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SWDPR301. PROJECT REQUIREMENTS ANALYIS

Competent: ANALYZE PROJECT REQUIREMENTS

SECTOR: ICT

TRADE: SOFTWARE DEVELOPMENT

MODULE TYPE: SPECIFIC

CREDIT: 5

RQF LEVEL: 3

LEARNING HOURS: 50

Table of Contents

Elements of Competency and Performance Criteria

Elements of competency, Performance **criteria**

1.**Identify customer needs**

1.1. Data are accurately gathered based on customer needs

1.2. Data are effectively interpreted in line with customer needs

1.3 Project data are properly organized in accordance with customer needs

2. **Gather project requirements**

2.1. Project requirement is properly identified in accordance with customer needs

2.2. Research methodology and tools are correctly determined in accordance with project goals

2.3. Research is properly conducted in line with project goals

2.4. Data collected are properly analyzed in accordance with research conducted

2.5. Research findings are properly reported in accordance with project requirement

3. Determine user requirement

3.1. Target audience is properly defined based on project goals

3.2. User story is appropriately created based on the project goals

3.3. Task flow is properly created based on user stories

Course content

Learning outcomes: At the end of the module the learner will be able to:

1. Identify customer needs

2. Gather project requirements
3. Determine user requirements

LEARNING OUTCOME 1: IDENTIFY CUSTOMER NEEDS

Learning hours: 30

Indicative Content 1: Data gathering

The gathering of data is Seeks or collects and synthesizes information from a variety of stakeholders and sources in an objective, unbiased manner to reach a conclusion, goal, or judgment, and to enable strategic and leadership decision making.

Topic1. Key concept definitions

Customer

A customer is **a person or business that buys goods or services from another business**. Customers are crucial because they generate revenue. Without them, businesses would go out of business.

Data

Data is defined as **a collection of individual facts or statistics**. Data can come in the form of text, observations, figures, images, numbers, graphs, or symbols.

Information

information is the processed data or meaningful data.

Also, information is knowledge communicated or received concerning a particular fact or circumstance; news: information concerning a crime. knowledge gained through study, communication, research, instruction, etc.; **factual data**: His wealth of general information is amazing.

Pain points

It is **a specific problem that prospective customers of your business are experiencing** in other words, you can think of pain points as problems, plain and simple.

User story

It is an informal, general explanation of a software feature written from the perspective of the end user or customer. The purpose of a user story is to articulate how a piece of work will deliver a particular value back to the customer.

Research

It is a process of systematic inquiry that entails collection of data; documentation of critical information; and analysis and interpretation of that data/information, in accordance with suitable methodologies set by specific professional fields and academic disciplines.

Project

It is a series of tasks that need to be completed to reach a specific outcome A project can also be defined as a set of inputs and outputs required to achieve a particular goal Projects can range from simple to complex and can be managed by one person or a hundred?

Topic2. Work communication process

Topic 2.1. Sender

It is a person who sends a letter, package, message, etc.

The sender is an individual, group, or organization who initiates the communication.

Topic 2.2. Encoding

In computers, encoding is the process of putting a sequence of characters (letters, numbers, punctuation,

and certain symbols) into a specialized format for efficient transmission or storage.

Topic 2.3. Message

A message is a piece of information or a request that you send to someone or leave for them when you cannot speak to them directly.

Topic 2.4. Types of Communication channels

Topic 2.4.1. Communication

Communication is a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior.

Topic 2.4.2. Types of communication channels

Communication channels can be categorized into three principal channels:

1. Verbal

1. Written

2. **Non-verbal**.

Each of these communications channels have different strengths and weaknesses, and oftentimes we can use more than one channel at the same time.

1. **Verbal communication** is the use of words to share information with other people. It can therefore include both spoken and written communication. Verbal communication is **about language, both written and spoken**. In general, verbal communication refers to our use of words while nonverbal communication refers to communication that occurs through means other than words, such as body language, gestures, and silence.

2. **Written communication** is **any written message that two or more people exchange**. Written communication is typically more formal but less efficient than oral communication. Examples of written communication include: Emails. Text messages

What are 4 types of written communication?

A few common forms of written communications include:

1. Memos

2. Bulletins

3. Emails

4. faxes, and

5. Written advertisements

3. Nonverbal communication: Nonverbal communication is the transmission of messages or signals through a nonverbal platform such as eye contact, facial expressions, gestures, posture, use of objects and body language. It includes the use of social cues, kinesics, distance and physical environments/appearance, of voice and of touch.

2.5. Receiver

person who receives something; recipient. a person appointed by a court to manage property pending the outcome of litigation, during the infancy of the owner, or after the owner(s) has been declared bankrupt or of unsound mind.

2.6. Decoding

To convert (something, such as a coded message) into intelligible form to recognize and interpret (an electronic signal).

The **decoding** of a message is how an audience member is able to understand, and interpret the message. It is a process of interpretation and translation of coded information into a comprehensible form. The audience is trying to reconstruct the idea by giving meanings to symbols and by interpreting messages as a whole.

2.7. Feedback

Feedback occurs when outputs of a system are routed back as inputs as part of a chain of cause-and-effect that forms a circuit or loop. The system can then be said to feed back into itself

Topic3. Raw data collection

- **Methods of collecting data**

- Interviews
- Questionnaires
- Observations
- Facilitated Workshops
- Focus groups
- JAD
- Brainstorming
- Prototyping
- Documentation analysis

Topic3.1. Interviews

Interviews are of primary ways for information gathering where the system analyst will have face-to-face interaction with relevant stakeholders or subject matter experts.

Types of Interviews

1. **Unstructured Interviews**

These involve a conversation by the interviewee asking general questions. It is usually inefficient technique as it has a tendency to go off track from the main goal and the analyst will have to redirect the interview in the right path.

2. **Structured Interviews**

The interviewer will be the one making specific questions in order to obtain the required information from the interviewee.

This type of interview is considered to be efficient.

3. Semi-structured interviews

It begins with focused question

ns and moves to open-ended discussion. The data of interest will have to be predetermined. Some

of the questions that need to be asked are mentioned below.

- How should a task be performed?
- Why is this task being performed?
- Under what conditions, this task should be performed?
- What information do you need to complete the task?
- Whom should the communication be sent to?

Topic3.2. Questionnaires

It is an informal technique in which a document is used to collect information and opinion from respondents. It allows the system analyst to collect information from a target population which is very large and in remote locations or those who will have only minor input into the overall requirements.

Topic3.3. Observations

Observation or job shadowing involves an analyst watching their client performing their daily tasks and asking questions about what they are doing and why.

It is a great way to understand what the user might go through in their job and can provide some immediate requirements for how a process can be improved.

Types of Observation

Passive/Invisible

Here the analyst does not interact with the worker at all while the observation is going on, but takes notes. The analyst can ask questions by using a prepared list of questions of the worker on completion of the entire process, but they are not to interrupt the person while they work.

Active/Visible

Here the analyst can interrupt the worker to ask questions during the observation session. Some questions to ask include:

“Why are you doing this at this point?”

“What is usually the next step?”

Topic3.4. Focus Groups

Focus groups involve synergistic discussion among people who are representative of the users or customers related to the expectations, features and other aspects of a product.

Topic3.5. Focus GroupsJoint Application development (JAD)

It is a technique where a workshop is facilitated and the entire system participants sit and discuss for the system analysis and defining requirements.

Topic3.6. Focus Groups Brainstorming

It involves self-generated contribution of ideas by the group members around a specific issue, problem or requirement. The appropriate subject matter experts will start creatively brainstorming about what the solution might look like.

Topic3.7. Prototyping

In this approach, the preliminary requirements will be gathered which is used to build an initial version of the solution called a prototype.

Topic3.8. Documentation Analysis

The technique involves written documentation of procedures and tasks that often exist, particularly in business contexts.

Topic 4. Description of data collection Tools (Traditional and online forms Peripherals).

The terms "data collecting tools" refers to the **tools/devices used to gather data, such as a paper questionnaire or a system for computer-assisted interviews**.

Tools used to gather data include:

- Case studies
- Checklists
- Interviews
- Occasionally observation
- Surveys, and questionnaires.

In recent years, we have seen a sudden increase in commercial applications in **machine learning and AI**.

Machine learning models heavily rely on data. Therefore, data scientists have invented new methods of data collection. Some of these data collection methods did not exist before the rise of the digital revolution.

What is traditional data collection?

1. DIRECT PERSONAL INTERVIEWS

The investigator personally meets concerned individuals and collects the required information from them. When the area to be covered is vast, this method may prove very costly and time-consuming.

2. INDIRECT PERSONAL INTERVIEWS

We interview the third parties or witnesses having information, whenever the direct sources do not exist, or the informants hesitate to respond for some reason or other.

3. COLLECTION THROUGH QUESTIONNAIRES

The questionnaires are usually sent by mail to inquire through several pertinent questions. In questionnaires, there is a space for entering the asked information asked.

4. COLLECTION THROUGH ENUMERATORS

In this method, trained enumerators collected the information. They assist the informants in making the entries in the schedules or questionnaires correctly. If the enumerator is well trained, experienced, and discreet, then you can get the most reliable information through this method.

4. COLLECTION THROUGH LOCAL SOURCES

In this method, the agents or local correspondents collect and send the required information, using their judgment as to the best way of obtaining it, but there is no formal collection of data. This method is cheap and expeditious but gives only the estimates. It may involve local agents' bias.

