1. **Research design**

The researcher not only selects a qualitative, quantitative, or mixed methods study to conduct; the inquirer also decides on a type of study within these three choices. Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research design. Others have called them *strategies of inquiry* (Denzin & Lincoln, 2011). The designs available to the researcher have grown over the years as computer technology has advanced our data analysis and ability to analyze complex models and as individuals have articulated new procedures for conducting social science research.

A research design is a plan or strategy that is drawn up for organizing the research and making it practicable, so that research questions can be answered based on evidence and warrants. Some researchers argue that a research design should go into considerable detail on data-collection instruments and data types. Others argue that this is a logistical rather than a logical matter, and that a design comprises only, or mainly, a logical argument in which all the elements of the argument cohere (e.g. issues of research questions, methodologies/kinds of research suitable to answer the research questions).

 As Labaree (2013) remarks, the research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data. (p. 1)

Moreover, De Vaus (1999) contends that a research design functions to ensure that the evidence that research obtains enables them to ‘answer the initial question as unambiguously as possible’ (p. 9) and to indicate the kind of evidence required to answer the research questions. Research design is, as White (2013, p. 221) notes, a logical rather than a logistical matter, i.e. concerned with the overall blueprint – the architecture – rather than the ‘nuts and bolts’ of how to carry out that plan (the implementation of the plan and the building materials to be used). The ‘logic’ here is the sequence which connects the data (typically empirical data) to the research questions and its conclusions (Yin, 2009, p. 26). It ensures that evidence is linked to research questions and conclusions and it makes clear the logic which connects the data to the evidence.

1. **A research design will include items such as:**
* the research purposes;
* the research questions;
* the problem, issue, phenomenon, matter to be addressed and the focus of the research;
* the kind of research to be undertaken (methodology(ies)), for example, longitudinal, experimental, action research, survey, ethnographic, case study, mixed methods, together with a justifiation for the kind chosen;
* the timing and duration of the research;
* the content of the research (which may lie on a continuum from interventionist to non-interventionist);
* the people, groups/sub-groups or cases involved and how these are decided;
* how to ensure reliability and validity in the kinds of evidence needed to meet the requirements of the warrants required (i.e. why should we believe that the answers given to the research questions provide us with fair evidence or conclusions; how convincing are the answers; how does the evidence, the fidings of the research, lead to the conclusions drawn, and how safe is this, e.g. in comparison to possible alternative conclusions and interpretations);
* addressing the ethical issues in the research;
* the organization of the research.
1. **A Good Research Design**

A good design is often characterized by adjectives like flexible, appropriate, efficient, economical and so on. Generally, the design which minimises bias and maximises the reliability of the data collected and analysed is considered a good design. The design which gives the smallest experimental error is supposed to be the best design in many investigations. Similarly, a design which yields maximal information and provides an opportunity for considering many different aspects of a problem is considered most appropriate and efficient design in respect of many research problems. Thus, the question of good design is related to the purpose or objective of the research problem and with the nature of the problem to be studied. A design may be quite suitable in one case, but may be found wanting in one respect or the other in the context of some other research problem. One single design cannot serve the purpose of all types of research problems.

A research design appropriate for a particular research problem, usually involves the consideration
of the following factors:

1. the means of obtaining information;
2. the availability and skills of the researcher and his staff, if any;
3. the objective of the problem to be studied;
4. the nature of the problem to be studied; and
5. the availability of time and money for the research work.

If the research study happens to be an exploratory or a formulative one, wherein the major
emphasis is on discovery of ideas and insights, the research design most appropriate must be flexible
enough to permit the consideration of many different aspects of a phenomenon. But when the purpose
of a study is accurate description of a situation or of an association between variables (or in what are
called the descriptive studies), accuracy becomes a major consideration.
Studies involving the testing of a hypothesis of a causal relationship between variables require a
design which will permit inferences about causality in addition to the minimization of bias and
maximization of reliability. But in practice it is the most difficult task to put a particular study in a
particular group, for a given research may have in it elements of two or more of the functions of
different studies. It is only on the basis of its primary function that a study can be categorized either
as an exploratory or descriptive or hypothesis-testing study and accordingly the choice of a research
design may be made in case of a particular study. Besides, the availability of time, money, skills of the
research staff and the means of obtaining the information must be given due weightage while working
out the relevant details of the research design such as experimental design, survey design, sample
design and the like

