Selection of Basic Research Methods

Steps for choosing the right research methodology

Here are six factors to help you select the right research methodology.

1. Goals:

When selecting a research methodology, start with the end result—your research goals—as the first consideration. Carefully considering what your research project needs to accomplish will greatly inform the methodology selection. Are you just looking for more information? Do you need "go" or "no-go" decisions? Do you need to find out all the information in one fell swoop, or will you the have opportunity for follow-up research? Knowing what type of information you need to confidently possess at the project's conclusion will often narrow your available methodologies right from the start.

2. Statistical Significance:

Once you have established your research goals, the next key factor for selecting a research methodology is the statistical significance of the results. When a result is *statistically significant*, it means that it is highly unlikely that the result occurred by chance alone. If you need definitive, clear, black-and-white, highly data-driven research results, or then you are generally looking for statistically significant answers. This means you will need quantitative data, and a large sample size, both factors that inform your research methodology. Statistical significance is key when extrapolating results from a sample set to a larger population, which is an important factor to consider in research.

3. Quantitative versus Qualitative Data:

In addition to the statistical significance of data, it's important to consider whether you need quantitative data, qualitative data, or both. Methodologies that capture qualitative data, such as focus groups, can be excellent for capturing consumer insights and open-ended reactions. Other methods for qualitative data collection, like highlighting tools and heat maps, allow for consumers to indicate areas of strong like or dislike. Conversely, quantitative data provides more

cut-and-dry results. If you have many questions that need to be asked, a survey with quantitative questions may be best, as consumers can answer these quickly. In addition, new online survey tools allow for quantitative questions to be much more interactive, helping to prevent survey fatigue.

4. Sample Size:

When considering your research goals, sample size often comes into play, which again helps select a research methodology. How big does your sample size need to be for you to be confident in making business decisions based upon the results? For example, if you are investigating price tolerance for a new product, will you be confident in the results after surveying 20 people, or would you prefer to survey 2,000? If you need a larger sample size, that will eliminate time-consuming, smaller-format methods such as focus groups and in-person interviews.

5. Timing:

How quickly do you need results? If you need quick turns on completion of data collection, you may want to consider an online survey, where national panels can field hundreds of completed surveys in just a few days. If you have a longer lead time, methods that are more time-intensive, such as in-home interviews, are possible. The project's timing will also affect your screening criteria used in your participant selection—a general rule is that the stricter the screening criteria, the longer it will take to find the required number of participants.

6. Availability of Existing Information:

A final factor for consideration is one that is often overlooked, "Does the data I need already exist via another source?" If you answered "yes" to this question, you may not even need to conduct primary research, and may be able to accomplish your project via secondary research sources such as Forrester Research, Market Research Insights (MRI), Nielsen, or Mintel. While secondary research is not as customizable as conducting proprietary research, it is a valuable research resource for a variety of topics..

7. The choice of methods and the way in which they are implemented will largely be determined by the research questions, but will also be influenced by practical considerations,

such as the availability of resources and the knowledge and skills of the persons undertaking the research).

8. Read previous studies and researches to find out the most commonly and/or effectively used methodological approaches to collect data. There are a slew of ways to conduct a research but not all are meant for your research. Determining the right methodology in dark can be very difficult. It is a good idea to read previous studies in your area and find out the methodology they used and the limitations or recommendations of the same.

9. **An integrated approach:** an integrated approach to methodological choice in two ways. First, the contributions range from the early decisions about design options through the concluding choices about analyzing, interpreting, and presenting results. Second, the collection is integrated because it addresses the needs of projects that collect qualitative evidence, quantitative data, or both.

10. **Other Considerations:** Before looking at the statistics required, and studying the preferred methods for the individual scientific discipline. Every experimental design must make compromises and generalizations, so the researcher must try to minimize these, whilst remaining realistic. For 'pure' sciences, such as chemistry or astrophysics, experiments are quite easy to define and will, usually, be strictly quantitative. For biology, psychology and social sciences, there can be a huge variety of methods to choose from, and a researcher will have to justify their choice. Whilst slightly arbitrary, the best way to look at the various methods is in terms of 'strength'.

Basic Research Methods

The types of basic research methodologies this unit will introduce you to are:

1. **Quantitative research:**

Quantitative research (the word 'quantitative' comes from the word 'quantity') involves information or data in the form of numbers. This allows us to measure or to quantify a whole

range of things. For example: the number of people who live below the poverty line; the number of children between specific ages who attend school; the average spending power in a community; or the number of adults who have access to computers in a village or town.