Other Data Collection Tools

Now that we've explained the various techniques, let's narrow our focus even further by looking at some specific tools. For example, we mentioned interviews as a technique, but we can further break that down into different interview types (or "tools").

1. **Word Association**

The researcher gives the respondent a set of words and asks them what comes to mind when they hear each word.

2. **Sentence Completion**

Researchers use sentence completion to understand what kind of ideas the respondent has.

3. **Role-Playing**

Respondents are presented with an imaginary situation and asked how they would act or react if it was real.

4. **In-Person Surveys**

The researcher asks questions in person.

5. **Online/Web Surveys**

These surveys are easy to accomplish, but some users may be unwilling to answer truthfully, if at all.

6. **Mobile Surveys**

These surveys take advantage of the increasing proliferation of mobile technology. Mobile collection surveys rely on mobile devices like tablets or smartphones to conduct surveys via SMS or mobile apps.

7. Phone Surveys

No researcher can call thousands of people at once, so they need a third party to handle the chore. However, many people have call screening and won’t answer.

What are Common Challenges in Data Collection?

There are some prevalent challenges faced while collecting data, let us explore a few of them to understand them better and avoid them.

Data Quality Issues

The main threat to the broad and successful application of machine learning is poor data quality.

Inconsistent Data

When working with various data sources, it's conceivable that the same information will have discrepancies between sources. The differences could be in formats, units, or occasionally spellings.

Data Downtime

Data is the driving force behind the decisions and operations of data-driven businesses. However, there may be brief periods when their data is unreliable or not prepared. Customer complaints and subpar analytical outcomes are only two ways that this data unavailability can have a significant impact on businesses. **Ambiguous Data**

Even with thorough oversight, some errors can still occur in massive databases or data lakes. For data streaming at a fast speed, the issue becomes more overwhelming.

Duplicate Data

Streaming data, local databases, and cloud data lakes are just a few of the sources of data that modern enterprises must contend with.

Too Much Data

While we emphasize data-driven analytics and its advantages, a data quality problem with excessive data exists.

Inaccurate Data

For highly regulated businesses like healthcare, data accuracy is crucial.

Hidden Data

The majority of businesses only utilize a portion of their data, with the remainder sometimes being lost in data silos or discarded in data graveyards.

Topic4. Interact with the customer.

Topic4.1. Get to know the customer

Customers can make or break your brand. The ultimate goal of a great marketer is to have strong brand awareness, great customer reviews, and loyal customers that keep coming back (and push others to do the same).

Know your Customers:

Now that you understand the power of understanding your audience, let's look **at 7 great ways to get under the skin of your consumers and use those insights to drive campaign performance.**

Topic4.1.1. Get analytical across touchpoints

In the digital age, we are swimming in data.

By using a mix of social media analytics tools and mobile data platforms to capture a host of in-depth insights across your primary consumer touchpoints, you'll be able to build profiles or personas that improve your marketing communications.

Topic4.1.2. Spark up a dialogue and influence

One of the most direct and effective ways of getting to know your customers is by starting a conversation with them.

By meeting your consumers where they are, you will be able to understand how they connect with their peers while asking them valuable questions in a way that is organic rather than intrusive. But, perhaps one of the most powerful ways of sparking meaningful consumer dialogues and speaking your customers' language, is with user-generated content (UGC).

Topic4.1.3. Respond to positive and negative reviews. Personally.

It always pays to respond to positive and negative testimonials in a productive, timely fashion.

Topic4.1.4. Host an event or an experience

In terms of knowing your customers, experiential marketing is a very rewarding tactic if you get it right.

Topic4. 1.5. Tailor your deals, discounts, and incentives

Circling back to the importance of personalization: If you offer your customers tailored deals and discounts, you're likely to foster brand loyalty which, in turn, will give you the opportunity to get to know them better.

Topic4.1.6. Start a mobile loyalty scheme

Speaking of fostering trust and building long-term relationships, creating a customer loyalty scheme will not only boost your consumer retention rates but you will also open up a continual portal of communication between your brand and your audience.

Topic4.1.7. Host a contest

Last but certainly not least, we offer another swift nod to user-generated content.

Topic4.2. Predict customer needs

Predicting customer needs involves providing a service or product that customers haven't expressed a demand for yet. And this goes beyond your current customers. You need to think in terms of potential future customers, as well.

Why are customer predictions important?

Predicting customer behavior is a tool for companies to consistently entice customers and keep them engaged for longer such that they not only provide repeat business but also become brand advocates for the company. Marketers understand that predicting customer behavior is now an indispensable part of their jobs.

Meet the customer

Topic4.2.1. How to meet customer needs

1. Listen to customer feedback
2. Acknowledge your customers
3. Solve the customers' problems

4. Build a customer-focused company culture.
5. Demonstrate empathy
6. Interact with your customers
7. Analyze your reviews.
8. Be honest with customers.

Indicative content2. Interpretation of data

Data interpretation refers to the process of using diverse analytical methods to review data and arrive at relevant conclusions.

Topic1. Data manipulation

Data manipulation is the process of changing or altering data in order to make it more readable and organized.

Common data manipulations techniques discussed are:

1. Filtering.
2. Sorting.
3. Grouping.
4. Pivoting.
5. Transposing.
6. Changing Data Types.
7. Adding Columns and Rows.
8. Naming Columns or Rows.

Topic2. Data Visualization

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

Topic2.1. What are the 3 main goals of data visualization?

The utility of data visualization can be divided into three main goals:

1. **To explore**
2. **To monitor**
3. **To explain.**

Topic2.2. What are 4 characteristics of data visualization?

- **1. Accurate:** The visualization should accurately represent the data and its trends.
- **2. Clear:** Your visualization should be easy to understand.
- **3. Empowering:** The reader should know what action to take after viewing your visualization.
- **4. Succinct:** Your message shouldn't take long to resonate.

Topic2.3. Importance of Data Visualization

- **1. Analyzing the Data in a Better Way.** Analyzing reports helps business stakeholders focus on the areas that require attention.
- **2. Faster Decision Making.** Humans process visuals better than any tedious tabular forms or reports.

3.Making Sense of Complicated Data.

Indicative Content3. Organization of customer needs

Topic1. Categorization of data

Topic1.1. Definition

Data Categorization is **the process of dividing the world into groups of entities whose members are in some way similar to each other**.

Topic1.2. Data classification types

Data classification often involves **five common types.**

Topic1.2.1. Public data

Public data is important information, though often available material that's freely accessible for people to read, research, review and store. Here are some common examples of public data:

- First and last names
- Company names and founder or executive information
- Dates of birth or dates of incorporation
- Addresses, phone numbers and email addresses
- Job descriptions and position postings
- Press releases
- Organizational charts
- License plate numbers

Topic1.2.2. Private data

Private data differs from public data, though it doesn't have a high level of security like some other types do. Examples of private data might include:

- Personal contact information, like email addresses and phone numbers
- Research data or online browsing history
- Email inboxes or cellphone content
- Employee or student identification card numbers

Topic1.2.3. Internal data

This data often relates to a company, business or organization. Only those employees who work for the company typically have access to internal data. Some examples of internal data can include:

- Business plans and strategies
- Internal emails or memos
- Company intranet platforms
- Budget spreadsheets and revenue projections

- Email and messenger platforms
- Archived files
- Universal resource locators (URLs)

Internet protocol (IP) addresses

Topic1.2.4. Confidential data

A confidential data classification means a limited group of individuals or parties can access the sensitive information, often requiring clearance or special authorization. Confidential data access might involve aspects of identity and authorization management, for example, like regulated links to files or specialized password authentication to view content. Some examples of confidential data include:

- Social Security numbers
- State-issued identification card numbers or driver's license numbers
- Vehicle identification numbers (VINs)
- Medical and health records
- Insurance provider information

- Credit card numbers, pin numbers and expiration dates
- Cardholder account and transaction information
- Material on a credit card's magnetic strip
- Financial records
- Certification or employment license numbers
- Student or employee records
- Biometric identifiers, like fingerprints

Topic1.2.5. Restricted data

Restricted data is the most sensitive of the data classifications. It often has strict security controls to limit the amount of people with access to the data and backup systems, like data encryption, to prevent malicious users from accessing or reading the content on restricted platforms

Here are some examples of restricted data:

- Data protected by strict confidentiality agreements
- Federal tax information
- Protected health information (PHI)

Topic2. Data cleansing

Topic2.1. Definition

Data cleansing or data cleaning is the process of detecting and correcting corrupt or inaccurate records from a record set, table, or database and refers to identifying incomplete, incorrect, inaccurate or irrelevant parts of the data and then replacing, modifying, or deleting the dirty or coarse data.

There is no one right way to clean a dataset, as every set is different and presents its own unique slate of errors that need to be corrected. Many data cleaning techniques can now be automated with the help of dedicated software, but some portion of the work must be done manually to ensure the greatest accuracy.

Topic2.2. Data Cleaning vs. Data Cleansing vs. Data Scrubbing

You might sometimes hear the terms data cleansing or data scrubbing used instead of data cleaning. In most situations, these terms are all being used interchangeably and refer to the exact same thing. Data scrubbing may sometimes be used to refer to a specific aspect of data cleaning—namely, removing duplicate or bad data from datasets.

