

CHAPTER 1: MANAGE BUSINESS RESEARCH AND DEVELOPMENT

Unit of learning code: BUS/BM/CC/01/5/A

Related Unit of Competency in Occupational Standard: Manage business research and development

1.1 Introduction to the unit of learning

This unit specifies the competencies required to manage business research and development. It involves establishing research problem, developing research plan, conducting business research, analyzing business research findings and documenting business research findings.

1.2 Summary of Learning Outcomes

1. Establish research problem
2. Develop research plan
3. Conduct business research
4. Analyze business research finding
5. Document business research findings

1.2.1 LEARNING OUTCOME 1: ESTABLISH RESEARCH PROBLEM

Introduction to the learning outcome

This learning outcome specifies the content of competencies required to establish research Problem to guide on the management of business research and development.

It includes definition of terms related to research needs carried out in organizational, market demands, gathering customer feedback, establishing business research problem.

Performance Standard

1. Research needs are carried out in accordance with organizational business Performance and market demands
2. Customer feedback on organizations' products and services are gathered based on Organizational policy
3. Business research problem is established according to business needs assessment

Information Sheet

Definitions of terms

Research- According to:

Clifford Woody: Research comprises defining and redefining problems, formulating hypothesis or suggested solutions, organizing and evaluating data; making deductions and reaching conclusions and at least carefully testing the conclusions to determine whether they fit the formulated hypothesis

Crawford: Research is a systematic and refined technique of thinking employing specialized tools, instruments and procedures in order to obtain a more adequate solution of a problem than would be impossible under ordinary means.

Research problem;

A research problem is a specific issue, difficulty, contradiction, or gap in knowledge that you will aim to address in your research..

Customer feedback

Customer feedback refers to the information that comes directly from consumers about the satisfaction or dissatisfaction they experience regarding a certain product or service.

Market research

It is a systematic process for identifying marketing opportunities and solving marketing problems, using customer insights that come out of collecting and analyzing marketing information.

Marketing information system

It is a combination of people, technologies, and processes for managing marketing information, overseeing market research activities, and using customer insights to guide marketing decisions and broader management and strategy decisions

Business research

Business research is a process of obtaining a detailed study of all the business areas including the market and the customers and using that information to maximize the sales & profit of the business. Business research helps you make intelligent and informed decisions and identify the key areas to invest your money in.

Types of Business Research

Researchers use various research methods to collect relevant data so that business enterprises can make wiser decisions. There are two main types of methods to carry out business research:

1. Quantitative Business Research

It is a method of analyzing the largest group that meets your target goals. It uses mathematical techniques and data to explain the important status about your business and market. Usually, this data uses multiple-choice questionnaires that can help you analyse profitability of your sales.

Quantitative research can answer questions such as;

- Are your customers aware of the services or products you offer?
- How many people are interested in buying your products or services?
- Who are your best customers and what are their buying habits?
- How long the visitor stays on your website, and which is their exit page?

The result of quantitative business research is in the numerical form, for example:

- 40% of customers rate the new product as “attractive”
- 70% of prospective customers use the Internet to book their hotel room
- 6 out of 10 customers will buy a new food product after trying the free in-store sample

The quantitative research methods include various surveys such as postal, telephone, online, and face-to-face.

2. Qualitative Business Research

This business research focuses on attitudes, intentions, and beliefs. Qualitative research includes questions such as “Why”? or “How”?

The aim of this research is to gain insights into customers’ distinct behaviors and response to a new product. This research is beneficial for a new products and marketing initiatives to test reactions and rectify your approach

One can collect qualitative data using common methods such as case studies, focus groups, and interviews. This data is often valuable but can be time-consuming and expensive to collect, especially for a small business or a start-up.

Benefits of business research

Business research helps businesses understand their customers’ buying patterns, preferences and pin point current market trends and demographics. Using effective strategies to understand the demand and supply of the market, businesses can always stay ahead of the competitors, reduce costs and design solutions that aim at the market demand and their target audience. Other benefits include:

- Business research helps a business communicate with current and potential customers in a better way.

- It helps to identify opportunities and threats in the marketplace.
- It helps in minimize business risks.
- Business research is used to plan investments and financial outcomes effectively.
- It helps build a better market position
- It can keep a management updated current trends and innovations in the market

Business performance and market demands analysis

1. Review of business performance

After the crucial early stages of a business, it is important to regularly review progress, identify how to make the most of the market position established and decides where to take the business next. It is important to revisit and update the business plan with a new strategy in mind and make sure to introduce the developments identified.

The review is an essential process, detailing the stages to go through to assess how well a business is performing, highlighting strengths and areas that could be improved and suggesting the actions that need to be taken to implement the improvements that identified.

Assess the business efficiency

Many new businesses work in a short-term, reactive way. This offers flexibility - but can cost time and money as they move from getting the business going to concentrating on growing and developing it.

The best option is to balance the ability to respond rapidly with a clear overall strategy. This will help the business to decide whether the actions taken are appropriate or not.

Consider the various aspects of the business.

- a. Premises
- b. Facilities
- c. Information technology
- d. People and skills
- e. Professional skills
- f. Cash flow
- g. Working capital
- h. Cost base
- i. Borrowing
- j. Growth

3. Conduct a competitor analysis

It is important for a manager to have a clear idea of competitors' activities. Gathering this information may cost time, money and effort, but there are many benefits to knowing more about what competitors are doing.

It is useful to do a SWOT (strengths, weaknesses, opportunities, threats) analysis. This will show how a company is doing in relation to the market in general and in relation to competitors.

The following are ways of find out more about competitors:

- What they say about themselves
- What other people say about them

Commissioned market research

To get more detailed information, it is necessary to commission specific market research to conduct a customer and market analysis. When reviewing the business' performance, one would need to assess the customer base and market positioning as a key part of the process. Marketing plan should be updated at least as often as the business plan.

Tools used to conduct a market analysis:

1. **SWOT analysis** (strengths, weaknesses, opportunities, threats). This involves looking at the strengths and weaknesses of business' capabilities, and any opportunities and threats to the business. Once you've identified all of these, you can assess how to capitalise on your strengths, minimise the effects of your weaknesses, make the most of any opportunities and reduce the impact of any threats.

Opportunities and threats in the external environment: It's important to remember that opportunities can also be threats - for example, new markets could be dominated by competitors, undermining your position. Equally, threats can also be opportunities -for example, a competitor growing quickly and opening a new market for your product or service could mean that your market expands too. Once you have collected information on your organisation's internal strengths and weaknesses, and external opportunities and threats, enter this data into a simple table.

Table 3:

	Positive	Negative
Internal	Strengths	Weaknesses
External	Opportunities	Threats

Table 3: SWOT analysis

2. **STEEPLE analysis** - a technique for understanding the various external influences on a business – Social, Technological, Economic, Environmental, Political, Legal and Ethical.
2. **Scenario planning** - a technique that builds various plausible views of possible futures for a business.
3. **Critical success factor analysis** - a technique to identify the areas in which a business must succeed in order to achieve its objectives.
4. **The Five Forces** - the theory that there are five defined factors that influence the development of markets and businesses - potential entrants, existing competitors, buyers, suppliers and alternative products/services. Using this model you build a strategy to keep ahead of these influences.

The Importance of Marketing Research

These are the seven reasons why market research is important, especially for smaller teams and businesses:

- A. **Easily Spot Business Opportunities**
- B. **Lower Business Risks**
- C. **Create Relevant Promotional Materials**

Gathering customer feedback

What is customer feedback?

Customer feedback refers to the information that comes directly from consumers about the satisfaction or dissatisfaction they experience regarding a certain product or service. In other words, it is all the information generated by consumers and/or buyers of a certain brand. This information comes in many formats (e.g., text or speech) and through different channels.

Common sources of customer feedback are:

Surveys and questionnaires

It is defined as the measure of opinions and experiences of a group of people about a specific topic. Information is obtained by asking questions. A survey differs from a questionnaire, which is defined as a set of printed or written questions with a predetermined choice of answers, devised for the purposes of a statistical study

Emails and letters:

E-mails are another common form of customer feedback. Some consumers e-mail companies with their experiences after they have purchased or used a product or service. They use e-mails to express their gratitude or the reasons for their dissatisfaction.

Phone calls and call center data:

A call center is a centralized office that processes large volumes of telephone and electronic requests. A call center manages the incoming product support requests or information inquiries from users and something more.

Ratings and reviews

Online consumer product reviews are written by people who have used a certain product or service. They represent a very important source of customer feedback for brands sold through online retailers. Reviews contain relevant insights about brands, products, and services and reviews have the power to potentiate sales.

Customer feedback can be classified into two different macro-categories:

1. Questions and Answers:

It includes surveys and interviews. Some needs to ask some previously structured questions to consumers willing to participate. The outcome is a structured set of data and information that is easy to understand (e.g., charts, diagrams, curves) and usually includes key quantitative indicators. The results can also be written in a storytelling format with qualitative interpretations of the data. Sometimes, these two types of results are combined. The main drawback of using these methodologies is the potential bias that can result from the interaction between the organization (who asks questions) and the respondents (who gives answers).

2. Voluntarily generated:

Include e-mails, call centre data and online consumer product reviews. Usually, the information is not homogeneously structured. So, the main drawback of using this type of customer feedback lies within the complexity of the analysis. However, if approached correctly, invaluable unbiased insights can be obtained.

Benefits of customer feedback

1. Optimize products and services

Consumer input is commonly used throughout the product development process to make sure that the end product will solve a problem or fulfil a need. Listening to customers is the only way to know if you are offering something that they actually want to buy.

Listening to the voice of customers can help increase brand loyalty and even convert mere users into brand advocates.

2. Measure consumer satisfaction

Monitoring this indicator helps one to find out how a product is performing in terms of the consumers' expectations. Customer feedback provides important information about their satisfaction. A simple way to measure it is to look at the star-ratings of a product that accompany reviews posted on e-trailers. Usually, if a product has more stars, it means that it has performed most favourably and vice versa.

Some brands use their own interpretation of the star-ratings. E.g, products with a rating of 1-3.5 stars are considered as unsatisfactory, products with 3.5-4.5 stars as neutral and products with 4.5-5 stars as satisfactory.

This specific measurement is a quantitative one and is not enough to explain why consumers actually like the products or not. To deep dive into the reasons behind a certain score, it is important to analyse the full reviews.

3. Insights for a better customer experience

Optimizing the consumer experience should be the main motivation to gather customer feedback. Offering the best possible experience helps gain more opportunities for up-and cross-selling. Furthermore, consumers that are satisfied with their experiences are more likely to recommend brand to their friends.

In order to offer the best possible experience for consumers, one must understand what they want and how they feel. If a company can offer a better experience than the competitors, consumers are more likely to remain loyal to the brand. Moreover, customer feedback can help in understanding and better mapping the consumer journey for a product or brand and subsequently identify the areas of opportunity.

4. Help improve customer retention

Analyzing customer feedback regularly can help to ensure a continuous awareness of performance. Unsatisfied consumers who find better offers from competitors may stop doing business with you. Listening to unhappy consumers helps to design strategies to correct current mishaps and even prevent potential faux pas that can result in customers churning

5. Run consumer data-driven decisions

The best business decisions are based on data. But what if you end up with inaccurate data? Customer feedback is the holy grail of data that helps to understand how customers really feel about a product, service or brand.

Consider making customer feedback your guide to better business and marketing decisions. Consumers will have the best suggestions for your products. I really recommend you to listen to them

Business research problem

A *statement of the problem* is used in research work as a claim that outlines the problem addressed by a study. The statement of the problem briefly addresses the question: What is the problem that the research will address? An effective problem statement is concise and concrete.

Key characteristics of a statement of the problem

1. It should address a gap in knowledge.
2. It should be significant enough to contribute to the existing body of research
3. It should lead to further research
4. The problem should render itself to investigation through collection of data
5. It should be of interest to the researcher and suit his/her skills, time, and resources
6. The approach towards solving the problem should be ethical

How to write a problem statement

After you have identified a research problem for your project, the next step is to write a problem statement. An effective problem statement is concise and concrete. It should:

- Put the problem in **context** (what do we already know?)
- Describe the **precise issue** that the research will address (what do we need to know?)
- Show the **relevance** of the problem (why do we need to know it?)
- Set the **objectives** of the research (what will you do to find out?)

The problem statement will look different depending on whether one is dealing with a practical real-world problem or a theoretical scientific issue. But all problem statements follow a similar process.

Step 1: Contextualize the problem

The problem statement should frame your research problem in its particular context and give some background on what is already known about it.

Practical research problems

For practical research, focus on the concrete details of the situation:

- Where and when does the problem arise?
- Who does the problem affect?
- What attempts have been made to solve the problem?

Example

Voter turnout in region X has been decreasing steadily over the past ten years, in contrast to other areas of the country. According to surveys conducted by organization Y, turnout is lowest among under-25s and people on low incomes. There have been some effective attempts at engaging these groups in other regions, and in the last two elections parties A and B increased their campaigning efforts in region X, but these interventions have yet to have any significant effect on turnout.

Theoretical research problems

For theoretical research, think about the scientific, social, geographical and/or historical background:

- What is already known about the problem?
- Is the problem limited to a certain time period or geographical area?
- How has the problem been defined and debated in the scholarly literature?

Example

In the past ten years, the “gig economy” has become an increasingly important segment of the labour market. Under-30s are more likely to engage in freelance, contracted or zero-hour work arrangements instead of traditional full-time jobs. Research on the reasons for and consequences of this shift has focused on objective measures of income, working hours and employment conditions, but there has been little work exploring young people’s subjective experiences of the gig economy.

Step 2: Show why it matters

The problem statement should also address the relevance of the research: why is it important that the problem is solved?

This doesn’t mean you have to do something ground-breaking or world-changing. It’s more important that the problem is researchable, feasible, and clearly addresses a relevant issue in your field.

Step 3: Set your aims and objectives

Finally, the problem statement should frame how you intend to address the problem. Your goal should not be to find a conclusive solution, but to seek out the reasons behind the problem and propose more effective approaches to tackling or understanding it.

The aim is the overall purpose of your research. It is generally written in the infinitive form:

- The aim of this study is to **determine**...
- This project aims to **explore**...
- I aim to **investigate**...

The objectives are the concrete steps you will take to achieve the aim:

- Qualitative methods will be used to **identify**...
- I will use surveys to **collect**...
- Using statistical analysis, the research will **measure**...

Sample statement of a problem

An established trend in the small business start-up financing in Kenya is to establish funds. Some of these funds include the youth fund and women fund. These funds have helped improve the rate of start-ups in the country. However, after the start-up stage, the ventures start developing problems. First, they face problems in management which lead to a marketing problem and eventually to stagnation and early exit.

A study by the Institute of Development Studies (RoK, 2004) revealed that only 38% of the businesses are expanding while 58% have not added workers. According to the survey, more enterprises are likely to close in their first three years of operation. Four years later the same institute conducted another study in Central Kenya. This study revealed that 57% of small businesses are in stagnation with only 33% of them showing some level of growth.

In our current project, we propose to examine factors that have an impact on small business sustainability. We will employ both qualitative and quantitative approaches to gather both primary and secondary data and information with the objective of determining success factors for the growth of small business in Kenya.

Specifically, we shall employ the product life cycle (PLC) model to identify the needs of a small business at the various stages of the PLC.

How to Write a Problem Statement for Business

Writing a problem statement helps a business identify issues that may be preventing it from reaching its goals. A problem statement includes statistics and other information that provides additional insight into the problem. Before you begin writing, it's important to conduct thorough research on various factors that may be contributing to or exacerbating the problem.

