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1. INTRODUCTION & DEFINITIONS

1.1 Software Engineering

Software Engineering is the **systematic development and application of engineering principles** to the development of software. It covers the entire process of creating, deploying, maintaining and retiring software using a disciplined, quantifiable approach.

Key aspects of software engineering include:

- Requirements gathering and analysis
- System design and architecture
- Implementation (coding)
- Testing and quality assurance
- Deployment and maintenance
- Project management and documentation

1.2 What is a Feasibility Study?

A **Feasibility Study** in software engineering is a **preliminary study conducted before committing to a project** to determine whether it is technically and commercially viable. It evaluates the system's impact, functionality, and performance before investing significant resources in its development.

> **KEY POINT:** A feasibility study answers two critical questions: (1) Is it POSSIBLE to build this system? (2) Is it JUSTIFIED to build this system?

The feasibility study is a **management-oriented activity**. After it is completed, management makes a formal **"Go / No-Go" decision** on whether to proceed with the project.

1.3 Position of Feasibility Study in the SDLC

The feasibility study is conducted during the **Project Initiation Phase** of the Software Development Life Cycle (SDLC), before significant expenses are incurred. The typical SDLC phases are:

Phase	Description
1. Project Initiation	Define the need; identify stakeholders; commission feasibility study
2. Feasibility Study ★	Assess whether the project is viable — THIS IS OUR FOCUS
3. Requirements Analysis	Gather and document detailed system requirements (SRS)
4. System Design	Design architecture, database, interfaces, and modules
5. Implementation	Write and unit-test the actual code
6. Testing & QA	Integration, system and acceptance testing
7. Deployment	Release the system to end users

8. Maintenance	Fix bugs, improve, and update the live system

2. IMPORTANCE OF FEASIBILITY STUDY

A feasibility study is one of the most critical phases in software project management. Its importance lies in the following areas:

A

Validates Project Direction

It analyses whether software projects could possibly be right in terms of development, contribution, and implementation to the company. It confirms whether the project aligns with organisational goals.

B

Assesses Resource Availability

It analyses whether the required resources — hardware, human resources, software, and equipment — are available to develop the software.

C

Analyses the Timeframe

It evaluates whether the project can be realistically completed within an acceptable and useful time period given available resources and constraints.

D

Informs Management Decision-Making

It provides management with enough information to decide: whether the project CAN be done, whether it WILL benefit users, what alternatives exist, and which alternative is preferred.

E

Reduces Risk of Failure

By uncovering risks and challenges early, it prevents costly missteps and ensures that projects are aligned with business goals before major investment.

F

Justifies Investment

It establishes whether benefits outweigh costs and ensures that resources are invested in projects that deliver real value to the organisation.

3. TYPES OF FEASIBILITY STUDY

According to FSEN 104 (Dr. Olatunde), there are **8 types** of feasibility study. Each examines a different dimension of the proposed software project.

A Technical Feasibility

Technical feasibility involves the analysis of resources such as hardware, human resources, software, and equipment. It gives a report on the existence of resources for the software project and also analyses the technical skills of the team.

- Is the proposed technology or solution practical?
- Do we currently possess the necessary technology?
- Do we possess the necessary technical expertise?
- Is the relevant technology mature enough to be applied to our problem?
- Is the required technology available in-house? If not, can it be acquired?
- Will the technology be compatible with other existing systems?
- Does existing technology have the capacity to handle the proposed solution?

B Operational Feasibility

Operational feasibility analyses the degree of provision of services to the department and how much it will cost to manage, operate, and maintain after deployment. It focuses on whether the system will actually be used.

- Will the system be used after it is developed?
- Does management support the project?
- How do end users feel about their role in the new system?
- Are there potential labour objections or manager resistance?
- How will the working environment of end users change?
- Are there organisational conflicts and policies that could hinder adoption?
- Does the solution address social acceptability and legal/governmental requirements?

C Economic Feasibility

Economic feasibility analyses the cost and benefits of the project. It studies the cost of the project, its relevance, and operational cost. This is also known as Cost-Benefit Analysis.

