Some Important Aspects of Research Methodology in Social Science

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As we know from research methodology, science is knowledge represented as a collection of "theories" derived using the scientific method. In this paper, we will examine what is a theory, why do we need theories in research, how to evaluate theories, how can we apply theories in research, and also presents illustrative examples of Many theories frequently used in social science research.

Theories are explanations of a natural or social behavior, event, or phenomenon. More formally, a scientific theory is a system of constructs (concepts) and propositions (relationships between those constructs) that collectively presents a logical, systematic, and coherent explanation of a phenomenon of interest within some assumptions and boundary conditions (Bacharach 1989).1

Theories should explain why things happen, rather than just describe or predict. Note that it is possible to predict events or behaviors using a set of predictors, without necessarily explaining why such events are taking place. For instance, market analysts predict fluctuations in the stock market based on market announcements, earnings reports of major companies, and new data from the Federal Reserve and other agencies, based on previously observed *correlations*. Prediction requires only correlations. In contrast, explanations require *causations*,
or understanding of cause-effect relationships. Establishing causation requires three conditions: (1) correlations between two constructs, (2) temporal precedence (the cause must precede the effect in time), and (3) rejection of alternative hypotheses (through testing). Scientific theories are different from theological, philosophical, or other explanations in that scientific theories can be empirically tested using scientific methods. Explanations can be idiographic or nomothetic.

While understanding theories, it is also important to understand what theory is not. Theory is not data, facts, typologies, taxonomies, or empirical findings. A collection of facts is not a theory, just as a pile of stones is not a house. Likewise, a collection of constructs is not a theory, because theories must go well beyond constructs to include propositions, explanations, and boundary conditions. Data, facts, and findings operate at the empirical or observational level, while theories operate at a conceptual level and are based on logic rather than observations.

There are many benefits to using theories in research.

First, theories provide the underlying logic of the occurrence of natural or social phenomenon by explaining what are the key drivers and key outcomes of the target phenomenon and why, and what underlying processes are responsible driving that phenomenon. Second, they aid in sense-making by helping us synthesize prior empirical findings within a theoretical framework and reconcile contradictory findings by discovering contingent factors influencing the relationship between two constructs in different studies.

Third, theories provide guidance for future research by helping identify constructs and relationships that are worthy of further research. Fourth, theories can contribute to cumulative knowledge building by bridging gaps between other theories and by causing existing theories to be reevaluated in a new light.

However, theories can also have their own share of limitations. As simplified explanations of reality, theories may not always provide adequate explanations of the phenomenon of interest based on a limited set of constructs and relationships. Theories are designed to be simple and parsimonious explanations, while reality may be significantly more complex. Furthermore, theories may impose blinders or limit researchers' "range of vision," causing them to miss out on important concepts that are not defined by the theory.

Constructs are abstract concepts specified at a high level of abstraction that are chosen specifically to explain the phenomenon of interest. Recall from that constructs may be unidimensional, such as weight or age, or multi-dimensional, such as personality or culture. While some constructs, such as age, education, and firm size, are easy to understand, others, such as creativity, prejudice, and organizational agility, may be more complex and abstruse, and still others such as trust, attitude, and learning, may represent temporal tendencies rather than steady states. Nevertheless, all constructs must have clear and unambiguous operational
definition that should specify exactly how the construct will be measured and at what level of analysis. Measurable representations of abstract constructs are called **variables**. For instance, intelligence quotient (IQ score) is a variable that is purported to measure an abstract construct called intelligence. Furthermore, variables may be independent, dependent, mediating, or moderating. **Propositions** are associations postulated between constructs based on deductive logic. Propositions are stated in declarative form and should ideally indicate a cause-effect relationship. The empirical formulation of propositions, stated as relationships between variables, is called **hypotheses**. The third theory is the **logic** that provides the basis for justifying the propositions as postulated.

Finally, all theories are constrained by **assumptions** about values, time, and space, and **boundary conditions** that govern where the theory can be applied and where it cannot be applied. For example, many economic theories assume that human beings are rational and employ utility maximization based on cost and benefit expectations as a way of understand human behavior. In contrast, political science theories assume that people are more political than rational, and try to position themselves in their professional or personal environment in a way that maximizes their power and control over others. Given the nature of their underlying assumptions, economic and political theories are not directly comparable, and researchers should not use economic theories if their objective is to understand the power structure or its evolution in a organization. all of its implicit assumptions that form the boundaries of that theory must be properly understood. Unfortunately, theorists rarely state their implicit assumptions clearly, which leads to frequent misapplications of theories to problem situations in research.