A common way of conducting quantitative research is using a survey. Surveys usually involve filling in a questionnaire. The usefulness of a survey is that the information you get is standardized because each respondent – the person who fills out the questionnaire – is answering the exact same questions. Once you have enough responses to your questionnaire, you can then put the data together and analyse it in a way that answers your research question – or what it is you want to know.

It is important to realize that quantitative research does not necessarily mean that respondents will give numbers for their answers to your questions. Sometimes they may answer a 'yes' or 'no' question, as in: 'Do you have a computer?' Sometimes they might write down an answer, a word, a sentence, or a paragraph to describe something, as in answers to: 'What is the brand or make of your computer?' and 'Please describe in detail what you use your computer for.' Other answers may involve numbers, as in: 'How many computers do you have in your business or organization?'

2. Qualitative research

The aim of qualitative research is to deepen our understanding about something, and usually this means going beyond the numbers and the statistics. Qualitative research helps us to give reasons why the numbers tell us what they do. It is often contrasted to quantitative research and they are very often used together to get the 'bigger picture' of what we are trying to find out. Qualitative research helps us 'flesh out the story'.

The most common forms of qualitative research are *face-to-face interviews* and *focus groups*. Face-to-face interviews are just that: Meeting someone in person and discussing various issues. The informant – or person you are interviewing – may be an expert in a particular field (e.g. the editor of a newspaper) or they may be someone who is affected by the issues you are researching (e.g. someone who is HIV positive or who reads the media).

Although it is very important to develop a list of questions you want to ask someone, face-to-face interviews usually involve more than 'yes' or 'no' answers. The point is to try to understand the complexity of the issues you are researching. The nature of face-to-face interviews is that they are usually quite discursive.

Focus groups involve discussions with two or more participants. the responses are often free-ranging, as the participants are encouraged to explore the issues at hand in an in-depth way.

- **Site visits and observation**

Site visits (e.g. when you visit an organization, a manufacturing plant, a clinic or a housing project) are very useful and sometimes even necessary ways of gaining additional insight and making your theoretical information concrete in your mind

- **Case studies**

Case studies tell a story, and are often very lively and colourful ways of presenting your research, or to go about conducting research. Case studies often contain both qualitative and quantitative data, adding to the richness and detail of the situation being described, and the problem being analysed.

There are many different structures to case studies, and you will need to decide on the most appropriate structure for what you are trying to convey.

3. Participatory research

Participatory research allows community members, or a particular group being researched, to participate in developing research questions, designing the methodologies to be used in the research, and analysing the research findings. The usefulness of this approach is that perspectives that might otherwise be ignored by a researcher are incorporated into the research from the start. The analysis of the research findings shifts from being 'researcher-centric' (or biased towards the assumptions of the researcher) towards being 'community-centric', or incorporating the perspectives of the community. Participatory research is a very good methodology to raise

awareness around issues that a community or group might face, and it also helps in developing appropriate action plans in response to the research findings.

However, the most important thing to remember is that participatory research is about a group or community being involved in all, or most, phases of the research process, from designing the questions, to finding out the answers.

Field Study

A field study refers to research that is undertaken in the real world, where the confines of a laboratory setting are abandoned in favour of a natural setting. This form of research generally prohibits the direct manipulation of the environment by the researcher. However, sometimes, independent and dependent variables already exist within the social structure under study, and inferences can then be drawn about behaviours, social attitudes, values, and beliefs. It must be noted that a field study is separate from the concept of a field experiment. Overall, field studies belong to the category of non-experimental designs where the researcher uses what already exists in the environment.

Attributes of Field Studies

- Field studies involve collecting data outside of an experimental or lab setting. This type of data collection is most often done in natural settings or environments and can be done in a variety of ways for various disciplines.
- Field studies are known to be expensive and timely; however, the amount and diversity of the data collected can be invaluable.
- Field studies collect original or unconventional data via face-to-face interviews, surveys, or direct observation.
- This research technique is usually treated as an initial form of research because the data collected is specific only to the purpose for which it was gathered. Therefore, it is not applicable to the general public.

When to choose a field study

Field studies provide the most complete, unbiased picture of what potential users actually do. Unfortunately, field studies are expensive and can be time consuming. For these reasons, most research teams use them only when no other method will do. It is otherwise used when:

1. **When you need to understand the big picture:** Field studies are useful for providing context. If your product is designed to function in a particular context, testing in a lab might not give you accurate results. For example, to really find out how people slice their onions, you might want to observe them in their own kitchens. You can also use field studies to explore a need that you hope your as-yet-uncreated product will fill. For example, you could observe the staff at a hospital to look for places where your company might be able to help lower costs or improve outcomes.

