aim of this study was to assess the Project feasibility study practice and challenges in the case of Industrial Project Services (IPS). The necessary data was collected, analyzed and interpreted accordingly. Thus, in this section the findings are summarized, conclusions are drawn and recommendations were forwarded.

5.2 Summary

There were 42 participants in the study from three departments. One participant from each department selected for questionnaire pilot test. Therefore, the remaining 39 were the sample size of the population. The responses collected from them were analyzed, presented and discussed in chapter 4. To assess the practice of project feasibility study in the firm, seven subparts were used. Named technical feasibility study practice of the firm which contains 6 items, financial feasibility study which contains 7 items, Economic feasibility study practice which contains 7 items, project legal feasibility study practice which contains 6 items, project operational feasibility study which contains 7 items, project scheduling feasibility study practice which contains 5 items, and project market feasibility study which contains 7 items.

Looking at the technical feasibility study practice of the firm, it has an independent team to conduct the study. The activities such as technical risks associated with the project are identified and analyzed, technical viability of a project is studied within the context of the environment and within the context of the regulatory and compliance requirements, and resources, human capital, equipment, and technology which will be required for executing the project are identified and analyzed. According to the response, all of the above activities scored the mean above 4, which indicates that technical feasibility study practice of the firm is good. In contrast, the firm has no independent team to conduct scheduling feasibility study of the projects. The study is conducted by technical team. Furthermore, it rarely considers activities such as developing scheduling models, evaluating various scheduling techniques relevant to a specific project, and identifying

and assessing critical path activities. Their means were all below 3. This indicates that the study was badly practiced in the firm.

The financial and economic feasibility study practices of the firm are usually conducted by a single team organized as financial team. The study revealed that there was a gap in the financial feasibility study practice with respect to identifying and analyzing financial risks associated with the proposed project in the study. In addition, the firm rarely considers identifying and analyzing economic risks, and studying the impact of the project on employment in local industry and community development. In addition, the positive and negative monetary effects of the projects on the country's economy are not usually considered in the firm's economic feasibility study practice.

The legal, operational and scheduling feasibility study practices of the firm are all conducted by the technical feasibility study team. The interview respondents revealed that the technical feasibility study team is overloaded with various activities of the study. According to the respondents' response, the firm rarely considers studying all applicable Federal and local laws and regulations related to that specific project. The response mean was 2.72 and its standard deviation was 0.887. In addition, the practice of studying intellectual properties such as examining existing patents, trademarks, and copyrights that may affect the proposed project is not included in the firm's legal feasibility study practice.

The operational feasibility study practices such as identifying and analyzing operational risks, measuring how well a proposed method solves problems and meets requirements, reviewing the existing systems, structures, and processes that will need to support the current project, and estimating the operational costs of the project such as maintenance, repairs, labor, and other operational expenses are rarely practiced. Their mean values were 2.79, 2.59, 2.44 and 2.41 respectively.

Moreover, the firm's market feasibility study practice rarely includes market competition breakdown, and determining a project's unique selling proposition during the study.

Looking at the Elements to be considered to ensure the Quality of Project's Feasibility Study Practice, Feasibility Study Team members required level of experience and expertise in all kinds

of feasibility studies (μ = 4.51), and obtaining clear and concise statement of the project's objectives (μ = 4.31) are the two high ranked elements. The above two high ranked elements that has to be considered to ensure the quality of project's feasibility study practice followed by identifying reliable, relevant and sufficient data sources with respect to project objectives (μ = 4.18), assumptions and projections that are based on recent and realistic facts (μ = 4.05), stakeholders involvement to the required level (μ = 3.72), providing sufficient time to study each part of the study, and tools and techniques applied to conduct the feasibility study are elements to be considered to ensure the quality of project feasibility study.

Among the challenges of project feasibility study practices, the primary challenges faced in the firm include gathering and analyzing all the necessary data (μ = 4.49), and managing uncertainty (μ = 4.31). Followed by addressing all stakeholder concerns and interest (μ = 4.0), Complex decision-making that requires a thorough understanding of the business, industry, and market to identify and mitigate risks (μ = 3.95), limited budget, tight schedule, establishing realistic objectives, unforeseen obstacles and complex technical requirements such as emerging technologies.

Using advanced technologies such as big data analytics and artificial intelligence to collect and analyze data is crucial for properly addressing data gathering and analysis challenges. As this study suggests, competent professionals need to be assigned to gather and analyze data. In feasibility studies, stakeholder management challenges can also be addressed through effective stakeholder analysis and communication. Moreover, scenario analysis should also be included by considering the outcomes of different scenarios.

5.3 Conclusion

The study aimed at assessing the Project feasibility study practice and challenges in the case of Industrial Project Services (IPS). The questionnaire and interview questions prepared accordingly, reports review included, data collected, analyzed, interpreted and summary of the findings were drawn.