- Is the project justified — will benefits outweigh costs?
- What is the minimal cost to attain a certain system?
- How soon will the benefits accrue?
- Which alternative offers the best return on investment?
- Considers both tangible (quantifiable) and intangible benefits.
- Evaluates both development costs (one-time) and operational costs (on-going).

D Legal Feasibility

Legal feasibility analyses the project from a legal perspective. It is the study to determine whether the proposed project is in line with all legal requirements and regulations.

- Does the project comply with existing laws and regulations?
- Are there any copyright, patent, or licensing issues?
- Does the system adhere to data privacy laws (e.g., GDPR, HIPAA)?
- Will the project violate any contractual obligations?
- Are there government regulations applicable to this project?
- Does the proposed system involve any trade secrets or intellectual property concerns?

E Schedule Feasibility

Schedule feasibility analyses the amount of time that will be taken to complete the proposed project. It determines whether the project can be completed within an acceptable and useful timeframe.

- Is it possible to build a solution in time to be useful?
- What are the consequences of delay?
- Are there any constraints on the schedule? Can they be met?
- Are the project deadlines mandatory or desirable?
- Do we have the technical expertise, or will training/hiring impact the schedule?
- Missed schedules are bad, but inadequate systems are worse!

F Cultural and Political Feasibility

Cultural and political feasibility analyses how the project will affect the cultural and political environment of the organisation and its stakeholders. It ensures the project is socially and politically acceptable.

- How will the project affect the organisation's culture and working norms?
- Are there political factors within the organisation that could impact the project?
- Will key stakeholders support or resist the proposed change?
- Does the system align with the organisation's values and mission?
- Are there external political factors (e.g., government policies) that affect the project?

G Market Feasibility

Market feasibility analyses the market willingness and ability to accept the proposed software. It also evaluates the target user base, possible competitors, and overall market importance.

- Is there a market demand for the proposed software?
- Who are the target users and what are their needs?
- Who are the possible competitors in the market?
- What is the market size and potential for growth?
- Can the software compete effectively in the current market landscape?
- What is the market's willingness to pay for the solution?

H Resource Feasibility

Resource feasibility analyses whether the resources needed for the development of the project are readily available and adequate. It covers financial, technical, and human resources.

- Are financial resources available and sufficient for the project?
- Are human resources (skilled staff, developers, testers) available?
- Are technical resources (hardware, software tools, infrastructure) accessible?
- Are the available resources in the right quantity and quality?
- Can additional resources be acquired if needed?
- Are the resources sustainable throughout the full project lifecycle?

4. AIMS OF FEASIBILITY STUDY

The aims of a feasibility study are as follows:

i.	To determine whether the overall objective of the company is covered and contributed by the proposed system.
ii.	To determine if the implementation of the system can be done using the current existing system and infrastructure.
iii.	To determine if the intended new system can be integrated with other existing systems within the organisation.
iv.	To evaluate whether the proposed system will successfully solve the problems that currently exist in the organisation.
v.	To determine if the system will satisfy the needs of users and management once deployed.
vi.	To establish whether the benefits of the new system outweigh its total costs (cost-benefit justification).
vii.	To identify and recommend the preferred alternative solution among all possible options.
viii.	To identify potential risks associated with the development and deployment of the system and suggest mitigation strategies.
ix.	To determine whether the project can be completed within the available time, budget, and resource constraints.
x.	To provide management with sufficient data to make an informed "Go / No-Go" decision on the project.
xi.	To assess the technical readiness of the organisation — whether the team has the skills, tools, and technology needed.
xii.	To ensure that the proposed project is aligned with the legal, regulatory, and compliance requirements of the industry.
xiii.	To evaluate the market environment — the target audience, existing competitors, and level of market demand.
xiv.	To confirm that adequate financial, human, and physical resources are available and sustainable throughout the project lifecycle.

5. FEASIBILITY STUDY PROCESS

The feasibility study follows a structured process. The following four key steps are carried out during the entire feasibility analysis:

Step A — Information Assessment

This step establishes the main aim and assessment of the project. It defines the scope, objectives, and boundaries of the feasibility study. The study team identifies the problem to be solved, the stakeholders involved, and the goals the new system must achieve. A clear assessment ensures all subsequent steps are focused and relevant.