2. **When starting from the beginning:** What do you do when you don't know enough about your potential customers to ask good questions about them? What do they need? What do they want? What factors impact their choices? Where do you focus your research? A poorly-designed study—one organized around an inapplicable question—is worse than useless, being not only uninformative but also misleading. A field study is a good way to get the information you need to begin your research in this case.

3. **When your research can't fit in the lab:** example, if your device is designed to function as a component of the navigational system of an oil tanker, going to an oil tanker for final testing makes sense. You probably have an R&D budget for field studies if you're the oil tanker business, too.

Benefits of Field Studies

Field studies can return almost any kind of information you need, but they are most useful for building the groundwork that will help you design more focused studies later. Some of the general questions field studies can address include:

1. **Helps to Analyze the viewer's perspective regarding an Issue:** You probably talk about your product and all the need it fills using technical, somewhat jargony language. Use the

same language in surveys, interview questions, and recruitment efforts, and you will likely either confuse people or simply put them off. If you want to be taken seriously, you have to learn their language. Listening in the field is a great way to learn the language.

2. **Addresses the Cultural Context of the need:** if your target customers have a life context very different from yours, you are likely to misunderstand, and be unable to solve, their problems. Field studies are an excellent way to get to know your customers well enough that you will be able to offer them something they find meaningful and valuable.

3. **Helps to analyze the Circumstances:** By visiting multiple study sites, or one study site multiple times, you can gain insight into how the situation you are creating your product for varies, what commonalities your potential users have, how they differ from each other, and how adaptable your product (and your marketing) will have to be.

Limitations of Field Studies

1. The most obvious potential pitfall of field studies is that they are expensive, due to the need to travel, the number of hours researchers need to commit. As for the study itself, however, it still relies on old fashioned patience and observation. So while the cost of other forms of research has come down, the cost of field studies remains high.

2. Time Consuming

3. Complex analysis that open-ended, unstructured research requires. It's not that field studies are necessarily difficult—most don't require specialist anthropological researchers.

4. Field studies also stop being an option if your study design calls for a large number of observers—a crowd of researchers pretty much destroys the naturalness of a natural setting—or for recording equipment that aren't an option in the field. If your product is for use in rare, unpredictable circumstances (first-responder mobilization after an earthquake), or places you can't send a researcher (battlefields), then you can't do a field study. If you want to collect sensitive, confidential information, you might have to retreat to the more controllable circumstances of a lab.

Research Methods in Field Studies

1. **Direct observation:** Direct observation means simply watching somebody (or a group of some bodies) to see how they behave and why. Researchers can observe and take notes on visitor behaviour in order to find ways to improve exhibits, services, or visitor management, and most people never even notice they're being watched. However, there are both ethical and practical limits to incognito observation. In most cases, you will have to explain your presence to participants, and hope they act naturally.

2. **Participant observation:** Participant observation means that the researcher either joins the group of people being studied. Data recording is usually by field notes or diary entries written after the researcher has ceased observations for the day. The classic example of the method is the anthropologist who goes to live with some remote tribe for years on end, but an equally valid example would be a market researcher who makes a habit of inviting herself to cook-outs in order to identify design flaws in popular grill models. The ethnographic method combines informal qualitative interviews with direct observation,

3. **Qualitative interviews:** Qualitative interviews vary from informal and spontaneous to formal or even structured. Interviews may be a part of a participant observation study, or they can exist independently. The more formal and structured the interview, the easier its data will be to analyze. The less formal and more open-ended, the more likely the interview will be to provide information the researcher didn't think to ask about.

Laboratory Study/Experiments

Meaning: Lab research is referring to the research which is done inside the lab. They set up experiments and do tests inside the controlled environment (i.e. Laboratory). In this way, psychologists will be able to test their theories precisely and their finding's reliability is ensured because the experiments and tests will not be affected by the other variables

Concept of Laboratory Study

- Laboratory studies have the advantage of greater control of irrelevant variables that might otherwise influence the results and thus of clearer clues of the behaviour being observed. If

controlling all extraneous influences is successfully accomplished, any change observed in the subjects is presumed to be caused by the variable that has been manipulated.

- This approach comes close to establishing a cause-and-effect relationship. Nevertheless, caution should be taken when considering such a relationship.