Explain the Problem

The first section of the problem statement begins with a summary of the problem. The summary should be concise and ideally not more than five sentences long. Avoid jargon and industry buzzwords. Clearly state the problem without extraneous details. One might begin the problem statement by explaining that one is unable to expand a database because of memory and storage limitations.

Steps in developing a statement problem

Step 1: Identify a broad problem area

As you discuss and read about your topic, look for under-explored aspects and areas of concern, conflict or controversy. Your goal is to find a gap that your research project can fill.

Practical research problems

When doing practical research, one can identify a problem by reading reports, following up on previous research, and talking to people who work in the relevant field or organization.

It is important to look for:

- Issues with performance or efficiency in an organization
- Processes that could be improved in an institution
- Areas of concern among practitioners in a field
- Difficulties faced by specific groups of people in society

If a research is connected to a job or internship, one will need to find a research problem that has practical relevance for the organization.

Examples of practical research problems:

Step 2: Provide Facts to Describe the Problem

Voter turnout in region X has been decreasing, in contrast to the rest of the country.

Department of Company B has a high staff turnover rate, affecting productivity and team cohesion.

Non-profit organization Y faces a funding gap that means some of its programs will have to be cut.

Briefly mention facts that describe the problem. Depending on the problem, a program statement might include references to internal or external reports, staffing reports, statistics, customer demographics, national trends and information on company resources if they contribute to the problem.

Avoid bogging down the statement with too many facts and figures. Include only key statistics that illustrate the severity of the problem. If you are unsure which facts to include, choose three facts that best support your argument.

Step 3: Suggest a Solution

State your proposed solution to the problem. This section should be no longer than one or two sentences. You might mention that you will solve the memory problem by increasing your computer system's memory and upgrading your database. Mention how long you estimate it will take to solve the problem if applicable.

Don't provide exhaustive detail about the solution in the problem statement. Complete details on the various stages of the solution can be included when you write a project plan.

Step 4: Consider the organization's Needs

Carefully research the problem before you begin writing the problem statement. Don't rely on what you think you know about the problem. Review reports and talk to staff members to ensure that you truly understand the scope of the problem. Consider the needs and experience of your audience when you write the statement. Consider what your reader already knows about the topic and what you need to explain to ensure that the reader understands the significance of the problem when you write the statement

Learning Activities

Learning outcome	Learning activities	Special instructions
Establish a research problem	Trainees to go and find out from ,maybe CU CLUB,YSCS,CLUB or any other club with their institute the challenges they go through when	<ul style="list-style-type: none">To come the a Statement of a problem which is specific measureable achievable

	going about their operations.	realistic and time bound <ul style="list-style-type: none"> • It should also be researchable
--	-------------------------------	--

Practical activity

A class is divided into two groups 1 and 2

Group 1 activity

Uchumi case study

Introduction

Uchumi Supermarkets Ltd (Uchumi Supermarkets Limited) is a Kenya-based company engaged in the retail supermarkets operation. The company was founded in 1975 as a public limited liability company by three Kenyan parastatal companies: Industrial Commercial & Development Corporation (ICDC), Kenya Wine Agencies Limited (KWAL) and Kenya National Trading Corporation (KNTC). The main objective at the time was to create outlets for the equitable distribution of commodities and create retail outlets for Kenyan manufactures. In 1972, uchumi's shareholders signed a management contract with standard SPA, an Italian supermarket chain, to train Kenyans to run the new enterprise. The shares of the company stock were listed on the Nairobi Stock Exchange (NSC) in- all Government owned parastatals entered into a management contract with Standa SPA of Italy. Standa, a leading supermarket group with a presence in Europe and vast retail experience was given the task to manage and train Kenyan personnel who would eventually take over the running of the organization. In the 1990's Uchumi spearheaded the hypermarket concept in Kenya CRISIS In early 2000s Uchumi started to experience financial and operational difficulties occasioned by a sub-optimal expansion strategy coupled with weak internal control systems.. As a result, on31st May 2006, the Board of Directors resolved that the Company ceases operations and on 2ndJune 2006, the Debenture Holders placed the Company under receivership

1. Write you **Read and examine the case thoroughly**
 - Take notes, highlight relevant facts, underline key problems.
2. **Focus your analysis**
 - Identify two to five key problems
 - Why do they exist?
 - How do they impact the organization?
 - Who is responsible for them?
3. Write a statement of the problem relevant to the case above which is researchable

Group 2 activity

Strategic responses by Tuskys supermarket to changing competitive environment

Annceta Gacheri

Published 2010

Business

Today's organizations engaging in businesses have to contend with the dynamics of a changing competitive environment. Competition is one of the environmental influences to a business. It exerts pressure on firms to be proactive and to formulate successful strategies that facilitate proactive response to perceived and actual changes in the competitive environment. Strategic decisions are ones that are aimed at differentiating an organization from its competitors in a way that is sustainable in the future. In a given business environment an appropriate and competent strategic capability is a key basis for such an effective strategic response (Ansoff, 1979 and Hambrick, 1982). The research is a case study on Tuskys Supermarket, a retail chain in the Kenyan market. The ever-changing market presents continuing challenges to retailers. First and foremost, retailers must recognize the strong implications of a buyers' market (Lewison, 1994). Customers are being offered a wide choice of shopping experiences, but no one operation can capture them. Therefore, it is incumbent upon management to define their target market and direct their / energies toward solving that specific market's problems. The aim of this study was to establish the strategic responses that Tuskys Supermarket had adopted in the face of the current competitive environment and the success of the strategies adopted by the supermarket due to the competitive environment. The study was carried out through a case study design of Tuskys Supermarket where primary data was collected using an interview guide. Personal interviews were done with Tuskys Supermarket Operation's Manager and Nairobi Branch Managers using an interview guide. Content analysis technique was used to analyze the data. The study found out that there were several environmental factors that affect the operations of the business but the most significant factor was competition. The firm had reacted to competition and to the environmental changes in general using strategic responses that had been very successful. The study recommends managers to be on the lookout for any possible factors that would have an implication on the operation of the company and respond appropriately. So far the strategic responses had been successful but more needs to be done to ensure that Tuskys supermarket becomes the market leader in the Kenya's retail industry by having a sustainable long term competitive advantage.

1. Write you **Read and examine the case thoroughly**
 - Take notes, highlight relevant facts, underline key problems.
2. **Focus your analysis**
 - Identify two to five key problems
 - Why do they exist?
 - How do they impact the organization?
 - Who is responsible for them?

3. Write a statement of the problem relevant to the case above which is researchable

Self-Assessment

You are provided with the following questions for self -assessment, attempt them and check your responses

1. Briefly define a business research
2. Highlight the characteristics of good statement of the business problem
3. Explain types of business research
4. What are the benefits of a business which regularly undertakes the research on its activities
5. Why would it be necessary for a business to review its financial performance regularly?
6. When reviewing your business performance what are the key areas one should concentrate on?
7. Explain the models used in business strategic analysis
8. Highlight common sources on business customer feedback
9. What are the benefits of undertaking a market research of a business entity?
10. Explain the steps to be followed in the formulation of business statement of the problem in research.

Tools, Equipment, Supplies and Materials

List of Recommended Resources

Tools and equipment

- Calculator
- Computer
- Stationeries
- Camera
- Internet
- Tablets

Materials

- Questionnaires
- Mark pens

Other Reference materials

- Books from business authors
- Company operating procedures
- Industry/workplace codes of practice
- Customer requirements

References

1. Business Link UK (now GOV.UK/Business) Review your business performance, © Crown Copyright 2009
2. Nyaga C.N. (2009). Non-financial constraints hindering growth of SMEs in Kenya: The case of plastic manufacturing companies in industrial area in Nairobi county. (A masters research thesis, University of Nairobi).
3. Nyagah C.N. (2013). Non-financial constraints hindering growth of SME'S in Kenya: the case of plastic manufacturing companies in industrial area in Nairobi County (Doctoral dissertation).
4. John W.Creswell,(2010) Research Design,Third edition RoK, (2008). Economic Survey. Nairobi, Kenya. Government Printer.
5. Proquest, "First We Built, Now We Buy: A Sociological Case Study for Enterprise Systems in Higher Education," pp 292–203, <https://books.google.com/books?id=rgIAaigKQBIC&p>
6. Vincent P. Barabba, Surviving Transformation: Lessons from GM's Surprising Turnaround, pp 46–50, <https://books.google.com/books?id=VvbDYad7cLoC&pg>
7. "The Role of Brand in the Nonprofit Sector: Four Case Studies," pp 1–7, <http://www.ksghauser.harvard.edu/nonprofit-brand-conference/materials/assets/Case%20Studies%20-%20Dec%208%20Nonprofit%20Brand%20Conference.pdf> ↵
http://www.mckinsey.com/insights/operations/the_path_to_successful_new_product

Responses to Self-Assessment Questions

Q1. Briefly define a business research

Research comprises defining and redefining problems, formulating hypothesis or suggested solutions, organizing and evaluating data; making deductions and reaching conclusions and at least carefully testing the conclusions to determine whether they fit the formulated hypothesis.

Q2.Highlight the characteristics of good statement of the business problem

It should address a gap in knowledge.

1. It should be significant enough to contribute to the existing body of research
2. It should lead to further research
3. The problem should render itself to investigation through collection of data
4. It should be of interest to the researcher and suit his/her skills, time, and resources
5. The approach towards solving the problem should be ethical

Q3. Explain types of business research

Quantitative Business Research

It is a method of analyzing the largest group that meets your target goals. It uses mathematical techniques and data to explain the important stats about your business and market

Qualitative Business Research

This business research focuses on attitudes, intentions, and beliefs. Qualitative research includes questions such as “Why”? or “How?”

Q4. What are the benefits of a business which regularly undertakes the research on its activities?

- Business Research helps you communicate with current and potential customers in a better way.
- It helps you identify opportunities and threats in the marketplace.
- It helps you minimize risks.
- Business research is used to plan investments and financial outcomes effectively.
- It helps you build a better market position.

Q5. When reviewing your business performance what are the key areas one should concentrate on?

-Reviewing your progress will be particularly useful if you feel:

Uncertain about how well the business is performing

-Assess your core activities

A good starting point for your review is to evaluate what you actually do - your core activities, the products that you make, or services that you provide

-Assess your business efficiency

Many new businesses work in a short-term, reactive way. This offers flexibility - but can cost time and money as you move from getting the business going to concentrating on growing and developing it.

-Review your financial position

Businesses often fail because of poor financial management or a lack of planning. Often the business plan that was used to help raise finance is put on a shelf to gather dust.

-Conduct a competitor analysis

Now that you have been running your business for a while, you will probably have a clearer idea of your competitors.

-Conduct a customer and market analysis

When you started your business, you probably devised a marketing plan as part of your overall business plan

Q6. Explain the models used in business strategic analysis

-The **SWOT analysis** (strengths, weaknesses, opportunities, threats) is one of the most popular. This involves looking at the strengths and weaknesses of your business' capabilities, and any opportunities and threats to your business.

-**STEEPLE analysis** - a technique for understanding the various external influences on a business – Social, Technological, Economic, Environmental, Political, Legal and Ethical

-Scenario planning - a technique that builds various plausible views of possible futures for a business.

-Critical success factor analysis - a technique to identify the areas in which a business must succeed in order to achieve its objectives.

-The Five Forces - the theory that there are five defined factors that influence the development of markets and businesses - potential entrants, existing competitors, buyers, suppliers and alternative products/services. Using this model you build a strategy to keep ahead of these influences.

Q7. Highlight common sources on business customer feedback

- Surveys and questionnaires
 - Emails and letters
 - Phone calls and call centre data:
 - Ratings and reviews
- Online Consumer Product Reviews are written by people who have used a certain product or service

Q8. What are the benefits of undertaking a market research of a business entity?

- Business Research helps you communicate with current and potential customers in a better way.
 - It helps you identify opportunities and threats in the marketplace.
 - It helps you minimize risks.
 - Business research is used to plan investments and financial outcomes effectively.
 - It helps you build a better market position.
- It can keep you updated with current trends and innovations in the market

Q9. Explain the steps to be followed in the formulation of statement of the problem in business research.

- Put the problem in **context** (what do we already know?)

- Describe the **precise issue** that the research will address (what do we need to know?)
- Show the **relevance** of the problem (why do we need to know it?)
- Set the **objectives** of the research (what will you do to find out?)

easytvvet.com

1.2.2 LEARNING OUTCOME 2: DEVELOP RESEARCH PLAN

Introduction to learning outcome

This learning outcome specifies the content of competencies required to develop research plan to guide on the management of business research and development. It includes definition of terms, identification of research geographical area and target population, research cost, man power requirement, data research methods to be used, research tools, instruments and equipment based on the research requirement, the development of research hypothesis and development of a research schedule.

Performance Standard

1. Approximate research cost is determined according to the research problem and Organizational budget
2. Research geographical area and target population is identified based on established research Problem
3. Required man power is established based on the research problem
4. Data research methods are identified and developed according to research a
5. Research tools, materials and equipment are identified based on research requirements
6. Research hypothesis is developed.
7. Business research schedule is developed in accordance to research activities

Information sheet

Definition of terms

Needs assessment

It is a discrepancy between an existing set of conditions and a desired set of conditions. The results of need assessment study provides the foundations for developing new programs and for making changes in existing ones

Formative evaluation

It helps to collect a data about a program while it is still being developed

Summative evaluation

It is done after the program has been fully developed. It is conducted to evaluate how worthwhile the final program has been compared to similar programs.

Hypotheses

It is an idea or explanation for something that is based on known facts but has not yet been proved. They are intelligent guesses about possible solutions or explanations to the problem. . They are based on the research objectives.

Research design

The plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. It is the over-all operational pattern or framework of the project that stipulates what information is to be collected from which source by what procedures.

Research methods

Research methods are the strategies, processes or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic.

Research budget

The budget is a line item (tabular) representation of the expenses associated with the proposal project. The budget justification contains more in depth detail of the costs behind the line items, and sometimes explains the use of the funds where no evidence is available.

Data Collection

Data collection is a methodical process of gathering and analysing specific information to offer solutions to relevant questions and evaluate the results. It focuses on finding out all there is to a particular subject matter.

Sample Frame

The sample frame is the group of individuals that can be selected from the target population given the sampling process used in the study.

Sampling

Sampling can be defined as the process through which individuals or sampling units are selected from the sample frame.

Target population

The target population for a survey is the entire set of units for which the survey data are to be used to make inferences. Thus, the target population defines those units for which the findings of the survey are meant to generalize. Establishing study objectives is the first step in designing a survey. Defining the target population should be the second step.

Target populations must be specifically defined, as the definition determines whether sampled cases are eligible or ineligible for the survey. The geographic and temporal characteristics of the target population need to be delineated, as well as types of units being included. In some instances, the target population is restricted to exclude population members that are difficult or impossible to interview.

Why is the target population important? With a working knowledge of what the target population is and how you should be “particular” in creating a clear and precise definition, we can discuss why this target audience is not the same as the sampled population. It is actually more akin to what the sample would resemble if we had an infinite measure of time and access to unlimited resources.

The target population is important for three primary reasons:

1. Sets clear direction on the scope and objective of the research and data types
2. Defines the characteristic variables of the individuals who qualify for the study
3. Provides the scope of the total population or universe for determining sample size.

