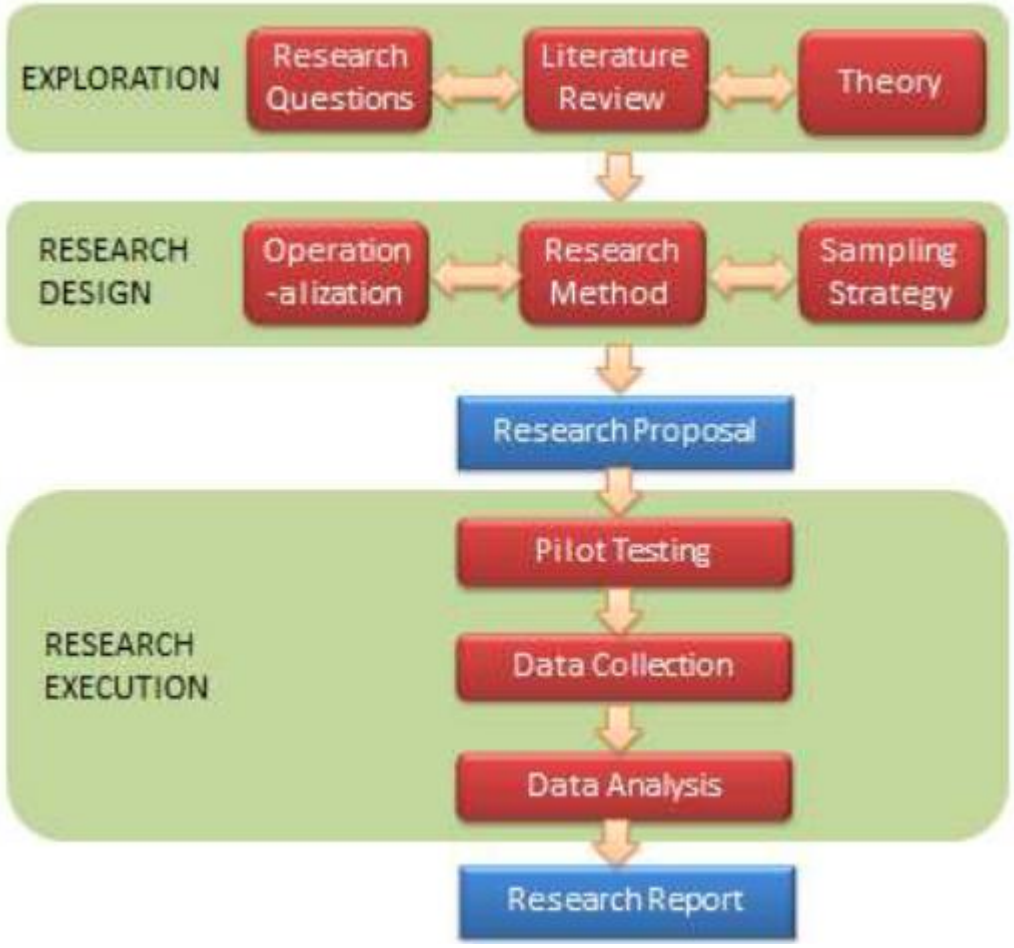
The Research Process

The Research Process





The Research Process (Exploration)

The first phase of research is **exploration**.

This phase includes exploring and selecting research questions for further investigation, examining the published literature in the area of inquiry to understand the current state of knowledge in that area, and identifying theories that may help answer the research questions of interest.



The Research Process (Exploration / Research questions)

Research questions are specific questions about a behavior, event, or phenomena of interest that you wish to seek answers for your research.

Examples: What factors motivate consumers to purchase goods and services online without knowing the vendors of these goods or services?, How can we make high school students more creative?, ...

This phase includes exploring and selecting research questions for further investigation, examining the published literature in the area of inquiry to understand the current state of knowledge in that area, and identifying theories that may help answer the research questions of interest.



The Research Process (Exploration / Literature Review)

The purpose of a **literature review** is three-fold:

(1) to survey the current state of knowledge in the area of inquiry,
(2) to identify key authors, articles, theories, and findings in that area, and
(3) to identify gaps in knowledge in that research area.



The Research Process (Exploration / Theories)

Third step is to identify one or more **theories** that can help address the desired research questions.
While the literature review may uncover a wide range of concepts or constructs potentially related to the phenomenon of interest, a theory will help identify which of these constructs is logically relevant to the target phenomenon and how.



The Research Process (Research Design)

The next phase in the research process is **research design**.
This process is concerned with creating a blueprint of the activities to take in order to satisfactorily answer the research questions identified in the exploration phase.

This includes selecting a research method, operationalizing constructs of interest, and devising an appropriate sampling strategy.



The Research Process (Research Design / Operationalization)

Operationalization is the process of designing precise measures for abstract theoretical constructs.

Operationalization starts with specifying an "operational definition" (or "conceptualization") of the constructs of interest.



The Research Process (Research Design / Research Method)

The researchers must also decide what **research method** they wish to employ for collecting data to address their research questions of interest.