- There are always the possibilities that there were an uncontrolled outside influence and the likelihood that the results were caused by chance.

- Another advantage of laboratory research is its reproducibility. The environmental conditions can be neatly controlled and documented. Like any other research method, disadvantages can be encountered in laboratory research.

- It may represent an artificial environment that may influence the manner in which subjects behave and therefore alter results.

Disadvantage

Though lab research enables the psychologists to control all the variables, as the experiment is carried out inside an "artificial" environment, it lacks validity as it is more unlikely to reflect the real situation.

Relevance of Lab Studies Practical Situations

- By their very nature laboratory experiments are at best only rough and approximate models of any real-life situation. First of all the possible independent variables that influence behaviour in any practical situation, a laboratory experiment selects only a. few for test. As a result, hidden or unsuspected interactions in real-life may easily nullify, or even reverse, conclusions arrived at in the laboratory.

- Second, variables always change when they are brought into the laboratory.

- Third, the effect of controlling extraneous or irrelevant variables in the laboratory is to increase the precision of an experiment but at the risk of discovering effects so small that they are of no practical importance.

- Fourth, the dependent variables (or criteria) used in laboratory experiments are variables of convenience. Rarely are they selected for their relevance to some practical situation.

- Last, the methods used to present variables in the laboratory are sometimes artificial and unrealistic.

- The safest and most honest conclusion to draw from all these considerations is that one should generalize with extreme caution from the results of laboratory experiments to the solution of practical problems.

Survey Method

The Survey method is the technique of gathering data by asking questions to people who are thought to have desired information. A formal list of questionnaire is prepared. Generally a non disguised approach is used. The respondents are asked questions on their demographic interest opinion.

Advantages of Survey Method

- As compared to other methods (direct observation, experimentation) survey yield a broader range of information. Surveys are effective to produce information on socio-economic characteristics, attitudes, opinions, motives etc and to gather information for planning product features, advertising media, sales promotion, channels of distribution and other marketing variables.

- Questioning is usually faster and cheaper that Observation.

- Questions are simple to administer.

- Data is reliable

- The variability of results is reduced.

- It is relatively simple to analyze, quote and interrelate the data obtained by survey method

Disadvantages of Survey Method

Unwillingness of respondents to provide information- This requires salesmanship on the part of the interviewer. The interviewer may assure that the information will be kept secret or apply the technique of offering some presents.

- **Inability of the respondents to provide information-** This may be due to

- Lack of knowledge
- Lapse of memory

- Inability to identify their motives and provide "reasons why?" for their actions
- Human Biases of the respondents are there, for eg: "Ego"
- Symantec difficulties are there - it is difficult, if not impossible, to state a given question in such a way that it will mean exactly same thing to each respondent. Similarly two different wordings of the same question will frequently produce quite different results.

How to overcome the limitations of Survey Method

- Careful framing and phrasing of questions.
- Careful control of data gathering by employing specially trained investigators who will observe carefully report on subtle reactions of persons interviewed
- Cautious interpretations by a clear recognition of the limitations of the data and understating of what exactly the data represents. This is especially true of responses to questions like - "What price would you be willing to pay for this product?"
- Looking at facts in relative rather than absolute terms. For eg - A survey by a dentist team showed that the number of families in the middle income group used toothpaste taken by itself in the absolute sense, the results of the survey are in some doubt. Even though the individual group readings shall differ say for eg: for upper income group families it could be 90 %. Hence we should look at the facts in relative rather than in absolute terms

Data Collection Methods in Survey Method

There are mainly 4 methods by which we can collect data through the Survey Method

1. **Telephonic Interview**

Telephone Interviewing stands out as the best method for gathering quickly needed information. Responses are collected from the respondents by the researcher on telephone.

2. **Personal Interview**

It is the most versatile of the all methods. They are used when props are required along with the verbal response non-verbal responses can also be observed.

3. **Mail Interview**

Questionnaires are send to the respondents; they fill it up and send it back.

4. **Electronic Interview**

Electronic interviewing is a process of recognizing and noting people, objects, occurrences rather than asking for information. For example-When you go to store, you notice which product people like to use. The Universal Product Code (UPC) is also a method of observing what people are buying.

Observational research

Defined as the method of viewing and recording the actions and behaviours of participants. It is described as being a systematic observation method, which implies that the observation techniques are sensible and replicable procedures so that the research could be reproduced. As the name describes, "observational" methods are all about observing the participants. There is no experiment conducted and no variables are manipulated. The observations are made without disturbing, influencing or altering the environment or the participants in any way. Researchers simply use all of their senses to observe participants in either a natural setting or a naturally occurring situation.