Sampling

- Sampling is the process of selecting a representative group from the population under study.
- The target population is the total group of individuals from which the sample might be drawn.
- A sample is the group of people who take part in the investigation. The people who take part are referred to as “participants”.
- Generalizability refers to the extent to which we can apply the findings of our research to the target population we are interested in.

The Purpose of Sampling

In psychological research we are interested in learning about large groups of people who all have something in common. We call the group that we are interested in studying our 'target population'.

In some types of research the target population might be as broad as all humans, but in other types of research the target population might be a smaller group such as teenagers, pre-school children or people who misuse drugs.

It is more or less impossible to study every single person in a target population so psychologists select a sample or sub-group of the population that is likely to be representative of the target population we are interested in.

This is important because we want to generalize from the sample to target population. The more representative the sample, the more confident the researcher can be that the results can be generalized to the target population.

One of the problems that can occur when selecting a sample from a target population is sampling bias. Sampling bias refers to situations where the sample does not reflect the characteristics of the target population.

There are various sampling methods:

The one chosen will depend on a number of factors (such as time, money etc.).

Probability sampling

It is based on the fact that every member of a population has a known and equal chance of being selected.

Methods of probability sampling

Random Sampling

Random sampling is a type of probability sampling where everyone in the entire target population has an equal chance of being selected.

This is similar to the national lottery. If the “population” is everyone who has bought a lottery ticket, then each person has an equal chance of winning the lottery (assuming they all have one ticket each).

Random samples require a way of naming or numbering the target population and then using some type of raffle method to choose those to make up the sample. Random samples are the best method of selecting your sample from the population of interest.

- The advantages are that your sample should represent the target population and eliminate sampling bias.
- The disadvantage is that it is very difficult to achieve (i.e. time, effort and money).

Stratified Sampling

The researcher identifies the different types of people that make up the target population and works out the proportions needed for the sample to be representative.

A list is made of each variable (e.g. IQ, gender etc.) which might have an effect on the research. For example, if we are interested in the money spent on books by undergraduates, then the main subject studied may be an important variable.

For example, students studying English Literature may spend more money on books than engineering students so if we use a very large percentage of English students or engineering students then our results will not be accurate.

We have to work out the relative percentage of each group at a university e.g. Engineering 10%, Social Sciences 15%, English 20%, Sciences 25%, Languages 10%, Law 5%, Medicine 15% The sample must then contain all these groups in the same proportion as in the target population (university students).

- The disadvantage of stratified sampling is that gathering such a sample would be extremely time consuming and difficult to do. This method is rarely used in Psychology.
- However, the advantage is that the sample should be highly representative of the target population and therefore we can generalize from the results obtained.

Opportunity Sampling

Uses people from target population available at the time and willing to take part. It is based on convenience.

An opportunity sample is obtained by asking members of the population of interest if they would take part in your research. An example would be selecting a sample of students from those coming out of the library.

- This is a quick way and easy of choosing participants (advantage)
- It may not provide a representative sample, and could be biased (disadvantage)

Systematic Sampling

It involves choosing subjects in a systematic (i.e. orderly / logical) way from the target population, like every nth participant on a list of names.

To take a systematic sample, you list all the members of the population, and then decided upon a sample you would like. By dividing the number of people in the population by the number of people you want in your sample, you get a number we will call n.

If you take every nth name, you will get a systematic sample of the correct size. If, for example, you wanted to sample 150 children from a school of 1,500, you would take every 10th name.

- The advantage of this method is that it should provide a representative sample.
- The disadvantage is that it is very difficult to achieve (i.e. time, effort and money).

Cluster sampling: in this type of probabilistic sampling, groups such as health facilities, schools, etc., are sampled. In the above-mentioned study, the selection of households is an example of cluster sampling.¹¹

Complex or multi-stage sampling: This probabilistic sampling method combines different strategies in the selection of the sample units

Non-Probability Sample

Non-probability sampling

Those who participate in a research study are selected not by random, but due to some factor that gives them the chance of participating in a study that others in the population do not have.

Types of non-probability sample include:

Convenience Sample:

As its name implies, this method uses people who are convenient to access to complete a study. This could include friends, people walking down a street, or those

enrolled in a university course. Convenience sampling is quick and easy, but will not yield results that can be applied to a broader population.

Snowball Sample

A snowball sample works by recruiting some sample members who in turn recruit people they know to join a sample. This method works well for reaching very specific populations who are likely to know others who meet the selection criteria.

Quota Sample

In quota sampling, a population is divided into subgroups by characteristics such as age or location and targets are set for the number of respondents needed from each subgroup. The main difference between quota sampling and stratified random sampling is that a random sampling technique is not used in quota sampling; For example, a researcher could conduct a convenience sample with specific quotas to ensure an equal number of males and females are included, but this technique would still not give every member of the population a chance of being selected and thus would not be a probability sample.

Purposive or Judgmental Sample

Using a purposive or judgmental sampling technique, the sample selection is left up to the researcher and their knowledge of who will fit the study criteria. For example, a purposive sample may include only PhD candidates in a specific subject matter. When studying specific characteristics this selection method may be used, however as the researcher can influence those who are selected to take place in the study, bias may be introduced

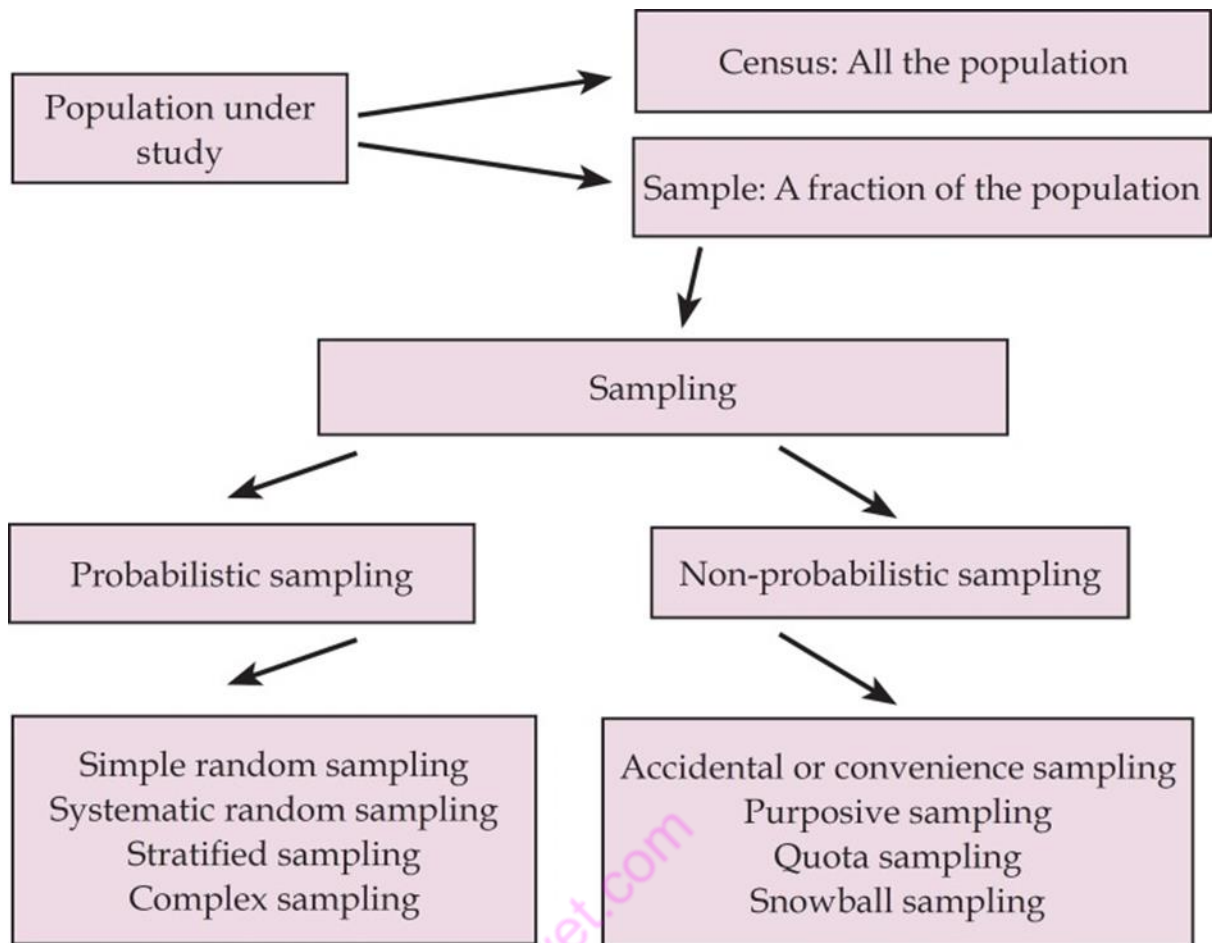


Figure 1 sampling techniques

How many participants should be used?

This depends on several factors; the size of the target population is important. If the target population is very large then you need a fairly large sample in order to be representative.

If the target population is much smaller, then the sample can be smaller but still be representative. There must be enough participants to make the sample representative of the target population.

Lastly, the sample must not be so large that the study takes too long or is too expensive!

Research Budget and other cost

The budget is a line item (tabular) representation of the expenses associated with the proposal project. The budget justification contains more in depth detail of the costs behind the line items, and sometimes explains the use of the funds were not evident. Examples include the need for consultants, or the unavailability within the University of an Item of equipment proposed for purchase. Foreign travel should be specifically detailed and justified, and not combined with domestic travel. The need to travel to professional meetings should be tied to the proposed project, if possible.

Cost estimates need to be as accurate to cover the expenses propose in the project. Reviewers will note both over- and under-estimations.

The budget should be developed by the departmental research administrator, in consultation with the appropriate project representative as per organization requirement needs. Sponsors customarily specify how budgets should be presented and what costs are allowable.

Typical divisions of the line item (tabular) budget are personnel, equipment, supplies, services, travel, and indirect costs (IDC). Other categories can be added as needed. The budget should make clear how the totals for each category of expenses are reached. Salary information, for example, often needs to be specified in detail: Make clear if salary totals involve two different rates (e.g., because of an anticipated increase in salary during the budget period).

General Checklist for Proposal Budget Items Directly Tied to the research Project:

A. Salaries and Wages

1. Academic personnel
2. Research assistants
3. Stipends (training grants only)
4. Consultants
5. Interviewers
6. Computer programmer
7. Data managers or analysts
8. Administrators
10. Editorial assistants
11. Technicians
12. Study/clinical coordinators
13. Hourly personnel
14. Staff benefits
15. Salary increases in proposals that extend into a new year, e.g., Cost of Living increases

16. Vacation accrual and/or use

B. Equipment

1. Fixed equipment
2. Movable equipment
3. Office equipment
4. Equipment installation

C. Materials and Supplies

1. Office supplies specifically for project
2. Communications
3. Test materials or samples
4. Questionnaire forms
5. Data access
6. Animals
7. Animal care
8. Laboratory supplies
9. Glassware
10. Chemicals
11. Electronic supplies
12. Report materials and supplies

D. Travel

1. Professional conferences

2. Field work
3. Sponsor meetings
4. Travel for consultation
5. Consultants' travel
6. Mileage for research participants

Data research design and methods

Research design is a plan to answer the research question. A research method is a strategy used to implement that plan. Research design and methods are different but closely related; because good research design ensures that the data obtained will help answer the research question more effectively.

Choosing a research method

It depends on the research goal. It depends on what subjects (and who) one wants to study. For example studying what makes people happy, or why some students are more conscious about recycling on campus. To answer these questions, one needs to make a decision about how to collect the data. Frequently used methods of data collection include:

- Observation / Participant Observation
- Surveys
- Interviews
- Focus Groups
- Experiments
- Secondary Data Analysis / Archival Study
- Mixed Methods (combination of some of the above)

One particular method could be better suited to your research goal than others, because the data you collect from different methods will be different in quality and quantity. For instance, surveys are usually designed to produce relatively short answers, rather than the extensive responses expected in qualitative interviews.

Factors to be considered when choosing one research method over another

First, decide how you will **collect data**. The methods depend on what type of data you need to answer your research question:

- **Qualitative vs. quantitative:** Will your data take the form of words or numbers?

- **Primary vs. secondary:** Will you collect original data yourself, or will you use data that has already been collected by someone else?
- **Descriptive vs. experimental:** Will you take measurements of something as it is, or will you perform an experiment?

Methods of data analysis

	Pros	Cons
Qualitative	<ul style="list-style-type: none"> • Flexible – you can often adjust your methods as you go to develop new knowledge. • Can be conducted with small samples. 	<ul style="list-style-type: none"> • Can't be analyzed statistically or generalized to broader populations. • Difficult to standardize research.
Quantitative	<ul style="list-style-type: none"> • Can be used to systematically describe large collections of things. • Generates reproducible knowledge. 	<ul style="list-style-type: none"> • Requires statistical training to analyze data. • Requires larger <u>samples</u>.

Table 4: types of data

Mixed methods approach, can also be used if it incorporates both qualitative and quantitative research methods.

Primary vs. secondary data

Primary data is any original information that you collect for the purposes of answering your research question (e.g. through surveys, observations and experiments). Secondary data is information that has already been collected by other researchers (e.g. in a government census or previous scientific studies).

If you are exploring a novel research question, you'll probably need to collect primary data. But if you want to synthesize existing knowledge, analyze historical trends, or identify patterns on a large scale, secondary data might be a better choice.

	Pros	Cons
Primary	<ul style="list-style-type: none"> • Can be collected to answer your specific research question. • You have control over the sampling and measurement methods. 	<ul style="list-style-type: none"> • More expensive and time-consuming to collect. • Requires training in data collection methods.
Secondary	<ul style="list-style-type: none"> • Easier and faster to access. • You can collect data that spans longer timescales and broader geographical locations. 	<ul style="list-style-type: none"> • No control over how data was generated. • Requires extra processing to make sure it works for your analysis.

Table 4: types of data

Descriptive vs. experimental data

In descriptive research, you collect data about your study subject without intervening. The validity of your research will depend on your sampling method.

In experimental research, you systematically intervene in a process and measure the outcome. The validity of your research will depend on your experimental design.

To conduct an experiment, you need to be able to vary your independent variable, precisely measure your dependent variable, and control for confounding variables. If it's practically and ethically possible, this method is the best choice for answering questions about cause and effect.

	Pros	Cons
Descriptive	<ul style="list-style-type: none"> • Allows you to describe your research subject without influencing it. 	<ul style="list-style-type: none"> • No control over confounding variables. • Can't establish cause and effect relationships.

	Pros	Cons
	<ul style="list-style-type: none"> • Accessible – you can gather more data on a larger scale. 	
Experimental	<ul style="list-style-type: none"> • More control over confounding variables. • Can establish cause and effect relationships. 	<ul style="list-style-type: none"> • You might influence your research subject in unexpected ways. • Usually requires more expertise and resources to collect data.

Table 4: types of data

Examples of data collection methods

Research methods for collecting data			
Research method	Primary or secondary?	Qualitative or quantitative?	When to use
Experiment	Primary	Quantitative	To test cause-and-effect relationships.
Survey	Primary	Quantitative	To understand general characteristics of a population.
Interview/focus group	Primary	Qualitative	To gain more in-depth understanding of a topic.
Observation	Primary	Either	To understand how something occurs in its natural setting.
Literature review	Secondary	Either	To situate your research in an existing body of work, or to evaluate trends within a research topic.