Step B — Information Collection

This step acquires all the necessary information and data required to achieve the stated objectives. It involves gathering both primary data (through interviews, surveys, observations) and secondary data (existing reports, documents, market research). The quality of this step directly determines the quality of the feasibility conclusions.

Step C — Information Reporting (Report Writing)

This step involves the in-depth details of report analysis and compilation. All findings from the information collection step are organised, analysed, and written up into a comprehensive feasibility report. The report must be well-structured, clearly written, and understandable to both technical and non-technical audiences.

Step D — General Information

This covers background information about the organisation, current systems, stakeholders, and the environment in which the new system will operate. It provides the context needed to properly interpret all other findings in the report.

6. REASONS FOR CONDUCTING A FEASIBILITY STUDY

I	**Enable the Commencement of Projects** A feasibility study provides the evidence and confidence needed to officially launch a software development project. Without it, organisations may start projects without adequate planning or justification.
II	**It Identifies Risk Factors** The study helps identify potential risks early in the project lifecycle — technical, financial, operational, and legal risks — allowing the team to plan risk mitigation strategies before significant resources are invested.
III	**It Reports the Viability of the Software** The feasibility study determines whether the proposed software is viable from all angles (technical, economic, operational, etc.) before committing to full development, preventing wasted investment.
IV	**It Measures Market Fit and Level of Competition** It measures how well the project fits the target market and evaluates its level of competition, ensuring the software will be relevant, competitive, and in-demand upon release.
V	**It Saves Time and Money** By identifying non-viable projects early, the feasibility study prevents organisations from wasting time and money on projects that are unlikely to succeed, allowing resources to be redirected to more promising initiatives.
VI	**It Supports Strategic Decision-Making** It provides management with data-driven insights to make informed strategic decisions about whether to proceed, modify, or abandon a proposed project — all within the broader context of organisational goals.

7. STAKEHOLDERS IN A FEASIBILITY STUDY

A feasibility study involves various stakeholders, each with specific roles and responsibilities. Involving the right people ensures a comprehensive and well-rounded study.

Stakeholder	Role in Feasibility Study
Project Manager	Oversees the entire feasibility study; coordinates team; ensures objectives are met on time
Business Analyst	Analyses business needs; bridges gap between technical team and management; quantifies benefits
Software Engineers	Assesses technical feasibility; evaluates technology options; estimates development effort
Financial Expert	Conducts cost-benefit analysis; calculates NPV, ROI, and payback period
Legal Advisor	Reviews legal compliance; identifies licensing, copyright, and regulatory issues
End Users	Provides insight into operational needs; participates in requirements gathering
Senior Management	Commissions the study; makes the final Go/No-Go decision based on the report
IT Infrastructure Team	Assesses hardware/software availability; evaluates compatibility with existing systems
Marketing Team	Conducts market feasibility; analyses competitors and target market demand

NOTE: All stakeholders must be involved throughout the process to ensure diverse perspectives and comprehensive findings. A report that is not understood by key stakeholders is useless.

8. DATA COLLECTION METHODS FOR FEASIBILITY STUDY

Collecting accurate and relevant data is the backbone of any feasibility study. The following methods are used to gather the information needed:

1	**Interviews** Direct conversations with potential users, managers, and domain experts to gather in-depth qualitative insights into their pain points, expectations, and preferences. Can be structured (fixed questions) or open-ended (free-flowing discussion).
2	**Surveys / Questionnaires** Written sets of questions distributed to a large number of stakeholders to gather scalable, quantitative data on user needs, feature preferences, and willingness to adopt the new system. Useful for reaching dispersed groups efficiently.
3	**Observation** Directly watching how users interact with the current system in their natural work environment. This reveals workflow inefficiencies, bottlenecks, and manual workarounds that might not be mentioned in interviews.
4	**Document Review** Examining existing project documentation, business reports, market research, financial records, technical manuals, and industry studies to understand the current landscape and identify knowledge gaps.
5	**Competitor Analysis** Gathering information about competitor products, pricing, market share, and strategies. This helps assess market feasibility and identify opportunities for differentiation.
6	**Prototyping** Building a small-scale or limited version of the proposed system to test technical concepts, validate feasibility, and gather early feedback from users before full development begins.
7	**Focus Groups** Structured discussions with a selected group of representative stakeholders or end users to explore attitudes, perceptions, and expectations about the proposed system in a group setting.