You should also know that data scrubbing can have a slightly different meaning within the specific context of data storage; in this case, it refers to an automated function that evaluates storage systems and disk drives to identify any bad sectors or blocks and to confirm the data in them can be read.

Topic2.3. What are the Steps of Data Cleaning?

Every organization's data cleaning methods will vary according to their individual needs as well as the particular constraints of the dataset. However, most data cleaning steps follow a standard framework:

- Determine the critical data values you need for your analysis.
- Collect the data you need, then sort and organize it.
- Identify duplicate or irrelevant values and remove them.
- Search for missing values and fill them in, so you have a complete dataset.
- Fix any remaining structural or repetitive errors in the dataset.

- Identify outliers and remove them, so they will not interfere with your analysis.
- Validate your dataset to ensure it is ready for data transformation and analysis.
- Once the set has been validated, perform your transformation and analysis.

Topic2.4. The benefits of effective data cleansing

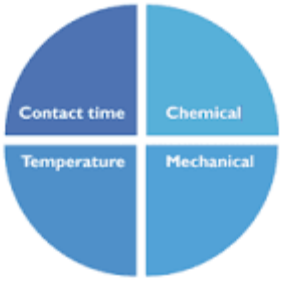
- Improved decision-making. With more accurate data, analytics applications can produce better results.
- More effective marketing and sales. Customer data is often wrong, inconsistent or out of date.
- Better operational performance.
- Increased use of data.
- Reduced data costs.

Topic2.5. Data Cleansing Techniques

1. Remove Irrelevant Values. The most basic methods of data cleaning in data mining include the removal of irrelevant values. ...

2. Avoid Typos (and similar errors) Typos are a result of human error and can be present anywhere.
3. Convert Data Types.
4. Take Care of Missing Values.
5. Uniformity of Language.

Topic2.6. Four basic components of cleaning



- **1. Contact time:**

Contact time is perhaps the most crucial part of any washing or cleaning process as it applies to all facets of cleaning.

- **2. Chemical.**

The influence of chemistry on all aspects of cleaning is very complex. It not only refers to the detergents used, but the composition of the water used makes a difference, just as much as the product that needs to be cleaned.

- **3. Temperature.**

  We are all aware of the influence temperature has on our lives and how dynamics can change dramatically with an increase or decrease in temperature. Of course the same applies to cleaning and in particular, mechanical washing.

- **4. Mechanical.**

  The mechanics of cleaning not only relate to the actual washing machine, but also to the items that have to be washed. Cleaning smokehouse trolleys requires a totally different approach to washing crystal glasses.

Topic3. Data reporting

Topic3.1. Definition

Data reporting is the process of collecting and submitting data which gives rise to accurate analyses of the facts on the ground; inaccurate data reporting can lead to vastly uninformed decision-making based on erroneous evidence.

Topic3.2. How to write a report?

- Decide on terms of reference. Many formal reports include a section that details the document's "terms of reference".
- Conduct your research.
- Write an outline.
- Write the first draft.
- Analyze data and record findings.
- Recommend a course of action.
- Edit and distribute.

Topic3.3. Parts of a report

Every report should have the following sections:

1. Title page.

The title page is **the first page of your article**, and therefore it is important to have a well-formatted title page that clearly represents your paper.

2. Table of contents.

A table of contents **shows the reader where the various sections of the report are located**.

- **3. Executive summary.**

An executive summary is a thorough overview of a research report or other type of document that synthesizes key points for its readers, saving them time and preparing them to understand the study's overall content.

- **4. Introduction.**

The introduction should: discuss the importance or significance of the research or problem to be reported. define the purpose of the report. outline the issues to be discussed (scope)

- **5. Discussion.**

The discussion section is one of the final parts of a research paper, in which an author describes, analyzes, and interprets their findings. They explain the significance of those results and tie everything back to the research question(s).

- **6. Conclusion.**

A conclusion is the final piece of writing in a research paper, essay, or article that summarizes the entire work. The

conclusion paragraph should restate your thesis, summarize the key supporting ideas you discussed throughout the work, and offer your final impression on the central idea.

- **7. Recommendations.**

A recommendation report is written to propose or recommend the options available to solve a problem or fill a need. The goal of the report is to compare options, recommend one option, and support that recommendation. While cost is always a consideration, there are other considerations as well.

- **8. References.**

To reference a report with an individual author, include the author's name and initials, the report title (italicized), the report number, the organization that published it, and the URL (if accessed online, e.g. as a PDF)

Topic3.4. Main Advantages of Report Writing

1. Report gives consolidated & updated information.

2. Report as a means of internal communication.
3. Report facilitates decision making and planning.
4. Report discloses unknown information.
5. Report gives Information to employees.
6. Report gives reliable permanent information.

LEARNING OUTCOME 2: GATHER PROJECT REQUIREMENTS

Learning hours: 20

Indicative Content1. Identification of project requirements

Topic1. Project management approach

Traditional project management is practiced universally and **includes specific techniques that are applied to the planning, estimating and control of the activities that make up a project**.

The aim of the approach is to help project managers and teams achieve their goals as required, on time and within budget.

Topic2.1. Agile

Agile is an iterative way of managing projects and developing software that makes it easier for teams to deliver value to their customers more quickly and effectively. An agile team is to deliver small but consumable increments of work rather than wagering everything on a "big bang" launch.

Topic2.1.1. Agile methodologies

It enables organization to deliver value to customers faster and with fewer complications by systematically managing projects and developing software in an iterative fashion. The approach of an agile team is to deliver work in small, but consumable, increments, rather than wagering everything on a "big bang" launch. As a result of continuously evaluating requirements, plans, and results, teams are able to respond to change in a timely manner.

Topic2.1.2. Agile is a Mindset

The values and principles of the Agile Manifesto serve as the foundation for the agile mindset.

Topic2.1.3. Agile has 5 Methodologies

1. Extreme Programming

It is a framework that enables teams to create high-quality software that helps improve their quality of life.

2. Kanban

It is a method that’s used to design, manage, and improve the flow of systems. Kanban enables organizations to visualize their flow of work and limit the amount of work in progress. It is used in situations where work arrives unpredictably, and where it needs to be deployed immediately without waiting for other work items.

3. Lean

It is a set of tools and principles that focuses on identifying and removing waste to speed up process development. Value is maximized, and waste is minimized. It is used in just about every industry that produces waste in some form.

4. Scrum

It is a framework used by teams to establish a hypothesis, test it, reflect on the experience, and make adjustments. It enables teams to incorporate practices from other frameworks depending on the requirements.

5. Crystal

It focuses on people and their interactions, rather than on tools and processes. Aimed to streamline processes and improve optimization, Crystal works on the principle that projects are unique and dynamic.

Topic2.1.4. Agile has 12 Principles

To make a process Agile, the following principles need to be satisfied.

1. Customer Satisfaction

The customer needs to be satisfied with the quick delivery of the product.

2. Welcome Change

Even late in the development process, changing needs need to be addressed.

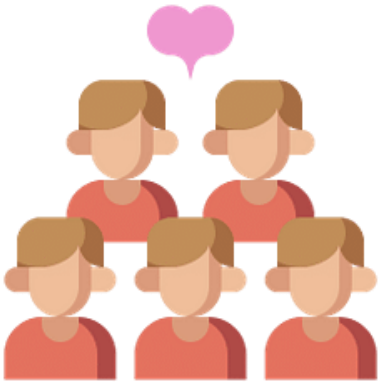
3. Deliver Frequently

Focus on a shorter timescale, and ensure products are delivered frequently.

4. Work Together

The business and development team need to work together through the course of the project.

5. Motivated Team



Team members must be motivated and trusted to complete the project successfully and on time.

6. Face-to-face

Having face-to-face interactions is one of the most effective forms of communication.

7. Working Software

Having working output is an indication of the progress made towards the final product.

8. Constant Pace

Agile promotes sustainable development.

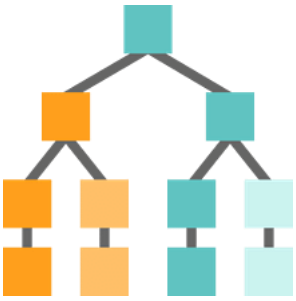
9. Good Design

Improve agility by focusing on good design and technical excellence.

10. Simplicity

The amount of time where work isn’t being done needs to be reduced.

11. Self-Organization



These types of teams provide the best designs, requirements, and architectures.

12. Reflect and Adjust

The effectiveness of the team can be improved by regularly reflecting on their work and making improvements.

Topic2.1.5. Key Agile Concepts

Here are a few essential Agile concepts:

- **1. User Stories:** The team divides the work into functional units known as "user stories" in consultation with the client or product owner. Each user story must add something valuable to the final product.
- **2. Daily Meeting:** The team meets every day at the same time to update everyone on the information necessary for coordination:

- Personas: When the project requires it, the team creates in-depth, fabricated biographies of hypothetical users of the intended product.
- **3. Team:** A small group of individuals assigned to the same project or effort, almost all of whom work full-time, is referred to as a "team" in the Agile context.
- **4. Incremental Development:** Agile teams prefer to use an incremental development strategy, which in an Agile setting means that each iteration of the product improves on the one before it by including user-visible functionality.
- **5. Iterative development:** Agile projects intentionally permit "repeating" software development activities and the potential for "revisiting" the same work products, known as iterative development.
- **6. Milestone Retrospective:** After a project has been running for a while, the team dedicates one to three days to examine the key moments.