Theories are simplified and often partial explanations of complex social reality. As such, there can be good explanations or poor explanations, and consequently, there can be good theories or poor theories. How can we evaluate the "goodness" of a given theory?

Different criteria have been proposed by different researchers, the more important of which are listed below:

1. **Logical consistency; 2. Explanatory power; 3. Falsifiability; and 4. Parsimony.**

How do researchers build theories? Steinfeld and Fulk (1990)2 recommend four such approaches. The first approach is to build theories inductively based on observed patterns of events or behaviors. Such approach is often called "grounded theory building", because the theory is grounded in empirical observations. This technique is heavily dependent on the observational and interpretive abilities of the researcher, and the resulting theory may be subjective and non-confirmable. Furthermore, observing certain patterns of events will not necessarily make a theory, unless the researcher is able to provide consistent explanations for the observed patterns.

The second approach to theory building is to conduct a bottom-up conceptual analysis to identify different sets of predictors relevant to the phenomenon of interest using a predefined framework. One such framework may be a simple input-process-output framework, where the researcher may look for different categories of inputs, such as individual, organizational, and/or technological factors potentially related to the phenomenon of interest (the output), and describe the underlying processes that link these factors to the target phenomenon. This is also an inductive approach that relies heavily on the inductive abilities of the researcher, and interpretation may be biased by researcher's prior knowledge of the phenomenon being studied.

The third approach to theorizing is to extend or modify existing theories to explain a new context, such as by extending theories of individual learning to explain organizational learning. While making such an extension, certain concepts, propositions, and/or boundary conditions of the old theory may be retained and others modified to fit the new context. This deductive approach leverages the rich inventory of social science theories developed by prior theoreticians, and is an efficient way of building new theories by building on existing ones.

The fourth approach is to apply existing theories in entirely new contexts by drawing upon the structural similarities between the two contexts. This approach relies on reasoning by analogy, and is probably the most creative way of theorizing using a deductive approach. For instance, Markus (1987)3 used analogic similarities between a nuclear explosion and uncontrolled growth of networks or network-based businesses to propose a critical mass theory of network growth.

In this section, we present brief overviews of a few illustrative theories from different social science disciplines. These theories explain different types of social behaviors, using a set of constructs, propositions, boundary conditions, assumptions, and underlying logic.

Agency theory, a classic theory in the organizational economics literature, was originally proposed by Ross (1973)4 to explain two-party relationships whose goals are not congruent with each other. The goal of agency theory is to specify optimal contracts and the conditions under which such contracts may help minimize the effect of goal incongruence.

Postulated by Azjen (1991)5, the theory of planned behavior is a generalized theory of human behavior in the social psychology literature that can be used to study a wide range of individual behaviors. It presumes that individual behavior represents conscious reasoned choice, and is shaped by cognitive thinking and social pressures. The theory postulates that behaviors are based on one's intention regarding that behavior, which in turn is a function of the person's attitude toward the behavior, subjective. norm regarding that behavior, and

perception of control over that behavior. Attitude is defined as the individual's overall positive or negative feelings about performing the behavior in question, which may be assessed as a summation of one's beliefs regarding the different consequences of that behavior, weighted by the desirability of those consequences.

Behavioral control is one's perception of internal or external controls constraining the behavior in question. Internal controls may include the person's ability to perform the intended behavior (self-efficacy), while external control refers to the availability of external resources needed to perform that behavior.

Innovation diffusion theory is a seminal theory in the communications literature that explains how innovations are adopted within a population of potential adopters.

Two utilitarian philosophers of the eighteenth century, Cesare Beccaria and Jeremy Bentham, formulated General Deterrence Theory as both an explanation of crime and a method for reducing it. While classical positivist research in criminology seeks generalized causes of criminal behaviors, such as poverty, lack of education, psychological conditions, and recommends strategies to rehabilitate criminals, such as by providing them job training and medical treatment, focuses on the criminal decision making process and situational factors that influence that process.

Research design is a comprehensive plan for data collection in an empirical research project. It is a "blueprint" for empirical research aimed at answering specific research questions or testing specific hypotheses, and must specify at least three processes: (1) the data collection process, (2) the instrument development process, and (3) the sampling process.