This project work investigated the project feasibility study practice of the firm through seven subsections. Named Technical feasibility study practice, Financial, Economic, Legal,

Operational, Scheduling and Market feasibility study practices each containing specific questions. Following that the elements that have to be considered to ensure the quality of project's feasibility study practice were identified and analyzed. Finally the challenges the firm usually faces during conducting a project's feasibility study were measured.

Looking at the firms' feasibility study practice, the technical feasibility study practice has a well-organized independent team and the team considers all the basic factors such as identifying and analyzing Project technical risks associated with the project, studying technical viability of a project within the context of the environment, the regulatory and compliance requirements, and identifying and analyzing resources, human capital, equipment, and technology which will be required for executing the project. In light of this, it is concluded that the firm's technical feasibility study practice in respect of international practice is exemplary. In contrast, the firm's scheduling feasibility study does not have the well-organized independent team/expertise, and the practice usually omits developing scheduling models, taking into account evaluating various scheduling techniques relevant to specific projects and identifying and assessing critical path activities. Hence, the firm's scheduling feasibility study practice is behind the international practices, so it needs to be revised and improved.

The firm has also not organized an independent team/expertise for legal and operational feasibility study practices. The studies were usually conducted by the technical team. As a result the firm's operational feasibility study practice only considers examining proposed methods, whether or not they fulfill all project requirements. But it rarely takes into account activities such as identifying and analyzing operational risks, measuring how well a proposed method solves problems and meets requirements, reviewing the existing systems, structures, and processes that will need to support the current project, and estimating the operational costs of the project such as maintenance, repairs, labor, and other operational expenses.

The firms' market feasibility study practice is done by a well-organized independent team/expertise and the team undertakes activities such as conducting market research, studying supply demand balance in the market, conducting sales projections. But it rarely includes market competition breakdown, and determining a project's unique selling proposition activities during the study.

In general, these factors contributed to the known 11 projects that experienced cost variances, 27 projects that faced time and cost variances, and 12 projects that failed to achieve their objectives.

In conclusion, the results from the findings indicated that the firms' feasibility study practices are behind the international feasibility study practices and it requires additional team arrangements such as legal, operational and scheduling, and improvements in marketing and financial feasibility study practices.

According to the results, Elements to be considered to ensure the Quality of Project's Feasibility Study Practice include the level of experience and expertise of the feasibility study team members, a clear and concise statement of the project's objectives, reliable, relevant, and sufficient data sources with respect to the project objectives, assumptions and projections that are based on recent and realistic facts, stakeholders involvement to the required level, and providing sufficient time to study each part of the study, and tools and techniques applied to conduct the feasibility study.

The results indicated that the firm faces the following challenges, from high ranked to low ranked, during conducting a feasibility study: gathering and analyzing all the necessary data, managing uncertainty, addressing stakeholder concerns, and making complex decisions that require an in-depth understanding of the business, industry, and market. In addition, a limited budget, a tight schedule, setting objectives, unforeseen obstacles, and complex technical requirements such as emerging technologies were also challenges.

5.4 Recommendations

The practice of the project feasibility study in the industrial project services (IPS) contains significant gaps in the areas like financial, economic, scheduling, legal and operational feasibility study practices. Therefore, based on the results and conclusions of the study the following recommendations are forwarded: First the firm should at least arrange additional independent team/expertise for project scheduling, legal and operational feasibility studies. Second the practices included in financial and market feasibility studies should be reviewed and improved.

5.5 Recommendations for further studies

The researcher's first suggestion is that this study be replicated at additional firms who conduct project feasibility studies in order to gain a deeper understanding of the topic of study and its wonderful research findings. This is because the study is restricted to one firm, Industrial project services (IPS), practice and challenges of project feasibility study.

Second, the firm's collection has more than 127 pre-feasibility and feasibility study reports. Therefore, a thorough case study on such documents will provide information that is crucial to the company and the feasibility study as a whole.

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APPENDIX I – QUESTIONNAIRE

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

MA PROGRAM

Dear Participants, I would like to extend my deepest appreciation for your time in responding to the research questions provided below. My name is Kaleb Simon and I'm a postgraduate student at Addis Ababa university school of commerce performing MA degree in project management. The title of my project work is: Assessment of Project feasibility study practice and challenges: The case of Industrial Project Services (IPS).

I believe, your experience will greatly contribute to the success of my research work. So it's with great respect that I ask you to fill this questionnaire. I also ask your kindly cooperation in answering the questions as truthfully as possible and your response will be highly confidential. This questionnaire will only be used for an academic purpose. The findings of the research will be shared to your organization when completed.