Topic2.1.6. Advantages of Agile:

- 1. Agile enables a large amount of collaboration and interaction between the client and the project team.
- Thanks to this, clients have improved transparency, and therefore a clearer understanding of the phases of the project is present.
- 2. The product is delivered predictably, or sometimes earlier than expected.
- 3. The cost of the project is predictable and follows a rigid schedule.
- 4. Changes can refine and re-prioritize the product backlog.
- 5. Enables the client to prioritize different features, allowing the team to ensure maximum project value.
- 6. The project is broken down into smaller units, providing high-quality development, testing, and collaboration.

Topic2.1.7. Agile Disadvantages

1. Organizational cultures can conflict with agile values

2. Teams may use inconsistent practices
3. Teams may encounter resistance from organizations to change in adoption.

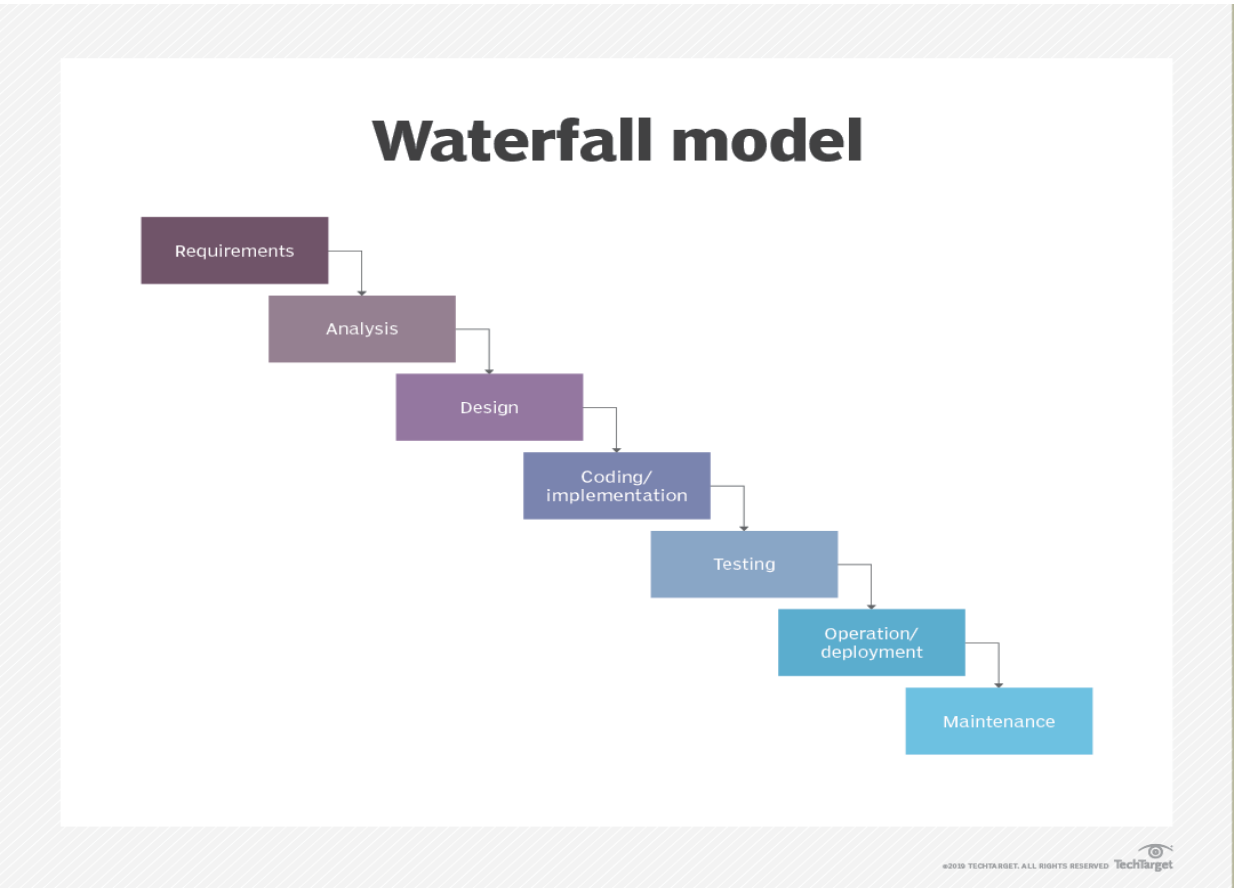
When Should You Use Agile Project Management?

Agile is a project management approach that is better suited for ongoing projects and projects where specific details are unclear from the beginning because of its core principles, which include continuous delivery, iteration, adaptability, and short time frames, among others. Therefore, an Agile approach is a good choice for a project lacking precise constraints, deadlines, or resources.

Topic1.2. Waterfall

The waterfall model is a breakdown of project activities into linear sequential phases, meaning they are passed down onto each other, where each phase depends on the deliverables of the previous one and corresponds to a specialization of tasks.

The waterfall model steps:



The waterfall model is the earlier approach used for software development. It involves teams following a step-by-step process, only proceeding after the previous steps are completed. Each phase needs to be completed before the next phase can begin.

Topic1.2.1. Let's have a look at the steps of the waterfall model.

1. **Requirements**. Potential requirements, deadlines and guidelines for the project are analyzed and placed into a formal requirements document, also called a functional specification. This stage of development defines and plans the project without mentioning specific processes.
2. **Analysis.** The system specifications are analyzed to generate product models and business logic to guide production. This is also when financial and technical resources are audited for feasibility.
3. **Design.** A design specification document is created to outline technical design requirements, such as the programming language, hardware, data sources, architecture and services.
4. **Coding and implementation.** The source code is developed using the models, logic and requirement specifications designated in the prior phases. Typically, the system is coded in smaller components, or units, before being put together.

5. **Testing.** This is when quality assurance, unit, system and beta tests identify issues that must be resolved. This may cause a forced repeat of the coding stage for debugging. If the system passes integration and testing, the waterfall continues forward.
6. **Operation and deployment.** The product or application is deemed fully functional and is deployed to a live environment.
7. **Maintenance.** Corrective, adaptive and perfective maintenance is carried out indefinitely to improve, update and enhance the product and its functionality. This could include releasing patch updates and new versions.

Topic2.2. Advantages of the waterfall model

Today, Agile methodology is often used in place of the waterfall model. However, there are **advantages** to the waterfall approach, such as the following:

1. Enables large or changing teams to move toward a common goal that's been defined in the requirements stage;

2. Forces structured, disciplined organization;
3. Simplifies understanding, following and arranging tasks;
4. Facilitates departmentalization and managerial control based on the schedule or deadlines;
5. Reinforces good coding habits to define before implementing design and then code;
6. Enables early system design and specification changes to be easily done; and
7. Clearly defines milestones and deadlines.

Topic1.2.3. The Waterfall Model's Disadvantages

Here are some of the disadvantages of the waterfall model:

1. Working software isn't created until late in the project life cycle
2. There's a large amount of risk and uncertainty
3. Not suited for complex and object-oriented projects
4. It is unsuitable for long and ongoing projects

5. Measuring the progress within stages are difficult
6. Changing requirements cannot be accommodated
7. The end-user/client isn’t focused on
8. Testing is delayed until the project is completed

Topic2. Project requirements

Topic2.1. Performance requirement

Performance requirements **define how well the software system accomplishes certain functions under specific conditions**.

At a minimum, a set of performance requirements should document the following:

he response time that is minimally acceptable the rest of the time. A longer response time can cause users to think the system is down.

- The typical throughput required and the times it will be taking place. This is not a casual consideration. For example, the requirement for one program might be that it runs twice a day: at 10:00 a.m. and 3:15 p.m. If this is a CPU-limited program that runs for 15 minutes and is planned to run on a multiuser system, some negotiation is in order.
- The size and timing of maximum-throughput periods.

❖ The mix of requests expected and how the mix varies with time.

❖ The number of users per machine and total number of users, if this is a multiuser application.

❖ Any assumptions that the user is making about the machines the workload will run on

Topic2.2. Usability requirement

Usability requirements deal with how easy it is for an operator to make use of the system.

Usability requirements cannot be directed verified, since they involve subjective behaviors that often have to be collected over time.

Usability Requirements for an interface design should support the following from the perspective of its primary users:

- **Efficiency of use**: goals are easy to accomplish quickly and with few or no user errors

- **Intuitiveness:** the interface is easy to learn and navigate; buttons, headings, and help/error messages are simple to understand
- **Low perceived workload**: the interface appears easy to use, rather than intimidating, demanding and frustrating

Components of usability

1. **Learnability**. A usable product is easy to learn.
2. **Efficiency**. An efficient product is the one that makes it easier for a user to perform his tasks quickly and effectively.
3. **Memorability**.
4. **Error Tolerance**.
5. **Satisfaction**.
6. **Make it part of design process.**

the purpose of usability

The goal of usability testing is **to understand how real users interact with your website and make changes**

based on the results. It is important to be sure that your app or website is easy to navigate and that tasks can be completed with ease; otherwise, people will leave and go to a competitor's site.

Topic2.2. 3. Recoverability requirement

Recoverability-Component Requirement: **The ability to repair or replace system components predictably, with minimum work effort, and with no loss or disruption of business functionality**. Incorporates traditional concepts of Configuration.