Research methods for collecting data			
Research method	Primary or secondary?	Qualitative or quantitative?	When to use
Case study	Either	Either	To gain an in-depth understanding of a specific group or context, or when you don't have the resources for a large study.

Table 5: data collection methods

Examples of data analysis methods

Research methods for analysing data		
Research method	Qualitative or quantitative?	When to use
Statistical analysis	Quantitative	To analyses data collected in a statistically valid manner (e.g. from experiments, surveys, and observations).
Meta-analysis	Quantitative	To statistically analyze the results of a large collection of studies. Can only be applied to studies that collected data in a statistically valid manner.
Thematic analysis	Qualitative	To analyze data collected from interviews, focus groups or textual sources. To understand general themes in the data and how they are communicated.
Content analysis	Either	To analyze large volumes of textual or visual data collected from surveys, literature reviews, or other sources.

Research methods for analysing data		
Research method	Qualitative or quantitative?	When to use
		Can be quantitative (i.e. frequencies of words) or qualitative (i.e. meanings of words).

Table 6 data analysis methods

Qualitative Research Method

The qualitative research methods of data collection does not involve the collection of data that involves numbers or a need to be deduced through a mathematical calculation, rather it is based on the non-quantifiable elements like the feeling or emotion of the researcher. An example of such a method is an open-ended questionnaire.

easyvet.com



Figure 2 research methods

Quantitative Method

Quantitative methods are presented in numbers and require a mathematical calculation to deduce. An example would be the use of a questionnaire with close-ended questions to arrive at figures to be calculated mathematically. Also, methods of correlation and regression, mean, mode and median.



Figure 3 data collection tools

Secondary Data Collection

Secondary data collection, on the other hand, is referred to as the gathering of second-hand data collected by an individual who is not the original user. It is the process of collecting data that already exists, be it already published books, journals and/or online portals. In terms of ease, it is much less expensive and easier to collect.

Your choice between Primary data collection and secondary data collection depend on the nature, scope and area of your research as well as its aims and objectives.

Reasons for data collection

There are a bunch of underlying reasons for collecting data, especially for a researcher:

- **Integrity of The Research:** A key reason for collecting data, quantitative or qualitative methods is to ensure that the integrity of the research question is indeed maintained.
- **Reduce the likelihood of errors:** The correct use of appropriate data collection methods reduces the likelihood of errors consistent with the results.
- **Decision Making:** To minimize the risk of errors in decision making, it is important that accurate data is collected so that the researcher doesn't make uninformed decisions.
- **Save Cost and Time:** Data collection saves the researcher time and funds that would otherwise be misspent without a deeper understanding of the topic or subject matter.
- **To support a need for a new idea, change and/or innovation:** To prove the need for a change in the norm or the introduction of new information that will be widely accepted, it is important to collect data as evidence to support these claims.

Data Collection Tools

The following are the top data collection tools for Academic, Opinion-based or product research.

Interview guide

An interview is a face-to-face conversation between two individuals with the sole purpose of collecting relevant information to satisfy a research purpose. Interviews are of different types namely; Structured, Semi-structured and unstructured with each having a slight variation from the other.

- **Structured Interviews** - Simply put, it is a verbally administered questionnaire. In terms of depth, it is surface level and is usually completed within a short period. For speed and efficiency, it is highly recommendable, but it lacks depth.
- **Semi-structured Interviews** - In this method, there exists several key questions which cover the scope of the areas to be explored. It allows a little more leeway for the researcher to explore the subject matter.
- **Unstructured Interviews** - It is an in-depth interview that allows the researcher to collect a wide range of information with a purpose. An advantage of this method is the freedom it gives a researcher to combine structure with flexibility even though it is more time-consuming.

Pros

- In-depth information
- Freedom of flexibility
- Accurate data.

Cons

- Time-consuming
- Expensive to collect.

What are the best Data Collection Tools for Interviews?

For collecting data through interviews, here are a few tools you can use to easily collect data:

Audio Recorder

An audio recorder is used for recording sound on disc, tape, or film. Audio information can meet the needs of a wide range of people, as well as provide alternatives to print data collection tools.

Digital Camera

An advantage of a digital camera is that it can be used for transmitting those images to a monitor screen when the need arises.

Camcorder

A camcorder is used for collecting data through interviews. It provides a combination of both an audio recorder and a video camera. The data provided is qualitative in nature and allows the respondents to answer questions asked exhaustively. If you need to collect sensitive information during an interview, a camcorder might not work for you as you would need to maintain your subject's privacy.

Questionnaires

This is the process of collecting data through an instrument consisting of a series of questions and prompts to receive a response from individuals it is administered to. Questionnaires are designed to collect data from a group.

For clarity, it is important to note that a questionnaire isn't a survey; rather it forms a part of it. A survey is a process of data gathering involving a variety of data collection methods, including a questionnaire.

On a questionnaire, there are three kinds of questions used. They are; fixed-alternative, scale, and open-ended. With each of the questions tailored to the nature and scope of the research.

Pros

- Can be administered in large numbers and is cost-effective.
- It can be used to compare and contrast previous research to measure change.

- Easy to visualize and analyze.
- Questionnaires offer actionable data.
- Respondent identity is protected.
- Questionnaires can cover all areas of a topic.
- Relatively inexpensive.

Cons

- Answers may be dishonest or the respondents lose interest midway.
- Questionnaires can't produce qualitative data.
- Questions might be left unanswered.
- Respondents may have a hidden agenda.
- Not all questions can be analyzed easily.

Data collection tools refer to the devices/instruments used to collect data,

The objective behind data collection is to capture quality evidence that allows analysis to lead to the formulation of convincing and credible answers to the questions that have been posed

Research hypothesis

Hypothesis: an idea or explanation for something that is based on known facts but has not yet been proved. It's a statement that provides an explanation for why or how something works, based on facts (or some reasonable assumptions), but that has not yet been specifically tested. For example, a hypothesis might look something like this:

A consumer's likelihood to trust a financial advisor is influenced by their perception of the competence and skill of the financial advisor.

In this example, we're making a statement about the relationship between **perceptions of competence** and **likelihood to trust**. The link between the two seems plausible and logical, but it is not proven (at least not in a scientifically rigorous way in every possible context). So, this qualifies as a hypothesis (loosely speaking). In the world of research, however, **a hypothesis needs a few more criteria** to constitute a true research hypothesis or scientific hypothesis. Let's take a look at these criteria.

Research hypothesis

A research hypothesis (also called a scientific hypothesis) is a statement about the expected outcome of a scientific study (for example, a dissertation or thesis). For a hypothesis to be a genuine research hypothesis, this statement needs to have three attributes – **specificity, testability and falsifiability**;

1. Hypothesis Essential : Specificity & Clarity

A good **research hypothesis needs to be very clear** about what's being assessed (who and what is involved) and very specific about the expected outcome.

For example:

Hypothesis 1: A customer's perception of a financial advisor's expertise has a positive relationship with their trust in said advisor. The hypothesis is very specific in that it identifies the variables involved (expertise and trust), the parties involved (a customer and an advisor), as well as the expected relationship type (positive correlation). There's no ambiguity or uncertainty about whom or what is involved in the statement and the expected outcome is clear.

2. Hypothesis Essential: Testability (Provability)

A **hypothesis must be testable** to qualify as a scientific hypothesis. If it's not testable, it's not a hypothesis. It means one must be able to collect observable data in a scientifically rigorous fashion to assess whether it supports the hypothesis or not.

For example, considering the previous hypothesis, we could test this hypothesis by undertaking a study to assess whether people's perceptions of an advisor's competence correlate with their likelihood to trust that advisor. Generally, one would use quantitative research methods, covering a large sample (a group of people) to test such a hypothesis.

Contrast that to the following statement:

Hypothesis 2: There are invisible, undetectable and unobservable forces all around us that influence our likelihood to trust a financial advisor.

In this case, the statement cannot be tested (because the forces are unobservable) and therefore, it's not a sound hypothesis.

3. Hypothesis Essential: Falsifiability (Dis-provability)

A scientific hypothesis needs to be testable (can be proven true), but that's not enough. To be a useful **hypothesis, it also needs to be falsifiable** (disprovable). There needs to be some identifiable way to test whether a hypothesis is false. If there's no way to assess whether a claim is false, it's not a hypothesis.

For example:

Hypothesis 3: Life exists on planets other than Earth.

Is this testable (provable)? Yes, you could send a space probe out that might find life on other planets. But is it falsifiable (disprovable)? Well, no.

If you were to send that same space probe out and it found no evidence or life on other planets that would not disprove the hypothesis. To disprove the hypothesis, you'd need to visit every single planet in the universe (or observe every planet in a detailed way), which is simply not possible (at least right now!). Therefore, the statement is not disprovable and therefore, it's not a hypothesis.

Collection Methods & Hypothesis Testing

Hypothesis testing is an act in statistics whereby an analyst tests an assumption regarding a population parameter. The methodology employed by the analyst depends on the nature of the data used and the reason for the analysis.

Hypothesis testing is used to assess the plausibility of a hypothesis by using sample data. Such data may come from a larger population, or from a data-generating process.

Four Steps of Hypothesis Testing:

1. The first step is for the analyst to state the two hypotheses so that only one can be right.
2. The next step is to formulate an analysis plan, which outlines how the data will be evaluated.
3. The third step is to carry out the plan and physically analyze the sample data.
4. The fourth and final step is to analyze the results and either reject the null hypothesis, or state that the null hypothesis is plausible, given the data.

Null and Alternative Hypotheses: Describe hypothesis testing in general and in practice The actual test begins by considering two hypotheses. They are called the null hypothesis and the alternative hypothesis. These hypotheses contain opposing viewpoints.

- **H_0 : The null hypothesis:** It is a statement about the population that either is believed to be true or is used to put forth an argument unless it can be shown to be incorrect beyond a reasonable doubt.
- **H_a : The alternative hypothesis:** It is a claim about the population that is contradictory to H_0 and what we conclude when we reject H_0 .

Since the null and alternative hypotheses are contradictory, evidence must be examined to decide if there is enough evidence to reject the null hypothesis or not. The evidence is in the form of sample data.

After you have determined which hypothesis the sample supports, you make a decision. There are two options for a **decision**. They are “reject H_0 ” if the sample information favours the alternative hypothesis or “do not reject H_0 ” or “decline to reject H_0 ” if the sample information is insufficient to reject the null hypothesis.

Table 3: Mathematical Symbols Used in H_0 and H_a :

H_0	H_a
equal (=)	not equal (\neq) or greater than ($>$) or less than ($<$)
greater than or equal to (\geq)	less than ($<$)
less than or equal to (\leq)	more than ($>$)

Table 7: Types of Errors in Hypothesis Testing

Hypothesis tests use sample data to make inferences about the properties of a population. Tremendous benefits are gained by working with random samples because it is usually impossible to measure the entire population.

However, there are trade-offs when you use samples. The samples we use are typically a minuscule percentage of the entire population. Consequently, they occasionally misrepresent the population severely enough to cause hypothesis tests to make errors.

Potential Outcomes in Hypothesis Testing

Hypothesis testing is a procedure in inferential statistics that assesses two mutually exclusive theories about the properties of a population. For a generic hypothesis test, the two hypotheses are as follows:

- **Null hypothesis:** There is no effect
- **Alternative hypothesis:** There is an effect.

The sample data must provide sufficient evidence to reject the null hypothesis and conclude that the effect exists in the population. Ideally, a hypothesis test fails to reject the null hypothesis when the effect is not present in the population, and it rejects the null hypothesis when the effect exists.

Statisticians define two types of errors in hypothesis testing. These errors are called Type I and Type II errors. Both types of error relate to incorrect conclusions about the null hypothesis.

	Test Rejects Null	Test Fails to Reject Null
Null is True	Type I Error False Positive	Correct decision No effect

Null is False	Correct decision	Type II error
	Effect exists	False negative

Table 8: Summary of four possible outcomes for a hypothesis test

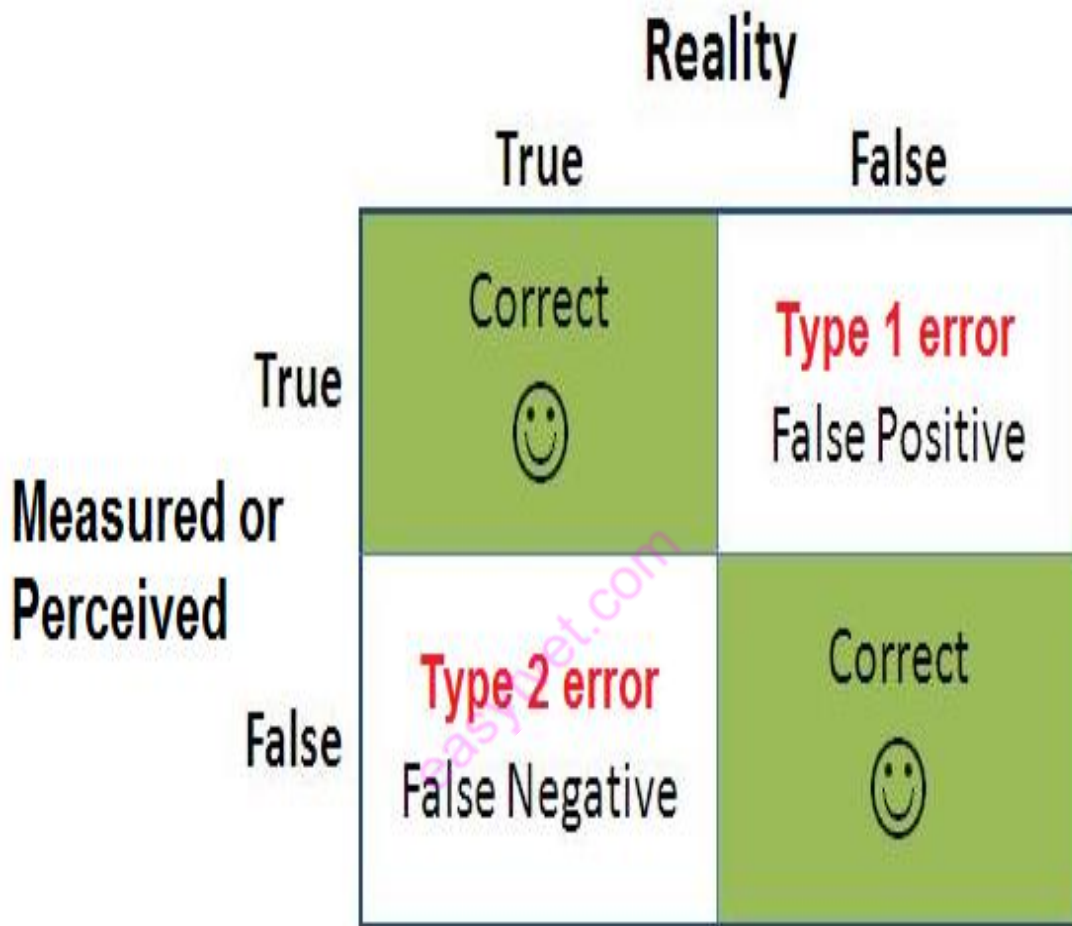


Figure 4: **Type 1 and type 2 errors.**

Consequences of a type 1 Error

Type 1 errors can happen due to bad luck (the 5% chance has played against you) or because of not respecting the test duration and sample size initially set for an experiment.

Consequently, a type 1 error will bring in a false positive. This means that one will wrongfully assume that a hypothesis testing has worked even though it hasn't.