Key Attributes of a Research Design

The quality of research designs can be defined in terms of four key design attributes: internal validity, external validity, construct validity, and statistical conclusion validity.

Construct validity examines how well a given measurement scale is measuring the theoretical construct that it is expected to measure. Many constructs used in social science research such as empathy, resistance to change, and organizational learning are difficult to define, much less measure. For instance, construct validity must assure that a measure of empathy is indeed measuring empathy and not compassion, which may be difficult since these constructs are somewhat similar in meaning.

Statistical conclusion validity examines the extent to which conclusions derived using a statistical procedure is valid. For example, it examines whether the right statistical method was used for hypotheses testing, whether the variables used meet the assumptions of that statistical test, and so forth. Because interpretive research designs do not employ statistical test, statistical conclusion validity is not applicable for such analysis.

The best research designs are those that can assure high levels of internal and external validity. Such designs would guard against spurious correlations, inspire greater faith in the hypotheses testing, and ensure that the results drawn from a small sample are generalizable to the population at large. Controls are required to assure internal validity (causality) of research designs, and can be accomplished in four ways: (1) manipulation, (2) elimination, (3) inclusion, and (4) statistical control, and (5) randomization.

In **manipulation**, the researcher manipulates the independent variables in one or more levels, and compares the effects of the treatments against a control group where subjects do not receive the treatment. The **elimination** technique relies on eliminating extraneous

variables by holding them constant across treatments, such as by restricting the study to a single gender or a single socioeconomic status. In the **inclusion** technique, the role of extraneous variables is considered by including them in the research design and separately estimating their effects on the dependent variable, such as via factorial designs where one factor is gender (male versus female). Such technique allows for greater generalizability but also requires substantially larger samples. In **statistical control**, extraneous variables are measured and used as covariates during the statistical testing process.

Finally, the **randomization** technique is aimed at canceling out the effects of extraneous variables through a process of random sampling, if it can be assured that these effects are of a random (non-systematic) nature. Two types of randomization are: (1) **random selection**, where a sample is selected randomly from a population, and (2) **random assignment**, where subjects selected in a non-random manner are randomly assigned to treatment groups. Randomization also assures external validity, allowing inferences drawn from the sample to be generalized to the population from which the sample is drawn. Note that random assignment is mandatory when random selection is not possible because of resource or access constraints. However, generalizability across populations is harder to ascertain since populations may differ on multiple dimensions and you can only control for few of those dimensions.

As noted earlier, research designs can be classified into two categories – positivist and interpretive – depending how their goal in scientific research. Positivist designs are meant for theory testing, while interpretive designs are meant for theory building. Positivist designs seek generalized patterns based on an objective view of reality, while interpretive designs seek subjective interpretations of social phenomena from the perspectives of the subjects involved.

Given the above 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. In the preliminary phases of research, when the research problem is unclear and the researcher wants to scope out the nature and extent of a certain research problem, a focus group (for individual unit of analysis) or a case study (for organizational unit of analysis) is an ideal strategy for exploratory research. As one delves further into the research domain, but finds that there are no good theories to explain the phenomenon of interest and wants to build a theory to fill in the unmet gap in that area, interpretive designs such as case research or ethnography may be useful designs. If competing theories exist and the researcher wishes to test these different theories or integrate them into a larger theory, positivist designs such as experimental design, survey research, or secondary data analysis are more appropriate.

Regardless of the specific research design chosen, the researcher should strive to collect quantitative and qualitative data using a combination of techniques such as questionnaires, interviews, observations, documents, or secondary data. For instance, even in a highly structured survey questionnaire, intended to collect quantitative data, the researcher may leave some room for a few open-ended questions to collect qualitative data that may generate unexpected insights not otherwise available from structured quantitative data alone. Likewise, while case research employ mostly face-to-face interviews to collect most qualitative data, the

potential and value of collecting quantitative data should not be ignored. As an example, in a study of organizational decision making processes, the case interviewer can record numeric quantities such as how many months it took to make certain organizational decisions, how many people were involved in that decision process, and how many decision alternatives were considered, which can provide valuable insights not otherwise available from interviewees' narrative responses. Irrespective of the specific research design employed, the goal of the
researcher should be to collect as much and as diverse data as possible that can help generate the best possible insights about the phenomenon of interest.

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