Topic2.2. 4. Management and Maintainability.

- Maintainability requirement

Maintainability is defined as the probability that a failed component or system will be restored or repaired to a specified condition within a specified period or time when maintenance is performed in accordance with prescribed

procedures. From: Safety and Reliability Modeling and its Applications.

5 factors that will impact maintainability of your systems, and how to get them in order.

1. Drawings.
2. Automation programming best practice.
3. Staff skills and attitude.
4. Standardization of parts and equipment.
5. Planned maintenance regime.

How is maintainability evaluated?

Maintainability is evaluated through the **following sub characteristics:**

1. **Analyzability**: Capability to detect software faults and understand its running.

2. **Modularity**: Software right structuring, allowing to perform changes without affecting other parts of the software.

How to improve maintainability

1. Train your team better. The more training you offer your staff – especially new recruits, if your team has a high turnover – the faster they will act.

2. Concentrate more information on each asset.

3. Purchase similar equipment.

4. Increase planned maintenance.

Topic2.2. 5. Accessibility requirement

Accessibility is **the practice of making information, activities, and/or environments sensible, meaningful, and usable for as many people as possible**.

Topic2.2. 5.1. Components of accessibility.

Accessibility means different things to different people but accessibility is not just a single thing. We can broadly divide it into three pillars:

1. **Emotional,**
2. **Functional**
3. **Technical**.

Each pillar must be accessible in itself but all must be considered together.

Topic2.2.5.2. Four general factors affect physical accessibility:

1. Mobility, that is, physical movement. ...
2. Mobility Substitutes, such as telecommunications and delivery services. ...
3. Transportation System Connectivity, which refers to the directness of links and the density of connections in path or road network.

4. Land Use, that is, the geographic distribution of activities and destinations.

Topic3. Project scope

In project management, scope is the defined features and functions of a product, or the scope of work needed to finish a project. Scope involves getting information required to start a project, including the features the product needs to meet its stakeholders' requirements.

Topic3. 1. Three Aspects of Scope Management

- **1. Scope Definition**. First, project teams define what is in scope. ...
- **2. Work Decomposition/WBS.** The next important aspect of project scope management is the work decomposition. ...
- **3. Scope Management.** Finally, the scope has to be actively managed. **important steps to define the scope of a project in your business:**

1. Identify project needs.

2. Figure out project goals.
3. Consider project limitations.
4. Define resources and budget.
5. Write a killing project scope statement.

Indicative Content2. Research methodology

Topic1. Description of research methodology

Research methodology simply refers to the practical "how" of any given piece of research. More specifically, it's about **how** a researcher **systematically designs a study** to ensure valid and reliable results that address the research aims and objectives.

For example, how did the researcher go about deciding:

- **What** data to collect (and what data to ignore)
- **Who** to collect it from (in research, this is called "sampling design")
- How to **collect** it (this is called "data collection methods")
- How to **analyses** it (this is called "data analysis methods")

Topic1.1. Importance of research methodology

The research methodology section of your study will indicate how valid your findings are and how well-informed your paper is. It also assists future researchers planning to use the same methodology, who want to cite your study or replicate it.

Research methodology: This is a set of systematic technique used in research.

Topic1.2. The following are the advantages of research methodology:

1. Advancement of wealth of human being
2. Provision of tools for carrying out the research
3. Develops a critical and scientific attitude, disciplined thinking to observations
4. Enrichment of the research process and provision of chance for in-depth study and understanding of the subject.

5. Helps to inculcate the ability to evaluate and use research results with reasonable confidence and in decision making

6. Inculcates the ability to learn to read and think critically.

Topic2. Types of research methodology

Topic2.1. Fundamental research

Basic research, or fundamental research, is **a type of investigation focused on improving the understanding of a particular phenomenon, study or law of nature**. This type of research examines data to find the unknown and fulfill a sense of curiosity.

Fundamental research, also known as **basic research** or **pure research** does not usually generate findings that have immediate applications in a practical level. Fundamental research is driven by curiosity and the desire to expand knowledge in specific research area. This type of research makes a specific contribution to the academic body of knowledge in the research area.

Examples of Fundamental Research

The following are examples for fundamental researches in business:

- A critical analysis of product placement as an effective marketing strategy
- An investigation into the main elements of brands and branding
- A study of factors impacting each stage of product life cycle

Topic2.1.1. Advantages of fundamental research

- Fundamental researches are important to expand the pool of knowledge in any discipline.
- Findings of fundamental studies are usually applicable in a wide range of cases and scenarios.
- Fundamental studies usually do not have strict deadlines and they are usually driven by the curiosity of the researcher.

Topic2.1.2. Disadvantages of fundamental research

At the same time, fundamental studies have disadvantages as well. Findings of this type of studies have little or no practical implications. In other words**, fundamental studies do not resolve concrete and specific business problems.**

Topic2.2. Applied research

Topic2.2.1. Definition

Applied research is a type of research in which the problem is already known to the researcher. It is used to answer specific questions. Applied research refers to scientific study and research that seeks to solve practical problems.

Topic2.2.2. Characteristics of applied research.

- Also called Professional Research.
- Problems tend to be more practical.
- Seeks to find solutions to immediate problems and issues.
- Tends to be organizationally focused.
- Findings are usually kept private.
- Results are usually used internally to make decisions and establish strategy.

Topic2.2.3. There are 3 types of applied research.

1. **Evaluation research,**
2. **Development research, and**
3. **Action research**.

Topic2.3. Exploratory research

Exploratory research is "the preliminary research to clarify the exact nature of the problem to be solved." Also, Exploratory research is **a methodology approach that explores research questions that have not previously been studied in depth**.

It is often used when the issue you're studying is new, or the data collection process is challenging in some way.

Topic2.3.1. Types of exploratory research

Exploratory research applications include

1. **Case studies,**
2. **Field observations**
3. **Focus groups, and**
4. **Interviews**.

Topic2.3.2. The Characteristics of Exploratory Research

- The beginning phase of the study.
- Trial and error approach.
- Study of an undefined phenomenon.
- Uses small samples.
- Unstructured and flexible.
- Tentative results.
- Guide for future research.
- Qualitative and unrestricted.

Topic2.3.3. Advantages of Exploratory Research

- **Increased Understanding:** The main objective of exploratory research is to improve a researcher's knowledge of a topic
- **Concept Testing:** A typical basis for performing exploratory work is to check concepts before they are put in the marketplace, usually a very costly endeavor.
- **Assistance to Researchers:** It assists market researchers to find potential causes to the signs or symptoms conveyed by decision makers.
- **Flexibility of Data Sources:** Exploratory studies use secondary sources for example published literature.
- **It can help to find out possible ways to achieve decision maker's goals:** For instance, assume a marketing manager is provided with a goal to boost product sales by 50 percent in the next couple of years.
- **Exploratory research provides answers to questions related to actually administering a big and costly research project:** One example is, researchers can

make use of exploratory study to understand words and phrases important to the individuals being researched. They can also get a feeling of how best to reach the people (e.g., email versus phone versus World wide web).

Topic2.3.4. Disadvantages of Exploratory research

Exploratory research won't be able to replace conclusive, quantitative research.

What is important to keep in mind about **exploratory research methods is that they have limitations**.

Topic2.4. Survey

In research of human subjects, **a survey** is a list of questions aimed for extracting specific data from a particular group of people. Surveys may be conducted by phone, mail, via the internet, and also at street corners or in malls.

Also

Survey research is defined as "**the collection of information from a sample of individuals through their responses to questions**" This type of research allows for a

variety of methods to recruit participants, collect data, and utilize various methods of instrumentation.

Topic2.4.1. Types of survey research

Exploratory, descriptive, and causal are the three main types used in survey research. It helps to familiarize yourself with these types before designing your survey research.

Topic2.4.2. Advantages

- Relatively easy to administer.
- Can be developed in less time (compared to other data-collection methods)
- Cost-effective, but cost depends on survey mode.
- Can be administered remotely via online, mobile devices, mail, email, kiosk, or telephone.
- Conducted remotely can reduce or prevent geographical dependence.

Topic2.4.3. Disadvantages

- Respondents may not feel encouraged to provide accurate, honest answers.
- Respondents may not feel comfortable providing answers that present themselves in an unfavorable manner.
- Respondents may not be fully aware of their reasons for any given answer because of lack of memory on the subject, or even boredom.

Topic2.5. Case studies

A case study is **a research approach that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context**.

It is an established research design that is used extensively in a wide variety of disciplines, particularly in the social sciences.

Topic2.5.1. Types of Case Studies

- **Collective case studies:** These involve studying a group of individuals.

- **Descriptive case studies:** These involve starting with a descriptive theory.
- **Explanatory case studies:** These are often used to do causal investigations.

Topic2.5.2. Objective of case study

- The general purpose of a case study is to:
- describe an individual situation (case), e.g. a person, business, organization, or institution, in detail;
- identify the key issues of the case (your assignment question should tell you what to focus on);
- analyses the case using relevant theoretical concepts from your unit.

Topic2.5.3. Characteristics of an effective case study are:

- Builds A Good Story.
- Involves Interesting Characters.
- Uses Realistic Scenarios.
- Makes Corporate Learners Think Critically.
- Applies Knowledge of the online Training Course.