Such methods may include quantitative methods such as experiments or survey research or qualitative methods such as case research or action research, or possibly a combination of both.



The Research Process (Research Design / Sampling Strategy)

Researchers must also carefully choose the target population from which they wish to collect data, and a **sampling** strategy to select a sample from that population.

For instance, should they survey individuals or firms or workgroups within firms? What types of individuals or firms they wish to target? Sampling strategy is closely related to the unit of analysis in a research problem.



The Research Process (Research Proposal)

At this stage, it is often a good idea to write a **research proposal** detailing all of the decisions made in the preceding stages of the research process and the rationale behind each decision.

This multi-part proposal should address what research questions you wish to study and why, the prior state of knowledge in this area, theories you wish to employ along with hypotheses to be tested, how to measure constructs, what research method to be employed and why, and desired sampling strategy.



The Research Process (Research Proposal)

Funding agencies typically require such a proposal in order to select the best proposals for funding. Even if funding is not sought for a research project, a proposal may serve as a useful vehicle for seeking feedback from other researchers and identifying potential problems with the research project (e.g., whether some important constructs were missing from the study) before starting data collection.

Having decided who to study (subjects), what to measure (concepts), and how to collect data (research method), the researcher is now ready to proceed to the **research execution** phase. This includes pilot testing the measurement instruments, data collection, and data analysis.



The Research Process (Research Execution / Pilot Testing)

Pilot testing is an often overlooked but extremely important part of the research process.

It helps detect potential problems in your research design and/or instrumentation (e.g., whether the questions asked is intelligible to the targeted sample), and to ensure that the measurement instruments used in the study are reliable and valid measures of the constructs of interest.

The pilot sample is usually a small subset of the target population.



The Research Process (Research Execution / Data Collection)

After a successful pilot testing, the researcher may then proceed with **data collection** using the sampled population.

The data collected may be quantitative or qualitative, depending on the research method employed.



The Research Process (Research Execution / Data Analysis)

Following data collection, the data is analyzed and interpreted for the purpose of drawing conclusions regarding the research questions of interest.

Depending on the type of data collected (quantitative or qualitative), **data analysis** may be quantitative (e.g., employ statistical techniques such as regression or structural equation modeling) or qualitative (e.g., coding or content analysis).

The Research Process (Research Report)

The final phase of research involves preparing the final **research report** documenting the entire research process and its findings in the form of a research paper or dissertation.

This report should outline in detail all the choices made during the research process (e.g., theory used, constructs selected, measures used, research methods, sampling, etc.) and why, as well as the outcomes of each phase of the research process.

The research process must be described in sufficient detail so as to allow other researchers to replicate your study, test the findings, or assess whether the inferences derived are scientifically acceptable. Of course, having a ready research proposal will greatly simplify and quicken the process of writing the finished report.

Note that research is of no value unless the research process and outcomes are documented for future generations; such documentation is essential for the incremental progress of science.

Common Mistakes in Research

Insufficiently motivated research questions.

Often times, we choose our "pet" problems that are interesting to us but not to the scientific community at large, i.e., it does not generate new knowledge or insight about the phenomenon being investigated.

Because the research process involves a significant investment of time and effort on the researcher's part, the researcher must be certain (and be able to convince others) that the research questions they seek to answer in fact deal with real problems (and not hypothetical problems) that affect a substantial portion of a population and has not been adequately addressed in prior research.

Common Mistakes in Research

Pursuing research fads.

Another common mistake is pursuing “popular” topics with limited shelf life.
A typical example is studying technologies or practices that are popular today. Because research takes several years to complete and publish, it is possible that popular interest in these fads may die down by the time the research is completed and submitted for publication.

A better strategy may be to study “timeless” topics that have always persisted through the years.

Common Mistakes in Research

Blind data mining.

Some researchers have the tendency to collect data first (using instruments that are already available), and then figure out what to do with it.
Note that data collection is only one step in a long and elaborate process of planning, designing, and executing research.

In fact, a series of other activities are needed in a research process prior to data collection. If researchers jump into data collection without such elaborate planning, the data collected will likely be irrelevant, imperfect, or useless, and their data collection efforts may be entirely wasted.

An abundance of data cannot make up for deficits in research planning and design, and particularly, for the lack of interesting research questions.

Research Design (The Action Research vs. Design Research)

Given multitude of research designs, which design should researchers choose for their research? Generally speaking, researchers tend to select those research designs that they are most comfortable with and feel most competent to handle, but ideally, the choice should depend on the nature of the research phenomenon being studied.

Action research (AR) and design research (DR) are two research approaches in information systems (IS)

Research Design (The Action Research vs. Design Research)

Action Research (AR) and Design Research (DR) are two research approaches in Information Systems (IS).