9. HOW TO CONDUCT A FEASIBILITY STUDY — STEP BY STEP

The following steps outline how a professional feasibility study is conducted in software engineering:

STEP 1 — Define the Problem and Scope

Clearly articulate the problem the system will solve. Define the scope, goals, and expected outcomes of the study. Set the boundaries of what will and will not be covered. Ensure all stakeholders agree on the project's intent before proceeding.

STEP 2 — Conduct Preliminary Research

Gather existing information — documents, reports, market data, and industry studies. Identify gaps in knowledge. Conduct initial interviews with key stakeholders to understand the current landscape. This step prevents duplication of work.

STEP 3 — Identify and Evaluate Alternatives

Generate a range of possible solutions including "do nothing" as an option. Consider different business processes, levels of computerisation, and technology stacks. Each alternative should be identified before any deep analysis begins.

STEP 4 — Perform Detailed Feasibility Analysis

Evaluate each alternative across all 8 types of feasibility: Technical, Operational, Economic, Legal, Schedule, Cultural/Political, Market, and Resource feasibility. Collect data using interviews, surveys, observations, and document reviews.

STEP 5 — Conduct Cost-Benefit Analysis

For each viable alternative, identify and quantify all costs (development, operational) and benefits (tangible and intangible). Calculate Net Present Value (NPV), Return on Investment (ROI), and the Payback Period.

STEP 6 — Perform Risk Analysis

Identify all potential risks associated with each alternative. Assess their likelihood and impact. Develop risk mitigation strategies. A well-done feasibility study never ignores risk.

STEP 7 — Compare Alternatives Using a Feasibility Matrix

Use a weighted Feasibility Analysis Matrix to systematically compare all alternatives across all criteria. Assign scores and weights to each criterion. Calculate a final ranking for each candidate solution.

STEP 8 — Write the Feasibility Report

Compile all findings into a comprehensive, well-structured feasibility report. The report should be clear, factual, and understandable to both technical and non-technical audiences. Include clear recommendations.

STEP 9 **Present to Management for Go/No-Go Decision**

Present the report to key decision-makers and stakeholders. Management reviews the findings and makes the formal Go/No-Go decision. If approved, the project moves to the Requirements Analysis phase of the SDLC.

10. CONTENT / STRUCTURE OF THE FEASIBILITY STUDY REPORT

A formal feasibility study report must be well-written, well-presented, and aimed at a general audience including clients, financial management, and technical staff. The standard structure includes 9 sections:

#	Section Title	Content Description
1	Purpose & Scope of the Study	Objectives, who commissioned it, who conducted it, sources of information, process used, and duration of the study.
2	Description of Present Situation	Organisational setting, current system(s), related factors and constraints, stakeholders, and existing workflows.
3	Problems and Requirements	What is wrong with the present situation — inconsistencies, inadequacies in functionality, performance — and what changes are needed.
4	Objectives of the New System	Goals of the new system and the relationships between them. What the stakeholders want to achieve.
5	Possible Alternatives	All candidate solutions including "do nothing". Different business processes and levels of computerisation considered.
6	Criteria for Comparison	Definition of the criteria that will be used to evaluate and rank the alternatives (e.g., cost, feasibility type scores).
7	Analysis of Alternatives	Description of each alternative, evaluation against criteria, cost/benefit analysis, and special implications.
8	Recommendations	What is recommended, its implications, and what to do next. May include both interim and permanent solutions.
9	Appendices	Supporting material: detailed calculations, charts, interview transcripts, market data, and reference documents.

KEY POINT: A feasibility report that is not read and understood is useless. Write for a general audience — clear, concise, and well-structured.