- actively engages corporate learners.
- Utilizes Branching Scenarios.

Topic2.5.4. Advantages of Case Study

Ability to see a relationship between phenomena, context, and people.

- Flexibility to collect data through various means.
- Ability to capture the context and lived reality of participants.
- Flexibility to be used at various points in a research project, including pilot research

Topic2.5.5. Disadvantages of Case Study

- Difficulty generalizing findings from one case study to other settings.
- Risk of bias, as the researcher's personal opinions and preferences may influence the research.
- Difficulty convincing readers who are accustomed to clear-cut statistical answers.

Indicative Content3. Conduct research

Conducting research is **an inquiry-based process that involves identifying a question, gathering information, analyzing and evaluating evidence, drawing conclusions, and sharing the knowledge gained**. The ability to conduct research is a critical skill student need to be college and career ready.

Examples include **surveys, interviews, observations, and ethnographic research**.

Topic1. Plan

A research plan is **a framework that shows how you intend to approach your topic**.

Topic1.1. The 4 Types of Plans

- **Operational Planning**: "Operational plans are about how things need to happen," motivational leadership speaker Mack Story said at LinkedIn.
- **Strategic Planning**: "Strategic plans are all about why things need to happen," Story said. ...
- **Tactical Planning:**

- **Contingency Planning**:

Topic1.2. Select research methodology type

Factors to Consider Before Choosing the Best Research Methodology for Your Study

Nature of Your Research

Each research, irrespective of its type (qualitative, quantitative, or mixed), has a different purpose and approach that helps in solving its question.

Therefore, the key factor for deciding which research methodology to adopt depends on the nature of your research aims, objectives, and research questions.

Norms of Research Area

Appropriate selection of your research methodology also involves scrutinizing and considering the approaches used by other researchers in the discipline or studies with similar aims and objectives.

Researchers from same disciplines often follow a common methodological approach or set of approaches.

While it doesn't mean you should follow the herd, you should at least consider these approaches and evaluate their merit to your research's benefit.

Practicalities of the Methodology

While most methodological approaches will deliver the most scientifically rigorous research design theoretically, the chances of constraints faced practically cannot be overlooked.

Topic 1.3. What are the Steps to Follow While Choosing the Best Research Methodology?

Step 1: Define the goals, objectives, and research question.

Before worrying about the inferences, it is important to draw a path toward conclusive results.

Step 2: Refer pertinent research and effectively used methodology

As there are immeasurable ways of conducting research all may not be meant for your study.

Furthermore, determining the best research methodology can be difficult if you aren't aware of the approach undertaken by other researchers from your field. Therefore, reading pertinent literature in your research area and then evaluating its methodology based on the feasibility and limitations is essential.

Step 3: Structuring the plan and finding resources to conduct research

While the research area may be same, the method of data collation may not be. Some may be time consuming, some may be found on the internet, others might need field study, or might be expensive. Therefore, it is essential to base your decision after giving a thought to these limitations of data collection as well.

Step 4: Write the research methodology in detail and review it

After selecting a particular approach to conduct your research, you must make a note of all activities. It must include the approximate time and resources each step might take.

You should select a qualitative research methodology because:

- It uses an inductive and subjective approach. Furthermore, it adopts an open and flexible approach.
- Qualitative research builds theories.
- Word-based data can be collected via interviews and focus groups.
- It draws on small sample sizes and uses qualitative data analysis techniques such as content analysis, thematic analysis, etc.

You should select a quantitative research methodology because:

- It uses a deductive approach and objective approach. In addition, it adopts a closed and highly planned approach.
- Quantitative research tests theories.
- Numeric data can be collected via surveys or laboratory instrumentational experiments.
- It draws on large sample sizes and uses statistical data analysis techniques.

Topic1.4. Identify research tools.

Research tools are specific mechanisms or strategies that the researcher uses to collect, manipulate, or interpret data. Six general tools of research:

1.The library and its resources. like **books, magazines, newspapers, pamphlets, microfiche or microfilm**.

2. The computer and its software: Software is a set of instructions, data or programs used to operate computers and execute specific tasks.

3) Techniques of measurement: Measurement is the mapping of the values on a set of numbers.

In other words, measurement can be defined as "the process of mapping the aspects of an area onto some other areas as per some rules".

4) statistics: Statistics is a branch of science that deals with collection, organization and analysis of data from the sample to the whole population (is science learned from the data).

5) The human mind: The mind is often understood as a faculty that manifests itself in mental phenomena like sensation, perception, thinking, reasoning, memory, belief, desire, emotion and motivation.

6) Language: To become proficient in research, one needs to know the language. The main terms include **theory, concept, operationalize, variables, hypothesis, and**

sample. There are two types of variables: independent and dependent.

Topic2. Implement

According to the NIH(National Institutes of Health), implementation research is “the scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings in order to improve patient outcomes and benefit population health.

Indicative Content4. Analyze results

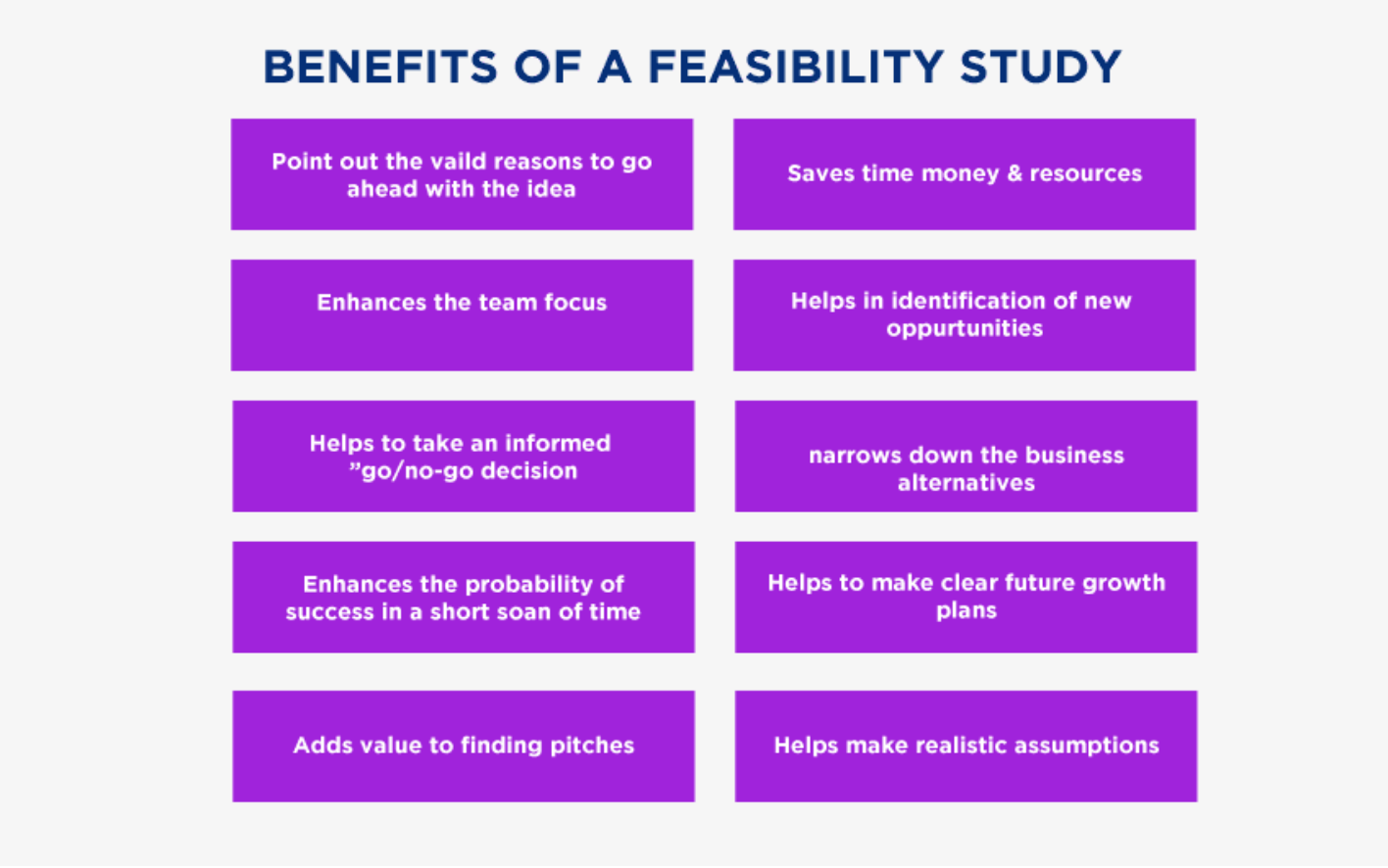
Data analysis is the most crucial part of any research. Data analysis summarizes collected data.

Topic1. Feasibility

A feasibility study is **a preliminary exploration of a proposed project or undertaking to determine its merits and viability**. A feasibility study aims to provide an

independent assessment that examines all aspects of a proposed project, including technical, economic, financial, legal, and environmental considerations.

A project feasibility study is conducted for various reasons, including determining whether a system software will be appropriate for creation, implementation, and overall contribution to the company.