In real life situations, this could potentially mean losing possible sales due to a faulty assumption caused by the test.

Understanding type 2 errors

Type 2 errors are referred to as “false negatives”.

In more statistically accurate terms, type 2 errors happen when the null hypothesis is false and you subsequently fail to reject it.

There are 3 parameters that can affect the power of a test:

Your sample size (n)

The significance level of your test (α)

The “true” value of your tested parameter (read more here)

Consequences of a type 2 error

Similarly to type 1 error, type 2 errors can lead to false assumptions and poor decision making that can result in lost sales or decreased profits.

Moreover, getting a false negative (without realizing it) can discredit conversion optimization efforts even though one could have proven a hypothesis. This can be a discouraging turn of events that could happen to all CRO experts and digital marketers.

A real-life example of a type 2 error

Let's say that you run an e-commerce store that sells high-end, complicated hardware for tech-savvy customers. In an attempt to increase conversions, you have the idea to implement an FAQ below your product page.

“Should we add an FAQ at the bottom of the product page”? Source: Digital Storm
You launch an A/B test to see if the variation (B) could outperform your control version (A).

After a week, **you do not notice any difference** in conversions: both versions seem to convert at the same rate and you start questioning your assumption. Three days later, you stop the test and keep your product page as it is.

At this point, you assume that adding an FAQ to your store didn't have any effect on conversions.

Two weeks later, you hear that a competitor has implemented an FAQ at the same time and observed tangible gains in conversions. You decide to re-run the test for a month in order to get more statistically relevant results based on an increased level of confidence (say 95%).

After a month – surprise – **you discover positive gains in conversions for the variation (B)**. Adding an FAQ at the bottom of your product page has indeed brought your company more sales than the control version.

The test encountered a type 2 error.

Research schedule

Timelines required by the research sponsor or organization to complete a given research project

Creating a research schedule

Take inventory of your time during the scheduled project and then records your personal schedule to help you determine time available for research. Consider your many school, work, and personal responsibilities, as well as any “starts and stops” in your schedule that may hinder your progress on a research project. Do you have to work a certain shift at your job? Are you responsible for taking care of others? Do you have other major class assignments that will demand special attention?

You may choose to record these on a calendar or day planner, program them into your phone, or write them on a whiteboard. Whatever method you use, create a schedule that lists the steps you will need to complete and be certain to check this list often throughout the project to help you meet the final deadline.

Making a preliminary plan

once you have narrowed your topic and have a research question, you should make a preliminary plan for your research project. Your project will go more smoothly if you make a plan for using your time wisely.

Begin by thinking about what you already know about your topic, exploring both what you think about it and your reasons and beliefs. Consider also possible sources and causes for these beliefs and reasons. After you have a sense of what you already know about your topic, determine what it is that you need to learn about it. What kinds of sources will you need to answer your questions?

To plan your project, spend time thinking about your choices for research and what kinds of sources you will need. First, consider the requirements of your assignment. What kinds of sources are indicated in the assignment? Does the assignment require a certain number of sources? Will you need to work with primary sources?

Next, consider the requirements of your discipline. What kinds of sources are considered appropriate? How current do they need to be?

Last, consider practical issues of access and availability. How will you locate appropriate sources?

Use It

As soon as you receive a research assignment, set up a schedule to organize your research time around the various steps and responsibilities. Using a current assignment, create a written schedule following the steps in the sample schedule above. Add other instructor requirements and research steps that may be required within your discipline, as necessary. And keep in mind that some parts of the process will overlap.

Sample research schedule

Steps in a research project	Finish by
Analyse requirements of the assignment.	_____
Plan a research strategy	_____
Select and narrow a topic.	_____
Create a system for organizing sources or a research log.	_____
Develop a research question.	_____
Locate, download/copy, and evaluate sources.	_____
Collect or create appropriate visuals.	_____
Read and take notes.	_____
Draft a working thesis.	_____
Write an outline, purpose statement, and/or a proposal.	_____
Create a working bibliography.	_____
Write a first draft.	_____
Get feedback from the instructor, or the writing center.	_____
Do additional research as necessary.	_____

Revise the draft.	_____
Compile a bibliography or list of sources.	_____
Edit and format the revised draft.	_____
Proofread the final draft	_____
Final project due	_____

Table 9: sample research schedule

Use a calendar to map out the schedule for your research project and keep track of deadlines. Note that some of the steps above may run longer than expected or overlap. In other cases, steps may have to be repeated. Keep the bigger picture of your schedule in mind to allow enough time to draft and revise.

Learn It

Staying organized is essential to a successful research project. The steps in a research project are time consuming, so use your organizational skills and create a realistic plan to manage your time efficiently.

Learning Activities

Learning outcome	Learning activity	Special instructions
Develop a research plan	Trainees in group of 4 to prepare a research plan for the institute catering department	<ul style="list-style-type: none"> • Indicate clear target population • Approximate cost • Research man power • Research method to be used and the tools

	Develop the research schedule fo the same	The schedule should be achievable .
--	--	--

Practical activities

1. Trainers to demonstrate how the two types of errors in hypothesis testing are committed in classroom setup.by playing A Judge and an accused person
2. In group 3 trainers they prepare a research budget for research on sale improvement post covid-19 period.
3. In group of 3 trainers to come with statement of the problem concerning the decline in sales of an organization post covid-19 error

Self-Assessment

1. write brief explanation on types of sampling methods
2. Draw table to illustrate the type 1 and type 2 error in hypothesis testing
3. what is the differences between qualitative statistics and quantitative statistics
4. why is target population important in business research
5. highlight the research tools appropriate in collection of primary data

Tools, Equipment, Supplies and Materials

List of Recommended Resources

Tools and equipment

- Calculator
- Computer
- Stationeries
- Camera
- Internet
- Tablets

Materials

- Questionnaires
- Mark pens

Other Reference materials

- Books from business authors

- Company operating procedures
- Industry/workplace codes of practice
- Customer requirements

References

1. Business Link UK (now GOV.UK/Business) Review your business performance, © Crown Copyright 2009
2. Nyaga C.N. (2009). Non-financial constraints hindering growth of SMEs in Kenya: The case of plastic manufacturing companies in industrial area in Nairobi county. (A masters research thesis, University of Nairobi).
3. Nyagah C.N. (2013). Non-financial constraints hindering growth of SME'S in Kenya: the case of plastic manufacturing companies in industrial area in Nairobi County (Doctoral dissertation).
4. John W.Creswell,(2010) Research Design,Third edition RoK, (2008). Economic Survey. Nairobi, Kenya. Government Printer.
5. Proquest, "First We Built, Now We Buy: A Sociological Case Study for Enterprise Systems in Higher Education," pp 292–203, <https://books.google.com/books?id=rgIAaigKQBIC&p>
6. Vincent P. Barabba, Surviving Transformation: Lessons from GM's Surprising Turnaround, pp 46–50, <https://books.google.com/books?id=VvbDYad7cLoC&pg>
7. "The Role of Brand in the Nonprofit Sector: Four Case Studies," pp 1–7, <http://www.ksghauser.harvard.edu/nonprofit-brand-conference/materials/assets/Case%20Studies%20-%20Dec%208%20Nonprofit%20Brand%20Conference.pdf> ↵
http://www.mckinsey.com/insights/operations/the_path_to_successful_new_product

Learning Outcome 2: Responses to Self-Assessment Questions

1. Why isn't important to check the reliability and validity of research instruments before use in research.

Reliability and validity are concepts used to evaluate the quality of research. They indicate how well a method, technique or test measures something. Reliability is about the consistency of a measure, and validity is about the accuracy of a measure.

It's important to consider reliability and validity when you are creating your research design, planning your methods, and writing up your results, especially in quantitative research.

Reliability vs validity		
	Reliability	Validity
What does it tell you?	The extent to which the results can be reproduced when the research is repeated under the same conditions.	The extent to which the results really measure what they are supposed to measure.
How is it assessed?	By checking the consistency of results across time, across different observers, and across parts of the test itself.	By checking how well the results correspond to established theories and other measures of the same concept.
How do they relate?	A reliable measurement is not always valid: the results might be reproducible, but they're not necessarily correct.	A valid measurement is generally reliable: if a test produces accurate results, they should be reproducible.

Table 10: reliability vs validity

1. Explain types of validity in business research

The validity of a measurement can be estimated based on three main types of evidence. Each type can be evaluated through expert judgement or statistical methods.

Type of validity	What does it assess?
<u>Construct</u>	The adherence of a measure to existing theory and knowledge of the concept being measured.
<u>Content</u>	The extent to which the measurement covers all aspects of the concept being measured.

Type of validity	What does it assess?
<u>Criterion</u>	The extent to which the result of a measure corresponds to other valid measures of the same concept.

Table 11: types of reliability

4. Highlight the different types of reliability

Test-Retest Reliability

When researchers measure a construct that they assume to be consistent across time, then the scores they obtain should also be consistent across time

Internal Consistency

A second kind of reliability is internal consistency, which is the consistency of people's responses across the items on a multiple-item measure. In general, all the items on such measures are supposed to reflect the same underlying construct, so people's scores on those items should be correlated with each other

Interpreter Reliability

Many behavioral measures involve significant judgment on the part of an observer or a rater. Inter-rater reliability is the extent to which different observers are consistent in their judgments.

5. What are benefits of doing Reconnaissance before undertaking a business research?

Reconnaissance sampling is a critical component of program design that involves sampling a few sites before the initiation of the full sampling program. Reconnaissance sampling is used to confirm that the methods selected for sampling will work in the field,

Reconnaissance sampling also provides an opportunity to test alternative methods, evaluate protocols, and uncover and correct problems in the sample design, collection methods, or response endpoint

easytvvet.com

1.2.3 LEARNING OUTCOME 3: CONDUCT BUSINESS RESEARCH

Introduction to learning outcome

This learning outcome specifies the content of competencies required to conduct business research to guide on the management of business research and development. It includes definition of terms, assembling of research tools, conducting reconnaissance, collection of the data and adherence to research schedule.

Performance Standard

1. Business research tools, materials and equipment identified are assembled according to research plan
2. Reconnaissance is conducted according to research plan
3. Business research data and information is collected according to the research schedule
4. Adherence to the research schedule is observed as per the research plan, Business research tools, materials and equipment identified are assembled according to research plan

Information Sheet

Definition of terms

Pre-testing of research tools

All study instruments (quantitative and qualitative) should be pre-tested to check the validity and reliability of data collection tools.

Reconnaissance -is preliminary research or a preliminary survey

Reconnaissance sampling

Reconnaissance sampling is a critical component of program design that involves sampling a few sites before the initiation of the full sampling program. It is used to confirm that the methods selected for sampling will work in the field. It also provides an opportunity to test alternative methods, evaluate protocols, and uncover and correct problems in the sample design, collection methods, or response endpoint

Research Reliability

Reliability refers to whether or not you get the same answer by using an instrument to measure something more than once. It is the degree to which research method produces stable and consistent results.

A specific measure is considered to be reliable if its application on the same object of measurement number of times produces the same results.

Types or reliability testing

1. Test-retest reliability relates to the measure of reliability that has been obtained by conducting the same test more than one time over period of time with the participation of the same sample group.

Example: Employees of ABC Company may be asked to complete the same questionnaire about employee job satisfaction two times with an interval of one week, so that test results can be compared to assess stability of scores.

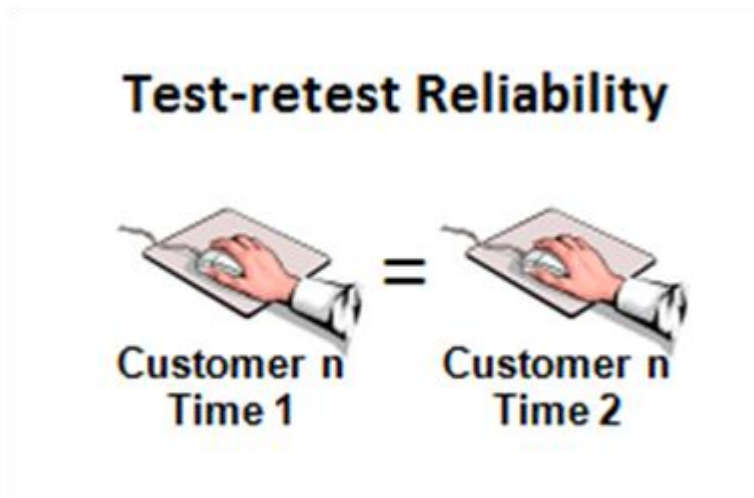


Figure 5: test-retest reliability

2. Parallel forms reliability relates to a measure that is obtained by conducting assessment of the same phenomena with the participation of the same sample group via more than one assessment method.

Example: The levels of employee satisfaction of ABC Company may be assessed with questionnaires, in-depth interviews and focus groups and results can be compared.

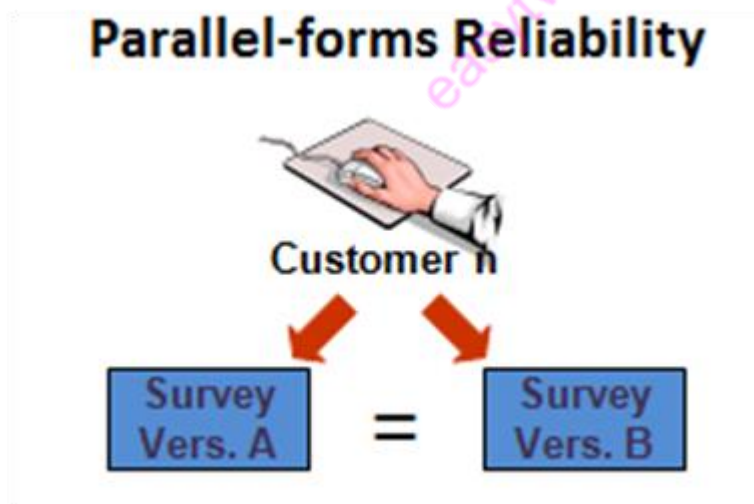


Figure 6: parallel-forms reliability

3. Inter-rater reliability as the name indicates relates to the measure of sets of results obtained by different assessors using same methods. Benefits and importance of assessing inter-rater reliability can be explained by referring to subjectivity of assessments.

Example: Levels of employee motivation at ABC Company can be assessed using observation method by two different assessors, and inter-rater reliability relates to the extent of difference between the two assessments.

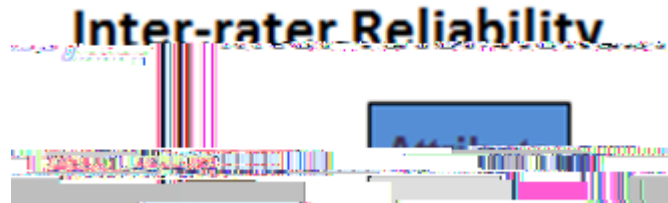


Figure 7: inter-rater reliability

4. Internal consistency reliability is applied to assess the extent of differences within the test items that explore the same construct produce similar results. It can be represented in two main formats.

- a) Average inter-item correlation is a specific form of internal consistency that is obtained by applying the same construct on each item of the test
- b) split-half reliability as another type of internal consistency reliability involves all items of a test to be ‘spitted in half’.

Validity

Research validity in surveys relates to the extent at which the survey measures right elements that need to be measured. In simple terms, validity refers to how well an instrument as measures what it is intended to measure.

Types of validity

- 1. Face Validity** is the most basic type of validity and it is associated with a highest level of subjectivity because it is not based on any scientific approach. In other words, in this case a test may be specified as valid by a researcher because it may seem as valid, without an in-depth scientific justification.