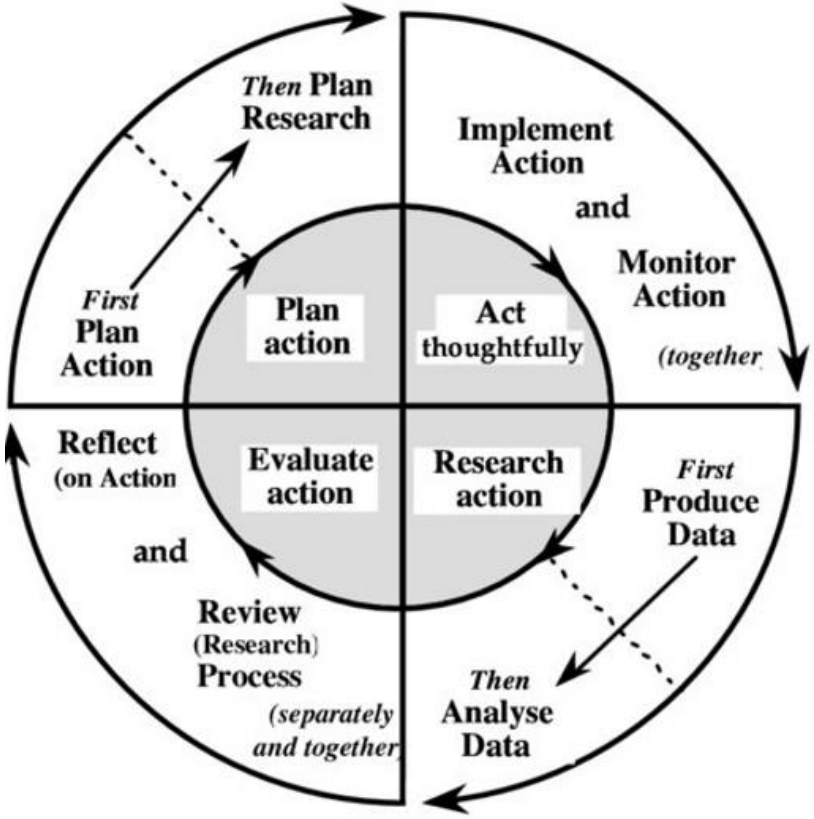
Action Research and Design Research emanate from different scientific chains.

AR emanates from social science.

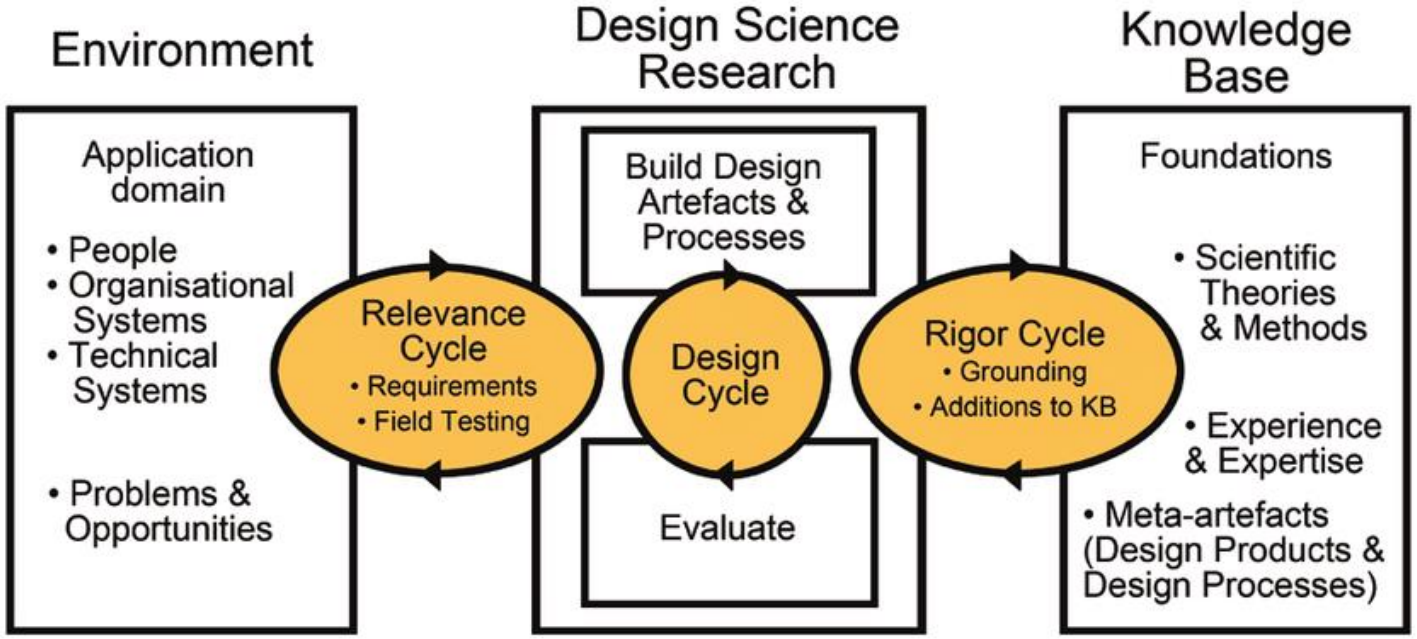
DR emanates from engineering science.

Research Design (The Action Research vs. Design Research)

The Action Research



The Design Research



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