A project feasibility study is a method to foresee outcomes; it is an inquiry, analysis, or assessment of a planned scheme and potential gains, and analyzes the viability and practicability of a proposed project, which is a crucial task before any further action can be performed. On the other hand, it affects the choice of action an investor, financier, or organization management will take.

If you have any questions or comments, please don't hesitate to contact me.

You can reach me at;

Mobile: +251- 9- 12349887

E-mail:kalebsimon23@gmail.com

With best Regards,

Kaleb Simon

INSTRUCTIONS

- ✓ Please just tick the BOXES provided in front of each options for the question
- ✓ For Section B if your answer for question number one is **NO**, proceed to the next subsection.

Section A: Demographic Information

1. Gender: M ☐ F ☐
2. Age (year): 20-30 ☐ 31-40 ☐ 41-50 ☐ >50 ☐
3. Level of Education: Diploma ☐ Degree ☐ Masters ☐ PHD ☐
4. Project Work Experience: < 1 ☐ 1-5 ☐ 6-10 ☐ > 10 ☐
5. Number of years in organization: < 1 ☐ 1-5 ☐ 6-10 ☐ > 10 ☐
6. Current Position in organization: Managerial Level ☐ Top Level ☐
   Middle Level ☐ Low Level ☐

Section B: Project Feasibility Study Practice

i. Project Technical Feasibility Study

Q. N.	Question Description	Please put a tick mark in the box provided accordingly		
1	Project Technical Feasibility Study is part of the practice of the feasibility study in an organization.	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐
2	There is an independent and cross functional team/Expertise for Project Technical Feasibility Study	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Technical risks associated with the project are identified and analyzed					
4	Technical viability of a project is studied within the context of the environment					
5	Technical viability of a project is studied within the context of the regulatory and compliance requirements					
6	Resources, human capital, equipment, and technology which will be required for executing the project, are identified and analyzed					

7. Specify, if any, other project technical feasibility study practice you apply: _____

_____

ii. Project Financial Feasibility Study

Q. N	Question Description	Please put a tick mark in the box provided accordingly		
1	Project Financial Feasibility Study is part of the practice of the feasibility study in an organization.	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐
2	There is an independent team/Expertise for Project Financial Feasibility Study	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐

			Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Financial risks associated with the project are identified and analyzed						
4	A detailed analysis of the revenue and expense projections with expected revenues or benefits, costs, and cash flow are conducted						
	For question number 5 you can select more than one	**Net present value**	**Internal rate of return**	**Payback period**	**Break even analysis**	**Others (List)**	**Not clearly known**
5	Financial calculations that are usually applied during financial feasibility Study.						

6. Specify, if any, other project financial feasibility study practice you apply: _____

_____

iii. Project Economic Feasibility Study

Q. N.	Question Description	Please put a tick mark in the box provided accordingly		
1	Project Economic Feasibility Study is part of the practice of the feasibility study in an organization.	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐
2	There is an independent team/Expertise for Project Technical Feasibility Study	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Economic risks associated with the project are identified and analyzed					
4	The potential impact of the project on employment in local industry are studied					
5	The potential impact of the project on community Development are studied					
6	The potential impact of the project on the society and environment are studied					
7	Positive and negative monetary effects of the project on the economy of the country are considered.					

8. Specify, if any, other project economic feasibility study practice you apply: _____

_____

iv. Project Legal Feasibility Study

Q. N.	Question Description	Please put a tick mark in the box provided accordingly		
1	Project Legal Feasibility Study is part of the practice of the feasibility study in an organization.	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐
2	There is an independent team/Expertise for Project Legal Feasibility Study	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Legal risks associated with liability, compliance, and contract issues of the project are identified and analyzed					
4	All applicable Federal and local laws and regulations related to that specific project are studied					
5	Intellectual property such as examining existing patents, trademarks, and copyrights that may affect the proposed project are studied					
6	Environmental regulations that may apply to the project are investigated					

7. Specify, if any, other project legal feasibility study practice you apply: _____

_____

v. Project Operational Feasibility Study

Q. N.	Question Description	Please put a tick mark in the box provided accordingly		
1	Project Operational Feasibility Study is part of the practice of the feasibility study in an organization.	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐
2	There is an independent team/Expertise for Project Operational Feasibility Study	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Operational risks associated with the project are identified and analyzed					
4	Proposed methods are examined whether or not they fulfill all project requirements.					
5	How well a proposed project solves problems and meets requirements are measured					
6	The existing systems, structures, and processes that will need to support the proposed project are reviewed.					
7	The operational costs of the project such as maintenance, repairs, labor, and other operational expenses are estimated					

8. Specify, if any, other project operational feasibility study practice you apply: _____

_____

vi. Project Scheduling Feasibility Study

Q. N.	Question Description	Please put a tick mark in the box provided accordingly		
1	Project Scheduling Feasibility Study is part of the practice of the feasibility study in an organization.	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐
2	There is an independent team/Expertise for Project Scheduling Feasibility Study	a)	Yes	☐
		b)	No	☐
		c)	Not clearly known	☐