Example: questionnaire design for a study that analyses the issues of employee performance can be assessed as valid because each individual question may seem to be addressing specific and relevant aspects of employee performance.

2. **Construct Validity** relates to assessment of suitability of measurement tool to measure the phenomenon being studied. Application of construct validity can be effectively facilitated with the involvement of panel of 'experts' closely familiar with the measure and the phenomenon.

Example: with the application of construct validity the levels of leadership competency in any given organization can be effectively assessed by devising questionnaire to be answered by operational level employees and asking questions about the levels of their motivation to do their duties in a daily basis.

3. **Criterion-Related Validity** involves comparison of tests results with the outcome. This specific type of validity correlates results of assessment with another criterion of assessment.

Example: nature of customer perception of brand image of a specific company can be accessed via organizing a focus group. The same issue can also be assessed through devising questionnaire to be answered by current and potential customers of the brand. The higher the level of correlation between focus group and questionnaire findings, the high the level of criterion-related validity.

4. **Formative Validity** refers to assessment of effectiveness of the measure in terms of providing information that can be used to improve specific aspects of the phenomenon.

Example: when developing initiatives to increase the levels of effectiveness of organisational culture if the measure is able to identify specific weaknesses of organisational culture such as employee-manager communication barriers, then the level of formative validity of the measure can be assessed as adequate.

5. Sampling Validity (similar to content validity) ensures that the area of coverage of the measure within the research area is vast. No measure is able to cover all items and elements within the phenomenon, therefore, important items and elements are selected using a specific pattern of sampling method depending on aims and objectives of the study.

Example: when assessing a leadership style exercised in a specific organisation, assessment of decision-making style would not suffice, and other issues related to leadership style such as organizational culture, personality of leaders, the nature of the industry etc. need to be taken into account as well.

Learning Activities

Learning outcome	Learning Activities	Special Instructions
Conduct Business Research	<p>Trainees to test some research tools of their reliability and validity.</p> <p>In a group of 5 trainees to collect data using two different tools in a supermarket about the popularity of a certain product .then later compare the result</p>	<p>Some to use questionnaires others interview.</p>

Practical activities

Trainers each to prepare a questionnaire for the group statement of the problem developed earlier. These questionnaires are filled in class after exchanging them in two set of groups, this exercise will help test reliability and validity of these questionnaires.

Self-assessment

You are provided with the following questions for self -assessment, attempt them and check your responses

1. Why isn't important to check the reliability and validity of research instruments before use in research.

2. Why isn't important to stick to the research schedule of research plan
3. Explain types of validity in business research
4. Highlight the different types of reliability
5. What are benefits of doing Reconnaissance before undertaking a business research?

Tools, Equipment, Supplies and Materials

List of Recommended Resources

Tools and equipment

- Calculator
- Computer
- Stationeries
- Camera
- Internet
- Tablets

Materials

- Questionnaires
- Mark pens

Other Reference materials

- Books from business authors
- Company operating procedures
- Industry/workplace codes of practice
- Customer requirements

References

1. ,Third edition RoK, (2008). Economic Survey. Nairobi, Kenya. Government Printer.
2. Proquest, "First We Built, Now We Buy: A Sociological Case Study for Enterprise Systems in Higher Education," pp 292–203, <https://books.google.com/books?id=rgIAaigKQBIC&p>
3. Vincent P. Barabba, Surviving Transformation: Lessons from GM's Surprising Turnaround, pp 46– 50, <https://books.google.com/books?id=VvbDYad7cLoC&pg>

4. The Role of Brand in the Nonprofit Sector: Four Case Studies," pp 1–7, <http://www.ksghauser.harvard.edu/nonprofit-brand-conference/materials/assets/Case%20Studies%20-%20Dec%208%20Nonprofit%20Brand%20Conference.pdf> ↵

Learning outcome 3, Responses to self-assessment questions

1. Write brief explanation on types of sampling methods in business research.

Random Sampling

Random sampling is a type of probability sampling where everyone in the entire target population has an equal chance of being selected

Stratified Sampling
The researcher identifies the different types of people that make up the target population and works out the proportions needed for the sample to be representative.

Opportunity Sampling

Uses people from target population available at the time and willing to take part. It is based on convenience

Cluster sampling: in this type of probabilistic sampling, groups such as health facilities, schools, etc., are sampled. In the above-mentioned study, the selection of households is an example of cluster sampling

Complex or multi-stage sampling: This probabilistic sampling method combines different strategies in the selection of the sample units

2. Draw table to illustrate the type 1 and type 2 errors in hypothesis testing

	Test Rejects Null	Test Fails to Reject Null
Null is True	Type I Error False Positive	Correct decision No effect
Null is False	Correct decision Effect exists	Type II error False negative

These errors are known as type 1 and type 2 errors.

3. What are the differences between qualitative statistics and quantitative statistics?

- For quantitative data, you can use statistical analysis methods to test relationships between variables.
- For qualitative data, you can use methods such as thematic analysis to interpret patterns and meanings in the data.

4. Why is target population important in business research?

1. Sets clear direction on the scope and objective of the research and data types
2. Defines the characteristic variables of the individuals who qualify for the study
3. Provides the scope of the total population or universe for determining sample size
5. Highlight the research tools appropriate in collection of primary data
 - Observation / Participant Observation
 - Surveys
 - Interviews
 - Focus Groups
 - Experiments
 - Secondary Data Analysis / Archival Study
 - Mixed Methods (combination of some of the above)

1.2.4 LEARNING OUTCOME 4: ANALYSE BUSINESS RESEARCH FINDING

Introduction to learning outcome

This learning outcome specifies the content of competencies required to conduct business research to guide on the management of business research and development. It includes definition of terms, preparation of data for analysis, presentation of data information

Performance Standard

1. Business research data and information collected is prepared for analysis
2. Data analysis are established according to statistical requirements
3. Collected business data and information is analyzed and presented based on statistical requirements

Information Sheet

Definition of terms

Data analysis

It involves going through information to identify predictable patterns, interpret results and make business decisions. Software solutions often are used to perform efficient and optimum data analysis. Companies use analysis in areas such as strategic management, marketing and sales, business development and human resources.

Statistical method

It is range of techniques and procedures for analyzing data, interpreting data, displaying data, and making decisions based on the data.

Data preparation

Data preparation creates higher quality data for analysis and other data management related tasks by eradicating errors and normalizing raw data before it is processed. It is critical, but takes a lot of time and might require specific skills.

Now, with a smart data preparation tool, the process has become faster and more accessible to a wider variety of users.

The following are steps required to properly prepare data:

1. Questionnaire checking: Questionnaire checking involves eliminating unacceptable questionnaires. These questionnaires may be incomplete, instructions not followed, little variance, missing pages, past cut-off date or respondent not qualified.
2. Editing: Editing looks to correct illegible, incomplete, inconsistent and ambiguous answers. After collecting the data, it is important to discover each dataset. This step is

about getting to know the data and understanding what has to be done before the data becomes useful in a particular context.

3. Coding: Coding typically assigns alpha or numeric codes to answers that do not already have them so that statistical techniques can be applied.

4. Transcribing: It involves transferring data so as to make it accessible to people or applications for further processing. Transforming data is the process of updating the format or value entries in order to reach a well-defined outcome, or to make the data more easily understood by a wider audience. *Enriching* data refers to adding and connecting data with other related information to provide deeper insights

5. Cleaning: Cleaning reviews data for consistencies. Inconsistencies may arise from faulty logic, out of range or extreme values. It is traditionally the most time consuming part of the data preparation process, but it's crucial for removing faulty data and filling in gaps. Important tasks in cleaning include:

- Removing extraneous data and outliers.
- Filling in missing values.
- Conforming data to a standardized pattern.
- Masking private or sensitive data entries.
- Once data has been cleansed, it must be validated by testing for errors in the data preparation process. An error in the system will become apparent during this step and will need to be resolved before moving forward.

6. Statistical adjustments: Statistical adjustments apply to data that requires weighting and scale transformations.

7. Analysis strategy selection: Finally, selection of a data analysis strategy is based on earlier work in designing the research project but is finalized after consideration of the characteristics of the data that has been gathered. Once prepared, the data can be stored or channeled into a third party application—such as a business intelligence tool—clearing the way for processing and analysis to take place.

Not all of these steps occur in every market research study. But as situations dictate, none of these steps should be overlooked in the name of expediency or economy

Self-Service Data Preparation Tools

Data preparation is a very important process requiring an intense investment of resources. Data scientists and data analysts report that 80% of their time is spent doing data preparation, rather than analysis.

Does your data team have time for thorough data preparation? What about organizations that don't have a team of data scientists or data analysts at all?

That's where self-service data preparation tools like Talend Data Preparation come in. Cloud-native platforms with machine learning capabilities simplify the data preparation process. This means that data scientists and business users can focus on analysing data,

instead of just cleaning it. It also allows business professionals, who may lack advanced IT skills, to run the process themselves. This makes data preparation more of a team sport, rather than wasting valuable resources and cycles with IT teams.

To get the best value out of a self-service data preparation tool, look for a platform with:

- Data access and discovery from any datasets — from Excel and CSV files to data warehouses, data lakes, and cloud apps such as Salesforce.com.
- Cleansing and enrichment functions.
- Auto-discovery, standardization, profiling, smart suggestions, and data visualization.
- Export functions to files (Excel, Cloud, Tableau, etc.) together with controlled export to data warehouses and enterprise applications.
- Shareable data preparations and data sets.
- Design and productivity features like automatic documentation, versioning, and operationalizing into ETL processes.

The Future of Data Preparation

Initially it focused on analytics, but now data preparation has evolved to address a much broader set of uses and can be used by a larger range of users. It improves the personal productivity of whoever uses it and has evolved into an enterprise tool that fosters collaboration between IT professionals, data experts, and business users.

Benefits of Data Preparation

76% of data scientists say that data preparation is the worst part of their job, but the efficient, accurate business decisions can only be made with clean data. Data preparation helps to:

- Fix errors quickly — Data preparation helps catch errors before processing. After data has been removed from its original source, these errors become more difficult to understand and correct.
- Produce top-quality data — Cleaning and reformatting datasets ensures that all data used in analysis will be high quality.
- Make better business decisions — higher quality data that can be processed and analysed more quickly and efficiently leads to more timely, efficient and high-quality business decisions.
- Superior scalability — Cloud data preparation can grow at the pace of the business. Enterprise do not have to worry about the underlying infrastructure or try to anticipate their evolutions.
- Future proof — Cloud data preparation upgrades automatically so that new capabilities or problem fixes can be turned on as soon as they are released. This allows organizations to stay ahead of the innovation curve without delays and added costs.
- Accelerated data usage and collaboration — doing data prep in the cloud means it is always on, doesn't require any technical installation, and lets teams collaborate on the work for faster results.

Statistical methods of data analysis

Statistical data analysis: Statistics are the branch of mathematics used to analyse the data that can describe, summarize and compare. Statistical data analysis is a process of performing numerous statistical functions involving collection of data, interpretation of data and validation of the data. Numerous statistical tools such as SAS, SPSS, STATA, etc., are available to analyse the statistical data from simple to complex problems based on the nature of the study.

Simple statistical methods for analyzing small data

With the current obsession over “big data,” analysts have produced a lot of fancy tools and techniques available to large organizations. However, there are a handful of basic data analysis tools that most organizations aren't using...to their detriment.

1. Mean: The arithmetic mean, more commonly known as “the average,” is the sum of a list of numbers divided by the number of items on the list. The mean is useful in determining the overall trend of a data set or providing a rapid snapshot of your data. Another advantage of the mean is that it's very easy and quick to calculate.
2. However, the mean has a pitfall in that; taken alone, the mean is a dangerous tool. In some data sets, the mean is also closely related to the mode and the median (two other measurements near the average). However, in a data set with a high number of outliers or a skewed distribution, the mean simply doesn't provide the accuracy you need for a nuanced decision.
3. Standard Deviation: The standard deviation, often represented with the Greek letter sigma, is the measure of a spread of data around the mean. A high standard deviation signifies that data is spread more widely from the mean, where a low standard deviation signals that more data align with the mean. In a portfolio of data analysis methods, the standard deviation is useful for quickly determining dispersion of data points.
4. However it has a pitfall in that: Just like the mean, the standard deviation is deceptive if taken alone. For example, if the data have a very strange pattern such as a non-normal curve or a large amount of outliers, then the standard deviation won't give you all the information you need.
5. Regression: Regression models the relationships between dependent and explanatory variables, which are usually charted on a scatterplot. The regression line also designates whether those relationships are strong or weak. Regression is commonly taught in high school or college statistics courses with applications for science or business in determining trends over time.
6. However it has a pitfall in that: Regression is not very nuanced. Sometimes, the outliers on a scatterplot (and the reasons for them) matter significantly. For example, an outlying data point may represent the input from your most critical supplier or your highest selling product. The nature of a regression line,

however, tempts you to ignore these outliers. As an illustration, examine a picture of a combe's quartet, in which the data sets have the exact same regression line but include widely different data points.

7. Sample size determination: When measuring a large data set or population, like a workforce, you don't always need to collect information from every member of that population – a sample does the job just as well. The trick is to determine the right size for a sample to be accurate. Using proportion and standard deviation methods, you are able to accurately determine the right sample size you need to make your data collection statistically significant.
8. However it has pitfall in that: When studying a new, untested variable in a population, your proportion equations might need to rely on certain assumptions. However, these assumptions might be completely inaccurate. This error is then passed along to your sample size determination and then onto the rest of your statistical data analysis
9. Hypothesis Testing: Also commonly called t testing, hypothesis testing assesses if a certain premise is actually true for your data set or population. In data analysis and statistics, you consider the result of a hypothesis test *statistically significant* if the results couldn't have happened by random chance. Hypothesis tests are used in everything from science and research to business and economic
10. However it has pitfalls in that: To be rigorous, hypothesis tests need to watch out for common errors. For example, the placebo effect occurs when participants falsely expect a certain result and then perceive (or actually attain) that result. Another common error is the Hawthorne effect (or observer effect), which happens when participants skew results because they know they are being studied.
11. These methods of data analysis add a lot of insight to the decision-making portfolio, particularly if you've never analysed a process or data set with statistics before. However, avoiding the common pitfalls associated with each method is just as important. Once you master these fundamental techniques for statistical data analysis, then you're ready to advance to more powerful data analysis tools.

Large data can be analysed using the following methods:

- a) Sign test
Wilcoxon's signed rank test
- b) Mann–Whitney test
Kolmogorov-Smirnov test
Kruskal- Jonckheere test: test¹⁴
Friedman test:

Note: Chi-square test, Fischer's exact test and McNemar's test are used to analyse the categorical or nominal variables.

Computers software that can be used in analysis of large data

SPSS, (Statistical Package for the Social Sciences) is perhaps the most widely used statistics software package within human behaviour research. SPSS offers the ability to easily compile descriptive statistics, parametric and non-parametric analyses, as well as graphical depictions of results through the graphical user interface (GUI). It also includes the option to create scripts to automate analysis, or to carry out more advanced statistical processing

SAS is a statistical analysis platform that offers options to use either the GUI, or to create scripts for more advanced analyses. It is a premium solution that is widely used in business, healthcare, and human behaviour research alike. It's possible to carry out advanced analyses and produce publication-worthy graphs and charts, although the coding can also be a difficult adjustment for those not used to this approach.