1. **Importance of research design**

Research design is needed because it facilitates the smooth sailing of the various research operations,
thereby making research as efficient as possible yielding maximal information with minimal expenditure
of effort, time and money. Just as for better, economical and attractive construction of a house, we
need a blueprint (or what is commonly called the map of the house) well thought out and prepared by
an expert architect, similarly we need a research design or a plan in advance of data collection and
analysis for our research project. Research design stands for advance planning of the methods to be
adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in
view the objective of the research and the availability of staff, time and money. Preparation of the
research design should be done with great care as any error in it may upset the entire project.
Research design, in fact, has a great bearing on the reliability of the results arrived at and as such
constitutes the firm foundation of the entire edifice of the research work.

Even then, the need for a well thought out research design is at times not realized by many. The
importance which this problem deserves is not given to it. As a result, many researches do not serve
the purpose for which they are undertaken. In fact, they may even give misleading conclusions.
Thoughtlessness in designing the research project may result in rendering the research exercise
futile. It is, therefore, imperative that an efficient and appropriate design must be prepared before
starting research operations. The design helps the researcher to organize his ideas in a form whereby
it will be possible for him to look for flaws and inadequacies. Such a design can even be given to
others for their comments and critical evaluation. In the absence of such a course of action, it will be
difficult for the critic to provide a comprehensive review of the proposed study.

1. **Types of Designs**

The researcher not only selects a qualitative, quantitative, or mixed methods study to conduct; the inquirer also decides on a type of study within these three choices. Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research design. Others have called them *strategies of inquiry* (Denzin & Lincoln, 2011). The designs available to the researcher have grown over the years as computer technology has advanced our data analysis and ability to analyze complex models and as individuals have articulated new procedures for conducting social science research.



***Quantitative Designs:***

During the late 19th and throughout the 20th century, strategies of inquiry associated with quantitative research were those that invoked the postpositivist worldview and that originated mainly in psychology. These include *true experiments* and the less rigorous experiments called *quasiexperiments*. An additional experimental design is *applied behavioral analysis or single-subject experiments* in which an experimental treatment is administered over time to a single individual or a small number of individuals. One type of non-experimental quantitative research is *causal-comparative research* in which the investigator compares two or more groups in terms of a cause (or independent variable) that has already happened. Another nonexperimental form of research is the *correlational design* in which investigators use the correlational statistic to describe and measure the degree or association (or relationship) between two or more variables or sets of scores (Creswell, 2012).

1. **Survey research** provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. It includes cross sectional and longitudinal studies using questionnaires or structured interviews for data collection—with the intent of generalizing from a sample to a population (Fowler, 2008).
2. **Experimental research** seeks to determine if a specific treatment influences an outcome. The researcher assesses this by providing a specific treatment to one group and withholding it from another and then determining how both groups scored on an outcome. Experiments include true experiments, with the random assignment of subjects to treatment conditions, and quasi-experiments that use nonrandomized assignments (Keppel, 1991). Included within quasi-experiments are single subject designs.

***Qualitative Designs:***

In qualitative research, the numbers and types of approaches have also become more clearly visible during the 1990s and into the 21st century. The historic origin for qualitative research comes from anthropology, sociology, the humanities, and evaluation. Books have summarized the various types, and complete procedures are now available on specific qualitative inquiry approaches. For example, Clandinin and Connelly (2000) constructed a picture of what narrative researchers do. Moustakas (1994) discussed the philosophical tenets and the procedures of the phenomenological method; Charmaz (2006), Corbin and Strauss (2007), and Strauss and Corbin (1990, 1998) identified the procedures of **grounded theory**. Fetterman (2010) and Wolcott (2008) summarized ethnographic procedures and the many faces and research strategies of **ethnography,** and Stake (1995) and Yin (2009, 2012) suggested processes involved in case study research.