11. ECONOMIC FEASIBILITY: COST-BENEFIT, NPV, ROI & PAYBACK

Economic feasibility is one of the most critical types. It involves **Cost-Benefit Analysis** to determine whether the benefits of the proposed system justify its costs. It answers: Is the project financially justified?

11.1 Types of Benefits

Tangible Benefits	Intangible Benefits
Readily quantifiable as monetary values: • Increased sales • Cost/error reductions • Increased throughput/efficiency • Increased margin on sales • More effective use of staff time	Difficult to quantify but may be more important: • Increased flexibility of operation • Higher quality products/services • Better customer relations • Improved staff morale • Competitive market advantage

11.2 Types of Costs

Development Costs (One-Time)	Operational Costs (On-going)
• Cost of development team • Consultant fees • Software (buy or build?) • Hardware (buy or lease?) • Facilities (site, communications, power) • Training personnel • File conversion costs • System installation costs	• Hardware repairs, lease, supplies • Software licenses and contracts • Facilities maintenance • Data entry and backup personnel • User support and helpdesk staff • Hardware and software maintenance • On-going training costs

11.3 Net Present Value (NPV)

NPV measures the total value of the investment with all figures adjusted to present dollar values. It is based on the principle that **a dollar today is worth more than a dollar in the future** (time value of money).

NPV = Cumulative PV of All Benefits – Cumulative PV of All Costs

Present Value Factor:

$PV(n) = 1 / (1 + i)^n$ where i = discount rate, n = year number

Example (Discount Rate = 12%):

- Year 1: PV = $1 / (1.12)^n = 0.893$
- Year 2: PV = $1 / (1.12)^n = 0.797$
- Year 3: PV = $1 / (1.12)^n = 0.712$
- Year 4: PV = $1 / (1.12)^n = 0.636$

11.4 Return on Investment (ROI)

ROI measures the ratio of the value of an investment to its cost. It is used to **compare the overall profitability of alternative solutions** and determine which is the best investment.

ROI = (Estimated Lifetime Benefits – Estimated Lifetime Costs) / Estimated Lifetime Costs

NOTE: The solution with the highest ROI is generally the best alternative. However, you must also consider the payback period to get the full financial picture.

11.5 Payback Period (Break-Even Point)

The payback period calculates **how long it will take for cumulative benefits to overtake cumulative costs**. It identifies when the investment begins to generate a net return.

Payback Fraction = |Beginning Year Amount| / (End Year Amount + |Beginning Year Amount|)

Example: If Year 3 net = –51,611 and Year 4 net = +70,501:

- Fraction = 51,611 / (70,501 + 51,611) = 0.42
- Payback Period ≈ 3 + 0.42 = **3.4 years**

12. RISK ANALYSIS IN FEASIBILITY STUDY

Risk analysis is an essential component of any feasibility study. It identifies, assesses, and plans responses to potential risks that could affect the success of the project.

12.1 What is a Risk?

A risk is any **uncertain event or condition that, if it occurs, would have a positive or negative effect on project objectives**. In software feasibility, we primarily focus on negative risks (threats).

12.2 Types of Risks in Software Projects

Risk Type	Description & Example
Technical Risk	Risks arising from the use of unproven technology, complex integrations, or insufficient technical expertise. E.g., choosing an immature framework.
Financial Risk	Risks related to budget overruns, inaccurate cost estimates, or insufficient funding. E.g., underestimating development hours.
Operational Risk	Risks that the system will not be used or will disrupt existing operations. E.g., user resistance to change.
Schedule Risk	Risks of project delays due to resource shortages, scope creep, or underestimated complexity. E.g., key developer leaving mid-project.
Legal/Compliance Risk	Risks of violating laws, regulations, or contractual obligations. E.g., GDPR non-compliance in a data-handling system.
Market Risk	Risks that the market will not accept the product. E.g., a competitor launching a superior product before yours.
Resource Risk	Risks that required resources (people, hardware, budget) will not be available when needed.