GraphPad Prism is premium software primarily used within statistics related to biology, but offers a range of capabilities that can be used across various fields. Similar to SPSS, scripting options are available to automate analyses, or carry out more complex statistical calculations, but the majority of the work can be completed through the GUI

The **Minitab** software offers a range of both basic and fairly advanced statistical tools for data analysis. Similar to GraphPad Prism, commands can be executed through both the GUI and scripted commands, making it accessible to novices as well as users looking to carry out more complex analyses

Data Analysis and Presentation

These two go hand in hand, and it will be difficult to provide a complete differentiation between the two. Adding visual aspect to data or sorting it using grouping and presenting it in the form of table is a part of the presentation. Doing further helps in analyzing data. During a study with an aim and multiple objectives, data analysis will be required to complete the required objectives. Compiling or presenting the analyzed data will help in overall analysis and concluding the study.

Steps for Presenting and Analyzing Data:

1. Frame the objectives of the study and make a list of data to be collected and its format.
2. Collect/obtain data from primary or secondary sources.
3. Change the format of data i.e., table, maps, graphs, etc. in the desired format.
4. Sort data through grouping, discarding the extra data and deciding the required form to make data comprehensible.
5. Make charts and graphs to help to add visual part and analyse trends.
6. Analyse trends and relate the information to fulfil the objectives.

Other points to remember

1. A presentation should have a predefined sequence of arguments being made to support the study. Start with stating the Aim of study and the objectives required to reach the aim.
2. Break the objectives in multiple parts and make a list of data to be collected. Noting down the sources of data, form in which data exist and needs to be obtained. Also conducting a primary survey for information which does not exist.
3. Form and explain the methodology adapted to carry out a study.
4. Data collection through primary survey needs to have well thought of sampling methods. This will help in reducing the efforts and increasing efficiency. Sample size should be given importance and correct sampling technique should be applied.
5. Present only the required information and skip the background research to make your point more clear.
6. Do not forget to give credits and references in the end and where ever required.

The presentation can be done using software such as Microsoft Power Point, Prezi, Google Analytics and other analytic software. It can also be done by making models, presenting on paper or sheets, on maps or by use of boards. The methods selected depends on the requirement and the resources available

In the process of Data Visualization, once the data and business question are finalized, the next step is to decide on the visualization. Graphs and charts reduces huge amount of information into simple and easy-to-understand formats. The purpose of the graphics (Graphs n Charts) on dashboard is to transform data and bring alive the underlying story whether it is to show a comparison, a relationship, or highlight a trend.

The challenge is to choose the right graph or chart from the variety of options available. Establishing the reasons for data presentation, aids in choosing the right graph/chart for visualization.

The four identified categories for data presentation are -

1. Comparison
2. Composition
3. Distribution
4. Relationship/Trend

Ways of presenting data include:

- Time Series Data
- Bar Charts
- Combo Charts
- Pie Charts
- Tables
- Geo Map
- Scorecard
- Scatter Charts
- Bullet Charts
- Area Chart
- Text & Images

When dealing with charts and graphs, having sufficient knowledge about frequency distribution, regular interval, axis label, frequency and other such terms is important.

1. Bar charts are ideal for information comparison and uses either horizontal or vertical bars (column chart) to show numerical comparison. The bars represent different categories of data. The length of each bar represents its value.

When to use — to compare data across categories.

Bar Chart Visual -

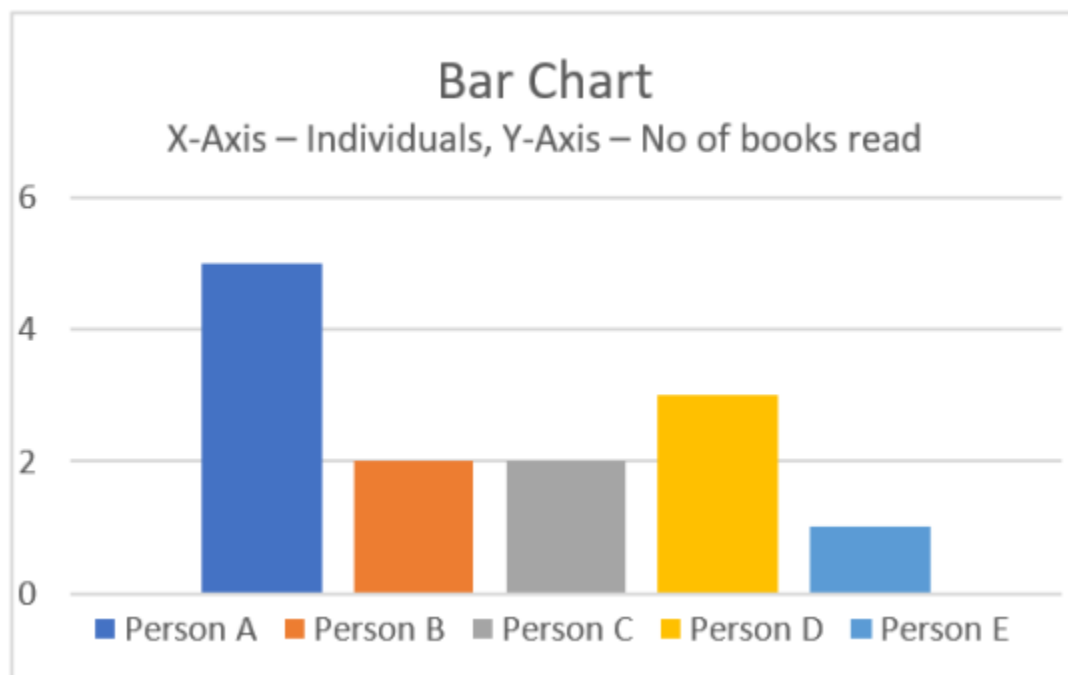


Figure 8: bar chat

2. Line charts reveal trends or progress over a period of time. It is a good way to visualize continuous data set or a sequence of values. Best suited for trend based data and analyzing the rate of change over a period of time. Values are plotted on line chart and the data points are connected to show a trend. Multiple trends can be highlighted and compared by plotting lines of different colours. Used when comparing data across categories.



Figure 9: line chart

3. Pie charts are used to show a data composition, typically for representing numbers as proportions or percentages of information — a part to whole, the sum total of all proportions being 100%. Use pie chart visual to show proportions/percentage.

Tea Vs Coffee Consumption

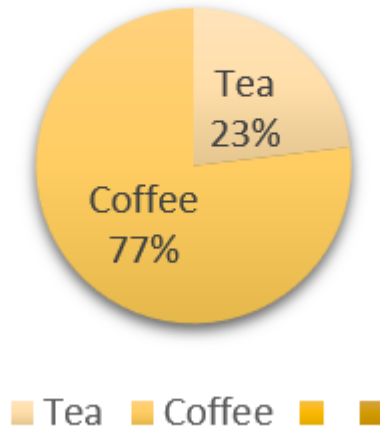


Figure 10: pie chart

4. Scatter plots are mostly used in correlation and distribution analysis. This is a type of graph helps to determine if relationship between two variables exists or not. It is an effective visual tool to show trends, concentrations and outliers in distribution of data.

Use it to investigate the relationship between different variables. For example;

Scatter Plot Visual — Cool Drinks Sales on a sunny day

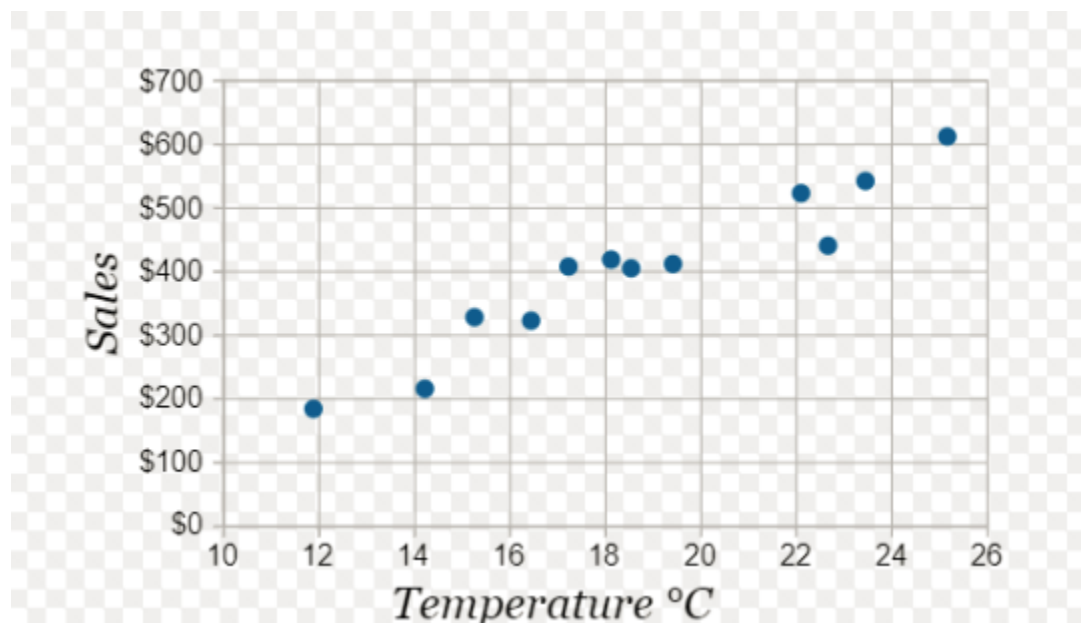


Figure 11 scatter chart

5. Heat maps are used mostly for information comparison. It provides a level of activity or rating information (e.g High to Low, Strongest to Weakest, and Excellent to Poor), all displayed using different colours.

Use to show the relationship between two factors.

Heat Map Visual -

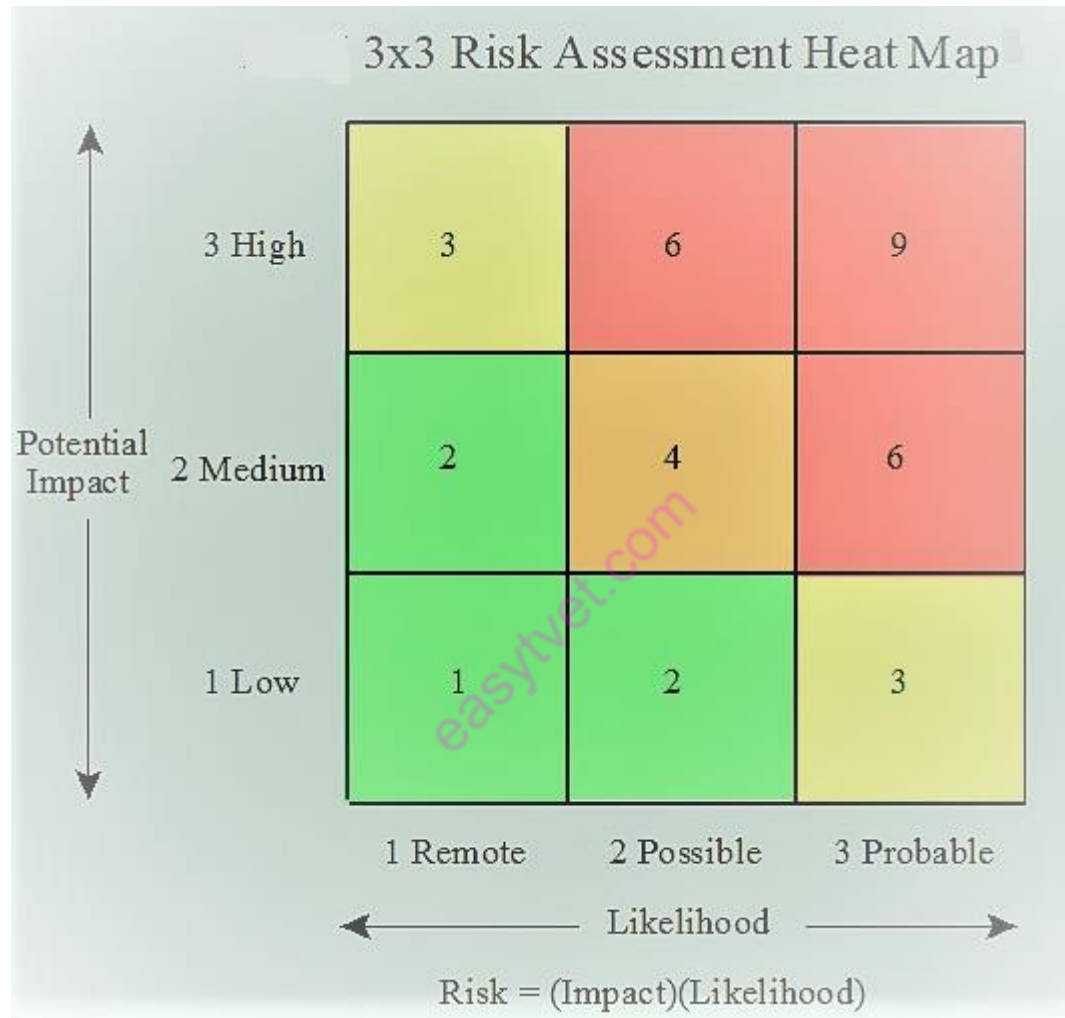


Figure 12: risk assessment

6. Histogram chart is used to see how data are distributed across groups. This is different from a Bar Chart. Like a bar chart, a histogram is made up of columns but with no gaps between the columns. Histograms present continuous data while bar chart presents categorical data (data that fits into categories).

Used when one wants to understand the distribution of data.

Histogram Chart Visual -

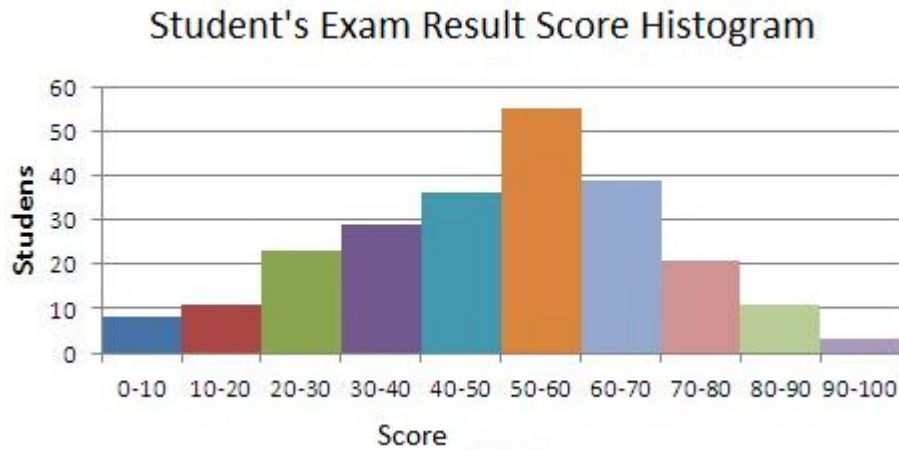


Figure 13: Histogram Chart Visual

Learning activities

Learning outcome	Learning Activities	Special Instructions
Analyse Research findings	Trainees accompanied by trainer assemble along the road next to their institution and carry out the following activity; Collect the data on the vehicle passing by and record them in terms of, Salon cars, lorries ,pickups and busses.	To create a table of each type of the vehicle, then prepare a pie chart, bar charts and histograms using the information.