Topic1.1. The five most important features include:

- Demographic research
- Competitive evaluations

- Pricing research
- Online polls
- Participant interviews

Topic1.2. Types of Feasibility Study in Project Management

*Topic1.2.1. **Technical Feasibility***

Technical Feasibility study of a project analyzes and evaluates its present resources, including equipment, programming, and necessary innovation.

*Topic1.2.2. **Operational Feasibility***

Operational Feasibility study examines how well a product will satisfy needs and how simply it will be used and maintained after implementation.

*Topic1.2.3. **Economic Feasibility***

The economic market feasibility study examines the project's expense and value.

*Topic1.2.4. **Legal Feasibility***

The project is examined from a legal standpoint in examining Legal Feasibility.

Topic1.2.5. Schedule Feasibility

A scheduling feasibility study's primary focus is the project proposal's schedules and due dates.

Topic2. Resources

Resource may be **letters, official records, interviews, survey results, or unanalyzed statistical data**. These sources contain raw data and information, such as the original work of art or immediate impressions.

Topic2.1. Examples of research resources

Theses, dissertations, scholarly journal articles (research based), some government reports, symposia and conference proceedings, original artwork, poems, photographs, speeches, letters, memos, personal narratives, diaries, interviews, autobiographies, and correspondence.

Topic2.2. Types or sources in research

Primary sources can be firsthand accounts of actual events written by an eyewitness or original literary or artistic works.

They may be letters, official records, interviews, survey results, or unanalyzed statistical data.

Secondary sources, on the other hand, are usually discussions, evaluations, syntheses, and analyses of primary and secondary source information.

The following sections will explain and provide examples of these various sources.

- Peer reviewed journal articles (papers)
- Edited academic books.
- Articles in professional journals.
- Statistical data from governmental websites.
- Website material from professional associations

Topic3. Competency

The concept of research competency was defined as **a combination of motivational, gnoseological, operational, and personal components**, developed at such a level that

allows one to successfully apply the acquired research skills and knowledge in practical tasks.

Topic4. Summarize

State the research question and explain why it is interesting. State the hypotheses tested. Briefly describe the methods (design, participants, materials, procedure, what was manipulated [independent variables], what was measured [dependent variables], how data were analyzed.

Topic4.1. How do you write summarize?

A summary begins with an introductory sentence that states the text's title, author and main point of the text as you see it. A summary is written in your own words. A summary contains only the ideas of the original text. Do not insert any of your own opinions, interpretations, deductions or comments into a summary.

Topic4.2. What is the purpose of summarize?

The purpose of summarizing is **to briefly present the key points of a theory or work in order to provide context for your argument/thesis**.

Topic4.3. Parts of a summary

Whether you are writing an essay that is completely a summary, or the summary is one small component of a different style of writing, every summary that you write should include:

a. **The name of the author**.

b. **The title of the work**.

c. **The main ideas of the work**.

To do this effectively, consider following these steps:

- Reread the original text.
- Make a list of key points.
- Note supporting evidence.
- Start with a context sentence.
- Describe the key concept of the text.
- Follow up with supporting evidence.
- Write a thesis statement.

Indicative Content5. Report findings

The Results (also sometimes called Findings) section in an empirical research paper **describes what the researcher(s) found when they analyzed their data**. Its primary purpose is to use the data collected to answer the research question(s) posed in the introduction, even if the findings challenge the hypothesis.

How do you write results and findings?

- Don't repeat results.
- Order simple to complex (building to conclusion); or may state conclusion first.
- Conclusion should be consistent with study objectives/research question. ...
- Emphasize what is new, different, or important about your results.
- Consider alternative explanations for the results.
- Limit speculation.

Topic1. Financial

Topic1.1. What is financial in research?

Research in Finance seeks to provide a collection of quality research articles that reflect the current and primary issues in financial markets.

Topic1.2. Why financial research is important?

A financial analysis will not only help you understand your company's financial condition, helping you determine its creditworthiness, profitability and ability to generate wealth, but will also provide you with a more in-depth look at how well it operates internally.

Topic1.3. Components of financial analysis

- **Revenues.** Revenues are probably your business's main source of cash.
- **Profits.** If you can't produce quality profits consistently, your business may not survive in the long run.
- Operational Efficiency.
- Capital Efficiency and Solvency.
- Liquidity.

Topic1.4. Characteristics of financial in research:

1. **Comparability,**
2. **Verifiability,**
3. **Timeliness and**
4. **Understandability**.

The characteristic of relevance implies that the information should have predictive and confirmatory value for users in making and evaluating economic decisions.

Topic2. Forecasting

Topic2.1. Definition

Forecasting is a technique that uses historical data as inputs to make informed estimates that are predictive in determining the direction of future trends.

Forecasting is a process of predicting or estimating the future based on past and present data.

These are:

1. Prepare the groundwork.
2. Create a future business.
3. Comparing actual with estimated results.
4. Refining the forecasts.

Now, explain each one:

1. **Prepare the Groundwork**

The group work preparation requires a thorough study, investigation, and analysis of the company, its products, its market share, its organizational structure, and the industry.

2. ***Create a Future Business:***

The future expectancy of the business can be reasonably computed from the past data as well as the input from the

key executives of the organization, sales personnel, and other specialists.

3. Comparing Actual with Estimated Results:

The forecast estimates over the future years provide benchmarks against which the actual growth and results can be measured and compared.

4. Refining the Forecasts:

In the light of any deviations found, the forecast can be refined to be more realistic.

Topic2.3. Importance of forecasting involves the following key points:

- Forecasting provides relevant and reliable information about the past and present events and the likely future events.
- It gives confidence to the managers for making important decisions.
- It is the basis for making planning premises, and.

- It keeps managers active and alert to face the challenges of future events and the changes in the environment.

Topic3. Produce report

A research report is an in-depth document that contains the results of a research project.

Topic3.1. What is the process of producing a report?

These steps are:

a. Preparing to write;
b. Organizing the information;
c. Writing draft copy;
d. Editing the information; and
e. Revising the text.

The importance of knowing who is the reader or the audience cannot be overemphasized.

Topic3.2. Various Types of Research Report Writing

1. **Original Research.** This is the most widespread type of journal manuscript used to put out full reports of data from research.
2. Short Reports or Letters.
3. Review Articles.
4. Case Studies.
5. Methodologies or Methods.

Topic3.3. Elements to consider in making a report

1. Briefly describe the context and background to the research.
2. Describe the change, problem or issue to be reported on.
3. Define the specific objectives and purpose of the report.
4. Indicate the overall answer to the problem explored in the report.

Learning outcome 3: DETERMINE USER REQUIREMENT

Learning hours: 30

Indicative Content 3.1. Identification of the target audience

Topic1. Description of the target audience

Topic1.1. Definition

Your target audience refers to **the specific group of consumers most likely to want your product or service**, and therefore, the group of people who should see your add campaigns. Target audience may be dictated by age, gender, income, location, interests or a myriad of other factors.

Topic1.2. Characteristics

- Be on-time and ready. Show up to the presentation refreshed and be the best representative of yourself that you can be.
- Turn the distractions(interruptions) off.
- Show your engagement by non-verbal cues.
- Take notes.
- Ask good questions.

- Make the connection.

Topic2. Target audience pain points

What Are Customer Pain Points?

Put simply, **customer pain points** are **a specific problem that customers or prospective customers of your business are experiencing in the marketplace**. They are essentially any problems that the customer may experience along their customer journey.

Topic2.1. How to identify customer pain points?

- Ask the right questions. Your top priority is to solve the major pain points received through customer feedback.
- Get your sales team talking.
- Check out online reviews.
- Closely watch your competitors.

Topic2.2. Types of customer pain points

- Financial pain points
- Productivity pain points
- Process pain points

- Support pain points

Topic2.2.1. Financial pain points

Financial pain points are pretty straightforward. Essentially, the customer is spending too much money on a particular service or product.

Some common examples of financial pain points include:

- Expensive subscription plans
- Steep membership fees
- Low-quality products that need to be replaced frequently
- Fees added on during the checkout process
- Lack of clarity about the final price
- Fees that jump drastically after a time period

Topic2.2.2. Productivity pain points

Productivity pain points are all about issues with efficiency. You may have heard these pain points referred to as ‘friction.’ Friction can exist anywhere. Whether it’s in the sales process, onboarding, or using an app interface, the end result is the same: inefficiencies and customer pain.

Anything that adds redundancy and makes buying, support, or usage less efficient will cause frustration.

There are two lenses to examine this type of customer pain point through:

- If your product is marketed as a productivity tool, but it isn't fulfilling that promise, users will experience frustration.
- There are instances where it's just plain difficult to interact with a company or buy a product. From engineering to sales, a goal should be to make it as easy as possible to buy and use what you're selling.

A good starting point is to ask if you're making the customer's life any easier.

Topic2.2.3. Process pain points

Process pain points are problems wherein you create friction for customers due to redundant or sub-par processes.

There are two frames (edges) for this:

- Your processes aren't great.

⋆ Your customers want to improve their own internal processes.

Topic2.2.4. Support pain points

Support pain points are issues where customers aren't receiving the help they need.

Topic2.2.5. Common support pain points

⋆ Can't find or access customer support.

Is your support info buried on your website?

During onboarding, were customers introduced to a dedicated support contact?

⋆ Unhelpful support agents

Are your support teams trained and empowered to be helpful or is there a never-ending chain of escalation that needs to be followed in order to get anything done?

⋆ Inconvenient communications channels

How long are your support line's hold times?