1. **Narrative research** is a design of inquiry from the humanities in which the researcher studies the lives of individuals and asks one or more individuals to provide stories about their lives (Riessman, 2008). This information is then often retold or restoried by the researcher into a narrative chronology. Often, in the end, the narrative combines views from the participant’s life with those of the researcher’s life in a collaborative narrative (Clandinin & Connelly, 2000).
2. **Phenomenological research** is a design of inquiry coming from philosophy and psychology in which the researcher describes the lived experiences ofindividuals about a phenomenon as described by participants. This description culminates in the essence of the experiences for several individuals who have all experienced the phenomenon. This design has strong philosophical underpinnings and typically involves conducting interviews (Giorgi, 2009; Moustakas, 1994).
3. **Grounded theory** is a design of inquiry from sociology in which the researcher derives a general, abstract theory ofa process, action, or interaction grounded in the views of participants. This process involves using multiple stages of data collection and the refinement and interrelationship of categories ofinformation (Charmaz, 2006; Corbin & Strauss, 2007).
4. **Ethnography** is a design of inquiry coming from anthropology and sociology in which the researcher studies the shared patterns of behaviors, language, and actions of an intact cultural group in a natural setting over a prolonged period. Data collection often involves observations and interviews.
5. **Case studies** are a design of inquiry found in many fields, especially evaluation, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one or more individuals. Cases are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Stake, 1995; Yin, 2009, 2012).

***Mixed Methods Designs***:

Mixed methods designs involve combining or integration of qualitative and quantitative research and data in a research study. Qualitative data tends to be open-ended without predetermined responses while quantitative data usually includes closed-ended responses such as found on questionnaires or psychological instruments. The field of mixed methods research is relatively new with major work in developing it stemming from the middle to late 1980s. Its origins, however, go back further. In 1959, Campbell and Fisk used multiple methods to study psychological traits—although their methods were only quantitative measures. Their work prompted others to begin collecting multiple forms of data, such as observations and interviews (qualitative data) with traditional surveys (Sieber, 1973). Early thoughts about the value of multiple methods—called mixed methods—resided in the idea that all methods had bias and weaknesses, and the collection of both quantitative and qualitative data neutralized the weaknesses of each form of data. Triangulating data sources—a means for seeking convergence across qualitative and quantitative methods—was born (Jick, 1979). By the early 1990s, mixed methods turned toward the systematic convergence of quantitative and qualitative databases, and the idea of integration in different types of research designs emerged. These types of designs were extensively discussed in a major handbook addressing the field in 2003 (Tashakkori & Teddlie, 2010).

1. **Convergent parallel mixed methods** is a form of mixed methods design in which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem. In this design, the investigator typically collects both forms of data at roughly the same time and then integrates the information in the interpretation of the overall results. Contradictions or incongruent findings are explained or further probed in this design.
2. **Explanatory sequential mixed methods** is one in which the researcher first conducts quantitative research, analyzes the results and then builds on the results to explain them in more detail with qualitative research. It is considered explanatory because the initial quantitative data results are explained further with the qualitative data. It is considered sequential because the initial quantitative phase is followed by the qualitative phase. This type of design is popular in fields with a strong quantitative orientation (hence the project begins with quantitative research), but it presents challenges of identifying the quantitative results to further explore and the unequal sample sizes for each phase of the study.
3. **Exploratory sequential mixed methods** is the reverse sequence from the explanatory sequential design. In the exploratory sequential approach the researcher first begins with a qualitative research phase and explores the views of participants. The data are then analyzed, and the information used to build into a second, quantitative phase. The qualitative phase may be used to build an instrument that best fits the sample under study, to identify appropriate instruments to use in the follow-up quantitative phase, or to specify variables that need to go into a follow-up quantitative study. Particular challenges to this design reside in focusing in on the appropriate qualitative findings to use and the sample selection for both phases of research.
4. **Transformative mixed methods** is a design that uses a theoretical lens drawn from social justice or power as an overarching perspective within a design that contains both quantitative and qualitative data. The data in this form of study could be converged or it could be ordered sequentially with one building on the other. An **embedded mixed methods** design involves as well either the convergent or sequential use of data, but the core idea is that either quantitative or qualitative data is embedded within a larger design (e.g., an experiment) and the data sources play a supporting role in the overall design. A **multiphase mixed methods** design is common in the fields of evaluation and program interventions. In this advanced design, concurrent or sequential strategies are used in tandem over time to best understand a long-term program goal.

There is no single blueprint for planning research. Research design is governed by ‘finess for purpose’. The purposes of the research determine the design of the research which, in turn, informs the methodology. For example, if the purpose of the research is to map the field, or to make generalizable comments, then a survey design might be desirable, using some form of stratified sample; if the effects of a specific intervention are to be evaluated then an experimental or action research design may be appropriate; if an in-depth study of a particular situation or group is important then an ethnographic design might be suitable.