12.3 Risk Management Process

- **1. Risk Identification:** List all possible risks that could affect the project. Use techniques like brainstorming, checklists, and expert interviews.
- **2. Risk Assessment:** Evaluate each risk based on its Likelihood (probability of occurring) and Impact (severity if it occurs).
- **3. Risk Prioritisation:** Rank risks by severity (High/Medium/Low). Focus mitigation efforts on High-likelihood, High-impact risks first.
- **4. Risk Mitigation Planning:** Develop specific strategies to reduce or eliminate each significant risk: Avoid, Transfer, Mitigate, or Accept.
- **5. Risk Monitoring:** Continuously monitor identified risks throughout the project lifecycle and update the risk register accordingly.

KEY POINT: A good feasibility study should identify risks and alternatives. Ignoring risk analysis is one of the most common causes of software project failure.

13. THE PIECES FRAMEWORK

The **PIECES Framework** (developed by James Wetherbe, 1994) is a checklist for identifying problems with an existing information system. It helps analysts and users "speak the same language" when defining problems and requirements during the feasibility study.

P — **Performance**

Is current throughput and response time adequate?

• Is the system processing data fast enough? • Are response times acceptable to all users? • Is system throughput meeting current demand? • Are there bottlenecks in the system?

I — **Information**

Do users and managers get timely, pertinent, accurate, and usefully formatted information?

• Is there a lack of necessary or relevant information? • Is data captured accurately and on time? • Is information presented in a useful format? • Is stored data secure, organised, and accessible?

E — **Economy**

Are services cost-effective? Could costs be reduced or benefits increased?

• Are operating costs too high or unknown? • Are there cost reduction opportunities? • Could new markets be explored to increase profits? • Are hardware and software costs justifiable?

C — **Control**

Are there effective controls against fraud and to guarantee accuracy and security?

• Is input data adequately edited and validated? • Are data privacy regulations being followed? • Is there too much or too little security control? • Are there risks of fraud or data breach?

E — **Efficiency**

Does the system make good use of people, time, and other resources?

• Is data being redundantly input or processed? • Are tasks requiring excessive effort or materials? • Are there unnecessary manual steps in workflows? • Do people, machines, or computers waste time?

S — **Services**

Are current services reliable, flexible, and expandable?

• Does the system produce inaccurate or inconsistent results? • Is the system easy to use and easy to learn? • Is the system flexible to change and new situations? • Is the system compatible with other systems?

14. COMPARING ALTERNATIVES — FEASIBILITY ANALYSIS MATRIX

When there are multiple candidate solutions and none is clearly superior across all criteria, a **Feasibility Analysis Matrix** is used to compare them systematically and objectively.

14.1 How the Matrix Works

- Columns correspond to the candidate solutions (alternatives).
- Rows correspond to the feasibility criteria (Technical, Operational, Economic, Schedule, etc.).
- Each criterion is assigned a weight (percentage) reflecting its relative importance.
- Each cell contains an assessment and a score (e.g., 0–100) for that candidate on that criterion.
- A final weighted score is calculated: Score × Weight for each row, then summed for each candidate.
- The candidate with the highest final weighted score is recommended as the preferred alternative.

14.2 Example Feasibility Analysis Matrix

Feasibility Criteria	Weight	Candidate 1	Candidate 2	Candidate 3
Operational Feasibility	30%	Score: 60 (Limited functionality)	Score: 100 (Fully supports users)	Score: 100 (Same as Candidate 2)
Technical Feasibility	30%	Score: 50 (Immature technology, v1.0)	Score: 95 (Mature tech, easy staff transition)	Score: 60 (Compatibility concerns)
Economic Feasibility	30%	Score: 60 NPV: $210,000 Payback: 4.5 yrs	Score: 85 NPV: $306,748 Payback: 3.5 yrs	Score: 90 NPV: $325,500 Payback: 3.3 yrs
Schedule Feasibility	10%	Score: 95 (< 3 months)	Score: 80 (9–12 months)	Score: 85 (9 months)
FINAL RANKING	**100%**	**60.5**	**92.0 ★**	**83.5**

NOTE: Candidate 2 has the highest weighted score (92.0) and would be the recommended solution despite having higher development costs, because it scores best overall across all criteria.