4.1.3.1 Practical activities

A Trainer gives the trainee a raw data of the class marks obtained in the previous statistics examination. Marks obtained by 64 students are as given below

Marks in %
50,40,60,25,76,48,35,40,56,38,55,67,68,70,75,45,74,42,54,45,24,26,45,65,37,76,46,1
4,56,34,56,78,80,56,78,45,67,30,60,50,60,34,56,78,30,40,45,76,57,58,67,98,28,56,45,
54,34,43,32,65,45,67,18,78,

Required

- a) Tabulate the in classes of, 0-10, 10-20 e.t.c
- b) Present the above marks of in form of
 - Pie chart
 - histogram
 - line graph

Self-assessment

1. Explain different methods of small data presentation
2. Explain five methods of used in data analysis
3. Highlight the benefits of data presentation
4. Highlight the process of preparing data for analysis
5. Explain the steps followed in data analysis and presentation

Tools, Equipment, Supplies and Materials

List of Recommended Resources

Tools and equipment

- Calculator
- Computer
- Stationeries
- Camera
- Internet
- Tablets

Materials

- Questionnaires
- Mark pens

Other Reference materials

- Books from business authors
- Company operating procedures
- Industry/workplace codes of practice
- Customer requirements

References

1. Sprent P. Statistics in medical research. Swiss Med Wkly. 2003;133:522– [PubMed] [Google Scholar]
2. Kaur SP. Variables in research. Indian J Res Rep Med Sci. 2013;4:36–8. [Google Scholar]
3. Satake EB. Statistical Methods and Reasoning for the Clinical Sciences Evidence-Based Practice. 1st ed. San Diego: Plural Publishing, Inc; 2015. pp. 1–19. [Google Scholar]
4. Wilder RT, Flick RP, Sprung J, Katusic SK, Barbaresi WJ, Mickelson C, et al. Early exposure to anesthesia and learning disabilities in a population-based birth cohort. Anesthesiology. 2009;110:796–804. [PMC free article] [PubMed] [Google Scholar]
5. Manikandan S. Measures of central tendency: Median and mode. J Pharmacol Pharmacother. 2011;2:214–5. [PMC free article] [PubMed] [Google Scholar]
6. Myles PS, Gin T. Statistical Methods for Anaesthesia and Intensive Care. 1st ed. Oxford: Bhttps://www.nib.si/eng/index.php/infrastructure/raziskovalna-oprema
7. http://www.iitgn.ac.in/academics/che/image/research_list_of equipments.pdf
8. <http://adphealth.org/irtoolkit/research-methods-and-data-management/resear>
9. <https://www.formpl.us/blog/data-collection-method>
10. <http://www.seepnetwork.org/content/library/detail/553>
11. <http://www.bdsknowledge.org/dyn/bds/docs/377/Guide%20to%20BDS%20M>
[A%20for%20Program%20Design%20Miehlbradt.pdf](http://www.bdsknowledge.org/dyn/bds/docs/377/Guide%20to%20BDS%20M)utterworth Heinemann; 2000. pp. 8–10. [Google Scholar]

Responses to self-assessment

1. Explain different methods of small data presentation

- Time Series Data
- Bar Charts
- Combo Charts
- Pie Charts
- Tables
- Geo Map
- Scorecard
- Scatter Charts
- Bullet Charts
- Area Chart
- Text & Images

2. Explain five methods of used in data analysis

1. Mean

The arithmetic mean, more commonly known as “the average,” is the sum of a list of numbers divided by the number of items on the list. The mean is useful in determining the overall trend of a data set or providing a rapid snapshot of your data. Another advantage of the mean is that it’s very easy and quick to calculate.

2. Standard Deviation

The standard deviation, often represented with the Greek letter sigma, is the measure of a spread of data around the mean. A high standard deviation signifies that data is spread more widely from the mean, where a low standard deviation signals that more data align with the mean. In a portfolio of data analysis methods, the standard deviation is useful for quickly determining dispersion of data points.

3. Regression

Regression models the relationships between dependent and explanatory variables, which are usually charted on a scatterplot. The regression line also designates whether those relationships are strong or weak. Regression is commonly taught in high school

or college statistics courses with applications for science or business in determining trends over time.

4. Sample Size Determination

When measuring a large data set or population, like a workforce, you don't always need to collect information from every member of that population – a sample does the job just as well. The trick is to determine the right size for a sample to be accurate. Using proportion and standard deviation methods, you are able to accurately determine the right sample size you need to make your data collection statistically significant.

5. Hypothesis Testing

Also commonly called *t* testing, hypothesis testing assesses if a certain premise is actually true for your data set or population. In data analysis and statistics, you consider the result of a hypothesis test *statistically significant* if the results couldn't have happened by random chance. Hypothesis tests are used in everything from science and research to business and economic

3. Highlight the benefits of data presentation

Ability to make faster, more informed business decisions, backed up by facts.

Allows deeper understanding of customer requirements, which, in turn helps to build better business relationships.

Increases awareness of risk, enabling good implementation of preventative measures.

Improve flexibility and greater capability in order to react to change - both within the business and the market.

Better insight into the financial performance of the business.

Proven to reduce costs and therefore increase profit.

4. Highlight the process of preparing data for analysis

Questionnaire checking:

Questionnaire checking involves eliminating unacceptable questionnaires. These questionnaires may be incomplete, instructions not followed, little variance, missing pages, past cut-off date or respondent not qualified.

2. Editing: Editing looks to correct illegible, incomplete, inconsistent and ambiguous answers. After collecting the data, it is important to discover each dataset. This step is about getting to know the data and understanding what has to be done before the data becomes useful in a particular context.

3. Coding: Coding typically assigns alpha or numeric codes to answers that do not already have them so that statistical techniques can be applied.

4. Transcribing: Transcribing data involves transferring data so as to make it accessible to people or applications for further processing.

5. Cleaning: Cleaning reviews data for consistencies. Inconsistencies may arise from faulty logic, out of range or extreme values.

6. Statistical adjustments: Statistical adjustments apply to data that requires weighting and scale transformations.

7. Analysis strategy selection: Finally, selection of a data analysis strategy is based on earlier work in designing the research project but is finalized after consideration of the characteristics of the data that has been gathered. Once prepared, the data can be stored or channeled into a third party application—such as a business intelligence tool—clearing the way for processing and analysis to take place.

5. Steps for Presenting and Analyzing Data:

Frame the objectives of the study and make a list of data to be collected and its format.

Collect/obtain data from primary or secondary sources.

Change the format of data i.e., table, maps, graphs, etc. in the desired format.

Sort data through grouping, discarding the extra data and deciding the required form to make data comprehensible.

Make charts and graphs to help to add visual part and analyse trends.

Analyse trends and relate the information to fulfil the objectives.

easytvvet.com

1.2.5 LEARNING OUTCOME 5: DOCUMENT BUSINESS RESEARCH FINDINGS

Introduction to the learning outcome

This learning outcome specifies the content of competencies required to document business research findings. It includes definition of terms related to report writing, obtaining report writing tools, preparing a business report, giving business report recommendations, sharing the business research findings and implementing the recommendations.

Performance Standard

1. Report writing tools are obtained in accordance with SOPs
2. Business report is developed based on analysed business data and information
3. Business report recommendation is shared and implemented based on organization policy

Information sheet

Definition of terms

Data Documentation- refers to information about your research data. It is meant to make your data understandable – to others who might want to reuse it, but also to your future self.

Importance of documenting research findings

- Good documentation can do more than help answer specific questions.
- Helps in finding relevant insight when you needed. But what about
- Keeping track of trends or analysing from historical data
- Documented research is reusable

Documentation can be the form of presentations or PDF reports –own research notes scattered both in digital formats and notebooks.

A few tips for continuous documentation:

- Try a generic tool like OneNote for keeping and organising notes. You can structure these notebooks to your own research. Once you have finished your research, you can easily select the notes you wish to add to your dataset (e.g. as a README-file).
- Use an electronic lab notebook for structured documenting. Your group might have a shared e-lab notebook tool you can use. One example is eLabJournal.
- If you use proprietary software such as OneNote or a e-lab notebook, make sure to export or convert your documentation to an open file format when you make it available to others. This way, people do not need the original software to open

the files – and the files will remain readable even if the software becomes obsolete.

- Do you work with spreadsheets? The free tool Colectica for Excel allows you to add documentation to your spreadsheets. Think of the explanation of variables and code lists. You can also export these to create separate documentation file if you work with scripting languages, such as R or Python, take a look at Jupyter Notebook. With this free, web-based tool you create one single document showing code snippets and their results in place. This provides a step-by-step overview of your data processing and analysis. Find examples of Jupyter notebooks by research domain here. This page also provides a list of journal articles with documentation in Jupyter notebooks

Testing the documentation

How do you know if your final documentation is understandable to others? Put it to the test! Simply give your dataset with documentation to somebody else. If this person has trouble understanding your data, there's room for improvement. Of course you can always contact Data Management Support if you need help.

Text (Written) Documentation

There are several ways to record your research process in a written format, including:

- A science journal to record ideas, hypotheses, observations, materials, etc. - basically all aspects of the inquiry process.
- A personal journal to record information about feelings about the process or relationships between partners.
- A formal report that states the research process, from hypothesis to literature review, analysis and conclusion, in a standard format for presenting scientific investigations.

Reporting Tools

Online and offline reporting tools

- Executive summaries
- Full data tables
- Action priority reporting
- Newspaper-style headline reports
- Communication reporting
- Flash reports
- Full detailed insight reporting
- Formal and informal presentations
- A3 summary reporting

Business reports

A report is a business tool used to convey research, findings and recommendations. A mini report is a condensed version of a report. It is used in a number of business cases. For example, a mini report can be used when frequent updates about a project are being made to superiors or when the reader of the report only requires a short summary of the matter at hand. Mini reports are also used when a full recap of the research is not required for the reader in order to understand the main objectives.

A business research report has the same function as an academic research report. The main point is to research an area or subject to gather more information about it. Topics can include budget research, customer service satisfaction research, product development research and effective marketing campaign research

Purpose

The purpose of a business research report is to provide business executives information or data pertaining to a specific topic or area. This can be both internal and external research. For example, if the business research report focuses on customer service and the business' relationship with its current customers, research assistants could complete a research questionnaire or interview with willing customers.

Sections of a business research report

According to ACS, a research report has specific sections to present the data in a professional manner. The report should have a title page that includes the date of the report and indicates the nature of the data in the report. It should also include an abstract of the research being done, an introduction to the report, a discussion of the experiment or methods used to get the information, the results of the research, discussions of changes that need to be made and a conclusion that sums up the report and research as a whole.

Uses

The results of the business research report are used to analyze and identify issues or problems that need to be addressed to improve services or products. For example, if customer service satisfaction surveys reveal that employees are often rude on the phone when addressing the caller, company executives can identify this complaint through the data in the report. A research report can also help identify patterns in seasonal sales or demands for specific products.

Features

Research reports can include graphs and charts in the findings section so the reader can easily read and examine the results. If the research was gathered using interviews, copies of the transcribed interviews should be included in the appendix, which is a supplementary feature of the report. Interviews may also be conducted with employees working directly with the research or the area being researched for the

report. Getting a professional and internal perspective can help create a larger picture, instead of simply getting the external customer perspective.

Guidelines on preparation of a business report

Provide only relevant details

While a full report may have research and data on corresponding elements of the main subject, a mini report should only provide directly relevant information. As mini reports are used to summarize information or provide key details in a short amount of time, it's best to only include information that is directly related to the main goal of the report.

For example, if the mini report focuses on customer feedback for your store for the last 30 days, don't include data that pertain to the last 12 months. Instead, stick to what is relevant for this mini report, which is the 30 days of data.

Use Clear Language and Bullet Points

A mini report should be written using clear language. Avoid using overly technical words or industry jargon in your mini report because it can distract the reader from understanding the key points you're trying to communicate. Instead, focus on telling the reader the main findings and recommendations using plain language.

Since mini reports are often used when the reader is short on time and isn't able to review the full scope of information, it's appropriate to use **bullet points** in your mini report. This makes it easy for the reader to scan the information quickly and understand the key elements in a shorter amount of time as compared to reading full paragraphs.

In business, you may be required to provide a mini report along with your colleagues or team members. A group report example is a sales update for the last week by each sales representative. If multiple people are working on a report together, be sure to review the full mini report to ensure the same tone and language is being used throughout. This not only makes it easier to read, but it also appears more professional.

Offer Resources or References for Further Information

Mini reports should include a section on resources or other documents the readers may want to consult after reading the mini report. This way, if the readers require further details or more information on the research and findings, they know where they can find additional materials.

This is where you can include data that are indirectly related or research material that is relevant but not required to fully understand the main point of the mini report. A report example for students may include a reference section for materials consulted while writing the mini report, while a report example for business employees may include links to previous mini reports or data from previous studies.

VIDEO LINK, ON HOW TO DEVELOP RECOMMENDATION OF A BUSINESS RESEARCH <https://www.coursera.org/lecture/marketing-research-report/developing-recommendations->

KYRBV?utm_source=link&utm_medium=page_share&utm_content=vlp&utm_campaign=top_button

Learning Activities

Learning outcome	Learning Activity	Special instructions
Document Business research findings	Trainees to collect the data on causes of their colleague class absenteeism .This information will be got from class attendance register	After analyzing the the data in terms of days class missed and reasons, Then they should prepare a report to be submitted to the institution management

Practical activities

Trainees are given several research finding from the library and then they are required to write a report and recommendations based on those data.

Self-Assessment

1. Why isn't important to document research finding
2. Identify methods of documentation
3. Highlight way of written documentation
4. Outline the offline and online reporting tools

Tools, Equipment, Supplies and Materials

List of Recommended Resources

Tools and equipment

- Calculator
- Computer
- Stationeries
- Camera
- Internet
- Tablets

Materials

- Questionnaires
- Mark pens

Other Reference materials

- Books from business authors
- Company operating procedures
- Industry/workplace codes of practice
- Customer requirements
- Marketing needs report

References

1. Business Link UK (now GOV.UK/Business) Review your business performance, © Crown
2. Copyright 2009
3. Nyaga C.N. (2009). Non-financial constraints hindering growth of SMEs in Kenya: The case of plastic manufacturing companies in industrial area in Nairobi county. (A masters research thesis, University of Nairobi).
4. Nyagah C.N. (2013). Non-financial constraints hindering growth of SME'S in Kenya: the case of plastic manufacturing companies in industrial area in Nairobi County (Doctoral dissertation).
5. John W.Creswell,(2010) Research Design,Third edition RoK, (2008). Economic Survey. Nairobi, Kenya. Government Printer.
6. Proquest, "First We Built, Now We Buy: A Sociological Case Study for Enterprise Systems in Higher Education," pp 292–203, <https://books.google.com/books?id=rgIAaigKQBIC&p>

Responses to self-assessment

1. Why isn't important to document research finding

- Keeping track of trends or analysing historical data to get yet more insight
- For others who might want to reuse it,
- For your future reference

2. Identify methods of documentation

- Presentations

- PDF reports
- Research notes
- Digital formats and notebooks

3. Highlight way of written documentation

- A **science journal** to record ideas, hypotheses, observations, materials, etc. - basically all aspects of the inquiry process.
- A **personal journal** to record information about your feelings about the process, relationships between partners etc.
- A **formal report** that states your research process, from hypothesis to literature review, analysis and conclusion, in a standard format for presenting scientific investigations.

4. Online and offline reporting tools

- Executive summaries
- Full data tables
- Action priority reporting
- Newspaper-style headline reports
- Communication reporting
- Flash reports
- Full detailed insight reporting
- Formal and informal presentations
- A3 summary reporting