Reasons for Choosing this Method: Following is a list of some of those reasons and situations:

- If research question is attempting to a questions of "how" or "what type".
- When it is important that the research take place in a natural setting so the phenomenon or behaviour is not influenced or disturbed in any way.
- When it is important to understand the setting that the observation is taking place in and how that may play a role in the results.
- If a topic has not been previously studied and little is known, it may be best to begin with observation in a natural setting. This may provide the foundation for further study and hypothesis development in the future.
- The actual behaviour of the participants has the potential to be different from what those individuals might report if they were asked.

Types of Observational Method

There are three main types of observational methods based primarily on the extent to which the researcher controls or interacts with the environment. The following list describes the three methods and provides an example of each.

1.) Naturalistic Observation –

- ❖ This method takes place in the natural, every day setting of the participants. In naturalistic observation, there is no intervention by the researcher.
- ❖ This type of observational method is sometimes referred to nonparticipant observation.
- ❖ In fact, the researcher typically attempts to carry out the observations without the knowledge of the participants.
- ❖ In this way, the researcher is able to observe the spontaneous, natural behaviour of the participants in their natural surroundings. The advantage of this type of method is the increased ecological validity.

- The disadvantages of this method are that the observations usually take place on a small scale with a small sample size and the participants may not truly be representative of the larger population.

- Naturalistic observations may also more difficult to replicate.

- Example: A researcher may use naturalistic observation to study the behaviours and interactions of pre-school aged children on a playground at recess.

1. Participant Observation –

- In participant observation, the researcher intervenes in the environment in some manner.

- Typically, the researcher will insert himself/herself in to the group as a member of the group. This is done to be able to observe behaviours that may otherwise not be accessible to the researcher.

- The observations can either be covert or overt. If they are covert, the researcher is under cover and his or her real identity and purpose are concealed. If the observations are overt, the researcher will reveal his or her real identity and intent and will ask permission to make the observations.

- The advantage is that it provides a deeper insight into the participants.

- The disadvantages are that it may be difficult to get the time and privacy to record observations if they are covert and there is the danger that the researcher may become "too close" and lose objectivity, resulting in bias.

- Example: A researcher may want to study the behaviours and habits of a particular religious group and joins the group in order to gain access.

2. Controlled Observation –

- This type of observational method is carried out under controlled, arranged conditions, often in a laboratory setting.

- Controlled observations are overt as the researcher will explain the purpose of the research and the participants know they are being observed. Each test subject is exposed to the same situation in order to examine differences between individual reactions.

- The advantage of this type of method is that the study is reproducible and therefore, can be tested for reliability.

- These studies are often fairly quick and can accommodate a larger sample size as well.

- The data is often coded to be numerical in nature which allows for less time consuming data analysis.

- The disadvantage is that this type of method may have less validity due to the Hawthorne effect, which states that participants may behave differently when they know that they are being watched. Example: A researcher is conducting sleep studies on trauma victims to examine the impact of traumatic events on sleep patterns and habits.

3. Structured Observation:

- Another observational method is structured observation. Here the investigator makes careful observations of one or more specific behaviours in a particular setting that is more structured than the settings used in naturalistic and participant observation.

- Researcher may observe people in a natural setting (like a classroom setting) that they have structured some way, for instance by introducing some specific task participants are to engage in or by introducing a specific social situation or manipulation.

- Emphasis in structured observation is on gathering quantitative rather than qualitative data. Researchers using this approach are interested in a limited set of behaviours. This allows them to quantify the behaviours they are observing. In other words, structured observation is less global than naturalistic and participant observation

- One of the primary benefits of structured observation is that it is far more efficient than naturalistic and participant observation. Since the researchers are focused on specific behaviours this reduces time and expense.

- Disadvantage: when researchers exert more control over the environment it may make the environment less natural which decreases external validity. It is less clear for instance whether structured observations made in a laboratory environment will generalize to a real world environment

Forms of Data Collection in this Method

- **Written narrative field notes –** This is the most descriptive and detailed form of data collection, but also the most difficult to analyze.

- **Templates or observation coding sheets –** These forms for recording observation may make it possible to "code" observations of behaviours in such a way that they can be assigned a numerical value. This makes both recording and data analysis much easier.

- **Audio/visual recordings –** It is often desirable to have recordings to refer back to as the data is being analyzed. Audio/visual recordings are commonly done in conjunction with hand-written recordings.