15. OUTCOMES OF A FEASIBILITY STUDY

After a thorough feasibility study, the following key outcomes are produced:

1	**Go / No-Go Decision** The most important outcome. Based on the analysis, management decides: GO (proceed), MODIFY (adjust scope/budget), or NO-GO (abandon and explore alternatives). This decision is backed by data.
2	**Identification of the Preferred Alternative** The feasibility study recommends the best solution from among all alternatives evaluated, supported by the feasibility matrix scores and cost-benefit analysis.
3	**Clear Risk Register** A documented list of all identified risks, their likelihood, impact, and proposed mitigation strategies. This becomes input for the project's risk management plan.
4	**Defined Project Timeline** A realistic development timeline with key phases, milestones, and deadlines. Includes potential delays and how to address them.
5	**Budget and Resource Plan** A detailed financial forecast covering all development and operational costs, as well as resource requirements (staff, hardware, software) needed throughout the project lifecycle.
6	**Stakeholder Confidence** A well-executed feasibility study builds stakeholder confidence by demonstrating that the project has been thoroughly vetted. It enables data-driven decisions rather than assumptions.

16. COMMON MISTAKES AVOIDED BY A FEASIBILITY STUDY

A well-done feasibility study helps organisations avoid the following six common project mistakes:

✗ **Solving the Wrong Problem**
Without a feasibility study, teams may invest heavily in building a solution to a problem that is either not critical, not the right problem, or already solved by existing tools.

✗ **Underestimating Costs**
Many projects fail because costs are underestimated. The economic feasibility analysis ensures realistic cost projections including hidden and operational costs.

✗ **Overestimating Benefits**
Teams often over-promise returns. The feasibility study requires benefits to be quantified and validated, separating realistic expectations from optimistic assumptions.

✗ **Ignoring Legal Compliance**
Legal issues discovered after development can be catastrophic. Legal feasibility ensures all compliance requirements are identified and addressed from the start.

✗ **Ignoring User Resistance**
Operational feasibility specifically addresses whether users will actually use the system. Systems built without user buy-in often fail after deployment despite being technically sound.

✗ **Unrealistic Scheduling**
Projects without schedule feasibility analysis routinely miss deadlines. Understanding the real time constraints and team capabilities prevents overcommitting on delivery dates.

17. QUICK REVISION SUMMARY

Topic	Key Points
Definition	Study of how possible it is to develop a project/system; conducted before committing resources
Position in SDLC	Project Initiation Phase — before requirements, design, or development begins
8 Types	Technical | Operational | Economic | Legal | Schedule | Cultural/Political | Market | Resource
14 Aims	Covers: objectives, usability, integration, problem-solving, user needs, cost-benefit, alternatives, risk, timeline, management decision, technical readiness, legal compliance, market, resources
4 Process Steps	Information Assessment → Information Collection → Report Writing → General Information
6 Reasons	Enable projects | Identify risks | Report viability | Market fit | Save time/money | Support decisions
Key Stakeholders	Project Manager, Business Analyst, Engineers, Financial Expert, Legal Advisor, End Users, Management
7 Data Methods	Interviews | Surveys | Observation | Document Review | Competitor Analysis | Prototyping | Focus Groups
9 Conduct Steps	Define scope → Research → Identify alternatives → Analyse → Cost-benefit → Risk → Matrix → Report → Present
Report Structure	9 sections: Scope, Present Situation, Problems, Objectives, Alternatives, Criteria, Analysis, Recommendations, Appendices
NPV Formula	Cumulative PV of Benefits – Cumulative PV of Costs; PV(n) = 1/(1+i)■
ROI Formula	(Lifetime Benefits – Lifetime Costs) / Lifetime Costs
Payback Period	|Beginning Year Amount| / (End Year Amount + |Beginning Year Amount|)
Risk Analysis	Identify → Assess → Prioritise → Mitigate → Monitor
PIECES Framework	Performance | Information | Economy | Control | Efficiency | Services
Feasibility Matrix	Weighted scoring table comparing candidates across all feasibility criteria
Key Outcomes	Go/No-Go decision | Preferred alternative | Risk register | Timeline | Budget plan | Stakeholder confidence
Common Mistakes	Wrong problem | Undercosting | Overbenefit | Legal gaps | User resistance | Unrealistic schedule