Do you know how your customers prefer to communicate with you?

Do you have support available by phone, email, or chatbots?

- Inability to self-service

Do you have up-to-date and accurate knowledge hubs?

Are the answers to frequently asked questions readily available to customers who prefer self-service support?

Indicative Content2. Creation of user story

Topic1. Description of user story

Topic1.1. Definition

A user story is an informal, general explanation of a software feature written from the perspective of the end user.

Topic1.2. What are the 3 parts of a user story?

The three elements of the standard user story template address:

- Who wants the functionality?
- What it is they want.
- Why they want it.

Topic1.3. What are the steps to write great Agile User Stories?

- Make up the list of your end users. ...
- Define what actions they may want to take.
- Find out what value this will bring to users and, eventually, to your product. ...
- Discuss acceptance criteria and an optimal implementation strategy.

Topic1.4. How do you write a good feature description?

A feature article should,

- Explore a topic or issue of current importance.
- Follows narratorial conventions (i.e. There is a plot, complication, and conclusion)
- Written in short paragraphs.
- Combine facts and opinions.
- Provide a perspective or angle about the topic or issue.
- Includes catchy features

What are the key parts of a user story?

Topic1.5. Five critical elements of a user story

1. **Story name.** You will create multiple user stories through the course of your project, so you need to be able to identify them easily when prioritizing.
2. **User role.** Identify the role of the user for whom the story is written.
3. Achievable action.
4. Desired business value.
5. Acceptance criteria.

Topic1.6. What should every user story have?

The User Story should be short and easy to read, understandable to all. All involved in the product development should take part in the User Story preparation. It is essential to understand that a User Story is a small target for a successful product. There is no need to replace all documentation with User Stories.

Topic2. Create project backlogs

Within agile project management, product backlog refers to a prioritized list of functionalities which a product should contain.

Topic2.1. Types of backlog

- **Product backlog**: Features you want to implement but have not yet prioritized for release.
- **Release backlog**: Features that need to be implemented for a particular release.

- **Sprint backlog**: User stories that need to be completed during a specific period of time.

Topic2.2. How to create a product backlog?

- Add ideas to the backlog. Stakeholders will typically be approaching you with ideas for product improvements.
- Get clarification. Once you're approached by a stakeholder with a product addition or fix, make sure you understand:
- Prioritize.
- Update the backlog regularly.

Topic2.3. Importance of a product backlog

A product backlog **represents feedback from multiple sources, like other developers, sales, business development, but most importantly, your users**. It's your job to take in that feedback, prioritize it, manage it, and work it into the future of your product.

Indicative Content 3. Elaborate task flow

Topic1. Definition

A task flow is **the portion of a task definition that shows the flow of the task**; that is, the diagram of the steps in a task. A task flow is similar to a workflow, as are their respective design tools. However, the task flow and workflow are used to perform different kinds of processes.

Topic2. Task flow analysis

A step-by-step analysis of how a user will interact with a system in order to reach a goal. This analysis is documented in a diagram that traces a user's possible paths through sequences of tasks and decision points in pursuit of their goal.

Topic3. Types of task flow

He Eisenhower Method offers four categories for tasks:

1. **Urgent/important,**
2. **Not urgent/important,**
3. **Not important/urgent, and**

4. **Not important/not urgent**.

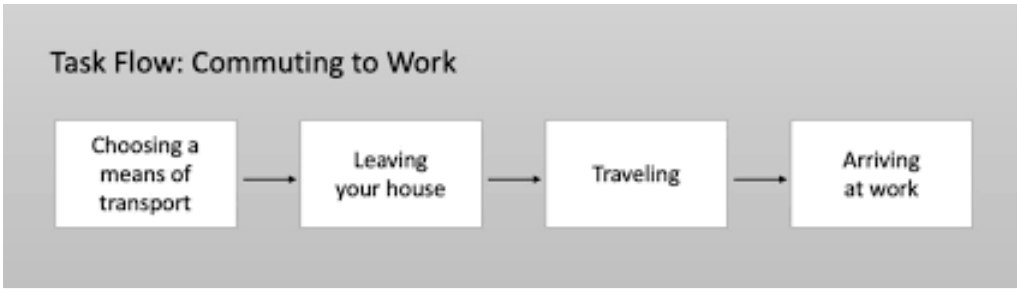
These work well because it allows you to quickly decide whether or not it is something that needs to be done now, later, or perhaps not at all.

Topic4. Importance of task flow analysis

User flows aren't just great for your design workflow. They're great for collaboration as well.

1. User flows give teammates,
2. Decision makers.
3. Stakeholders a better understanding of the user experience architecture behind your product.
4. This minimizes misunderstandings and speeds up buy-in.

Task analysis is important because it **helps your project team members understand how to complete each task step to their best abilities**. Additionally, it reduces mistakes, streamlines processes, and increases productivity.



Topic5. Create site map

A sitemap is a list of pages of a web site within a domain. There are three primary kinds of sitemap: 1. Sitemaps used during the planning of a website by its designers.

2 Human-visible listings, typically hierarchical, of the pages on a site.

3 Structured listings intended for web crawlers (is a program used by search engines to collect data from the internet) such as search engines.

Topic5.1. What is the purpose of site map?

“A site map is a diagram that shows the organization of a Web site's or application's content and functions,” answers Jim.

“It's a way to visualize the organization and labeling of content.

It gives clients and project-team members an overview of the Web site and how all the content will fit together.

Topic 5.2. What is benefit of sitemap?

A sitemap **helps you plan your site before you even start creating it**. Think of it like a building. It's a lot easier to build once you've created a structural layout. A sitemap can work in the same way, helping designers understand the number of pages on the site and how they are laid out.

Step-By-Step: How to Make a Site Map

- Lay Out Your Content Ideas. The first step to making a fully-functional site map is laying (arranging) out all the content ideas for your website.
- Identify the Categories and Subcategories for Your Site.
- Add Content and Data to the High-Level Structure.
- Refine Your Site Map.
- Share the Site Map.

Topic6. Generate task flow

Create a task flow

- Make sure that you have the System Administrator, or System Customizer security role or equivalent permissions. ...
- Open solution explorer and select Processes.
- On the Actions toolbar, select New.
- In the Create Process dialog box, complete the required fields

Topic6.1. What are the 5 steps of task analysis?

You can perform task analysis with the following five steps:

1. Identify goals. One of the first steps in task analysis is identifying the goals of the observation.
2. Divide the task down into subtasks.
3. Decide on an analysis type.
4. Analyze.
5. Share results with the team.

Integrated situation

IFU Ltd is a company located in Muhanga district which processes and provides cassava-based products, but is facing the issue of the customers who are complaining about their online absence and is in need of media that will help them to provide information in a proper way resulting into reaching the customer.

The company is looking for a web analyst to analyze the company website requirements to facilitate developers in designing a website which is going to advertise company services and expand their information to the global market.

From the above information provided you are required to:

- Reach the company to acquire detailed data about the project
- Prepare project requirement proposal needed to develop the IFU ltd website by identifying:
  - Company's services and activities
  - Website design tools

- Website design and implementation forecast
- Project financial
- Project backlogs
- Site map
- Task flow

* Present the draft of the project report with 1 to 3 pages to the manager for approval

  This task will be performed within 8hours

  All materials, tools and equipment are provided by IFU Ltd.

Resources

Tools

Web browser, Trello, Forms, flash disk

Equipment	Computer, telephone, camera, printer
Materials/ Consumables	Internet, Flip chart, marker pen, papers

Assessable outcomes	**Assessment criteria (Based on performance criteria)**	**Indicator**	**Observation**		**Ma allo**
			Yes	**No**	
Identify customer needs	a are accurately gathered	Ind.1 Questions for Interview are created			**6**

(30%)		Ind.2 Interpreted data are visualized			**4**
	a are properly organized	Ind.1 Data are categorized			**8**
		Ind.2 Data are cleansed			**4**
		Ind.3 Data are reported			**8**
Gather project requirements **(30%)**	Research is properly conducted	Ind.1 Research methodology is conducted			**8**
		Ind.2 Results are presented			**8**
	Research findings are	Ind.1 Financial is shown			**6**

	properly reported	Ind.2 Project forecast is created			**8**

Term 1: **User story:** A user story is a tool in Agile software development used to capture a description of a software feature from a user's perspective. The user story describes the type of user, what they want and why.

Format example: As a [User] I want to [Functionality] so that [Benefit/ results].

Term 2: **Project backlogs:** A project backlog is a prioritized and structured list of deliverables that are a part of the scope of a project. It is often a complete list that breaks down work that needs to be completed.

Product backlog best practices should be implemented for your project backlog. For example, you want to have a

single person own the backlog prioritization. The focus should also be to help the people managing the backlog to:

- Detail of the work (User story).
- Estimate timelines.
- Prioritize backlog items.

Term 3: **Site map:** A sitemap is a file where you provide information about the pages, videos, and other files on your site, and the relationships between them.

Term 4: **Task flow:** A task flow is a diagram that represents a user's journey through a specific task. You can think of task flows as the DNA of content experience. Instead of viewing a single piece of content in isolation, a task flow allows you to consider how one piece of content connects to the next.

Term 5: **Pain points:** Pain points are specific problems faced by current or prospective customers in the

marketplace. Pain points include any problems the customer may experience along their journey