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Scheduling models are developed					
4	Various scheduling techniques relevant to a specific project are evaluated					
5	Critical path activities are identified and assessed					

6. Specify, if any, other project scheduling feasibility study practice you apply: _____

_____

vii. Project Market Feasibility Study

Q. N.	Question Description	Please put a tick mark in the box provided accordingly				
1	Project Market Feasibility Study is part of the practice of the feasibility study in an organization	a)	Yes			☐
		b)	No			☐
		c)	Not clearly known			☐
2	There is an independent team/Expertise for Project Market Feasibility Study	a)	Yes			☐
		b)	No			☐
		c)	Not clearly known			☐
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
3	Market research is conducted					
4	Supply demand balance in the market is studied					
5	Market competition breakdown is done accordingly					

6	Sales projections are conducted					
7	Project's unique selling proposition are determined					

8. Specify, if any, other project market feasibility study practice you apply: _____

_____

Section C: Elements to be considered to ensure the Quality of Project's Feasibility Study Practice

Q. N.	Description of Elements to be considered to ensure the Quality of Project's Feasibility Study Practice	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Clear and concise statement of the project's objectives are obtained					
2	Feasibility Study Team members have the required level of experience and expertise in all kinds of feasibility studies					
3	Reliable, relevant and sufficient Data sources with respect to project objectives are identified					
4	Assumptions and projections are based on recent and realistic facts					
5	All the Stakeholdersare involved to the required level during feasibility study					

7. Specify, if any, other elements to be considered to ensure the Quality of Project's Feasibility Study Practice:

_____

Section D: Challenges of Project Feasibility Study Practice

Q. N.	Description of Challenges of Project Feasibility Study Practice	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Gathering and analyzing all the necessary data used to make informed decisions are challenging					
2	Uncertainty, occurred because a project often conducted in the early stages of a project where there is limited information available, is high					
3	Gathering and addressing all stakeholder concerns and interest are challenging					
4	Complex decision-making that requires a thorough understanding of the business, industry, and market to identify and mitigate risks are challenging					
5	Project feasibility study can be costly and time-consuming.					

6. Specify, if any, other challenges project feasibility study practice faces:

   _____

   _____

7. How do you handle various challenges related project feasibility study

   _____

   _____

APPENDIX II – INTERVIEW QUESTIONS

For Key Informants

1. What is your organization's practice and procedure for conducting project feasibility studies?
2. What are the tools and techniques your organization usually apply to conduct project feasibility study?
3. What are Elements to be considered to ensure the Quality of Project's Feasibility Study Practice?
4. What are the challenges your organization face during project feasibility study?
5. What are the methods your organization usually apply to handle challenges?

APPENDIX III – SECONDART DATA SOURCES

1. National veterinary Institute (NVI): Feasibility study for the establishment of a veterinary drugs manufacturing plant, March, 2024
2. Amhara National Regional states water resources development Bureau: Feasibility study for the establishment of pipe fitting manufacturing plant, May, 2014
3. Ministry of industry: Feasibility study for the establishment of sesame processing plant October, 2015
4. Ministry of industry: Feasibility study for the establishment of leather accessory manufacturing plant, October, 2015
5. Health care food Manufactures Share Company: Feasibility study for the establishment of edible oil production plant. October, 2021
6. Privatization and public enterprises supervising agency: Feasibility study for the electric generator manufacturing plant, March 2016
7. The housing construction, development and administration feasibility study, Sep. 2020
8. Feasibility study for the establishment of natural rubber processing plant at Addis Berhan site, Guraferda woreda, Bench Sheko Zone, SNNPR region, February 2022
9. Feasibility study for the Establishment of small and medium manufacturing enterprise, December 2021
10. The federal democratic republic of Ethiopia: Industrial parks development Corporation: feasibility study for the establishment of Adama industrial park, May, 2018
11. The federal democratic republic of Ethiopia: Industrial parks development Corporation: feasibility study for the establishment of Adama industrial park, May, 2018
12. The federal democratic republic of Ethiopia: Industrial parks development Corporation: feasibility study for the establishment of Bahredar industrial park, August, 2017
13. The federal democratic republic of Ethiopia: Industrial parks development Corporation: feasibility study for the establishment of Hawassa industrial park, September, 2015
14. The federal democratic republic of Ethiopia: Industrial parks development Corporation: feasibility study for the establishment of Jimma industrial park, June, 2017
15. Mesfin Industrial Engineering PLC: Feasibility study for CKD (Complete knocked down) automobile assembly, September 2017
16. Feasibility study for Natural Gum processing plant, April, 2022