Research Methodology in Political Science

Dr. Bharat Lal Meena

Associate Professor, Political Science, Babu Shobha Ram Govt. Arts College, Alwar, Rajasthan, India

ABSTRACT

The increasing reliance on statistical methods has been somewhat controversial within the discipline. There are many alternative approaches to research including constructionism. According to constructionism, humans do not simply discover knowledge of the real world through neutral processes, such as experimentation or unbiased observation, but rather create the reality they analyze.

KEYWORDS: research, methodology, politics, analyse, discipline, controversial

INTRODUCTION

Empiricism uses observation to judge the tenability of arguments.

The scientific method, in which findings are based on objective, systematic observation and verified through public inspection of methods and results, is the dominant methodological approach in political science. The ultimate goal of science, which is not always attained, is to use verifiable results to construct causal theories that explain why phenomena behave the way they do.

Scientific knowledge exhibits several characteristics, ten of which are particularly noteworthy:

➢ Science depends on empirical verification to confirm that statements are true through objective observation.

➢ Statements or hypotheses must be falsifiable, meaning that the statements or hypotheses can be refuted through contravening empirical evidence.

➢ While political scientists sometimes produce normative knowledge, which is concerned with evaluation or prescription about what should be, most scientists would agree that the goal of science is nonnormative knowledge, or, the factual or objective determinations of what is.

➢ Scientific knowledge must be transmissible—the methods used in making scientific discoveries must be made explicit so that others can analyze and replicate findings.[1,2,3]

➢ Scientific knowledge is cumulative because scientists build upon the research techniques and results of previous work in advancing the scientific enterprise.

➢ Science summarizes relationships between two or more individual facts through the use of empirical generalization.

➢ Scientific knowledge is explanatory because it answers "why" and "how" questions through a logically derived set of propositions about the relationship between two or more components. Causal relationships, more so than correlation, are especially important in establishing informative and useful explanations of political phenomena.

➢ Science seeks to explain through the power of prediction by offering systematic, reasoned anticipation of future events, which once confirmed, provide evidence that the scientific knowledge responsible for generating the prediction is correct.

➢ Most scientists accept probabilistic explanation— that 100-percent accuracy in prediction is not necessary to understand a phenomenon.

➢ Science relies on parsimony, or simplicity and elegance, to choose between alternate explanations. The explanation that explains the most about a phenomenon with the fewest parameters will be preferred.

A theory is a body of statements that synthesize knowledge of and explain phenomena. It leads to specific and testable predictions about empirical reality—the more observations support these predictions, the more the theory is confirmed.

There is no single prescription for finding scientific truth—research taking many different approaches can reach the same goal of being labeled "scientific." The ideal construction of a research project would begin with a well-defined research question. Next the researcher will explicitly specify hypotheses, or the terms to be tested through the collection and analysis of empirical data. The final steps include making conclusion about whether the data support the hypotheses or whether the hypotheses must be abandoned or modified.

Theories are sometimes described by their explanatory range, or the breadth of the phenomena they purport to explain. Narrow theories only apply to limited events or behaviors, while broad theories apply to an entire body of human behavior. [4,5,6]The broader the range of the things to be explained, the more valuable the theory.

The development of a political science project begins with developing an idea from a number of sources including general observation and the scientific literature. It also includes forming testable hypotheses, collecting data to test the hypotheses, analyzing the data, and interpreting the results.

There are two general objections to classifying political science as a science:
➢ Practical objections: political behavior is very complex, people can intentionally mislead researchers, and data can be difficult or impossible to attain.
➢ Philosophical objections: human reasoning cannot be objectively measured and "facts" are conditioned by the observer's perceptions and opinions.

DISCUSSION
Interpreting events and data from the political world requires a proper understanding of the nature and methods of inference. Political scientists rely on a variety of empirical methods and statistical models, such as linear regression, maximum likelihood estimation, laboratory and survey experiments, and social network analysis. Mathematical models are also important tools for rigorous theoretical analysis. Researchers apply a variety of advanced, sophisticated techniques that are carefully designed to suit the special features of political data.

Political Research Methodology: the Graduate Level
The Department of Political Science offers a strong and rigorous set of methodological courses designed to both broaden and deepen the "toolkits" of our graduate students in preparing them to both consume and produce original research requisite of a PhD degree. Most of the departmental faculty contributes to the Political Methodology component of our graduate program via courses, service on departmental committees, or informal means.

The department's faculty possess research and teaching interests in the following areas: social scientific inquiry and research design; qualitative methods; elementary and mathematical statistics; linear regression analysis; limited dependent variable regression models; measurement and causal models; longitudinal analysis; panel regression models; time series analysis; social choice theory; decision theory; and game theory. The departmental faculty possesses a strongly held shared belief that our graduate students' methodological training is one of our most important professional responsibilities as both teachers and mentors.

Our core courses in political research methodology are designed to ensure that all of our graduate students have acquired a sound basic knowledge of political methodology that is necessary for attaining success in a political science doctoral program.[7,8,9]

Students seeking additional training in political methodology can take courses in a variety of topics covered by department faculty (subject to course availability), ranging from qualitative methods to longitudinal analysis to game theory.

RESULTS
Five Methods of Political Science Research
1. Quantitative Data Analysis
2. Qualitative Data Analysis
3. Game Theory Models
4. Historical Analysis
5. Scenarios

Quantitative Data Analysis
Quantitative data analysis is concerned with measuring the raw figures and numbers. This form of data analysis uses statistical models and math, to develop new theories about the world around us.

Quantitative analysis is a form of descriptive statistics; meaning they are used to quantify the most basic features of a data set. Quantitative data can either be discrete (having to do with a particular set of numbers) or continuous - meaning that any numeric value could have a potential fit. [10,11,12]

Examples of quantitative data collection most commonly involve some kind of surveying or polling, and is concerned with gathering information such as:
➢ Age
➢ Height
➢ Income
➢ Test Scores
➢ Population Size
➢ Iterations of an Event
➢ Errors Made

These are all characteristics that can be easily picked apart and quantified using numerical data. They tell us how much of something there is in any given topic - allowing us to perform necessary calculations during our analysis.

Qualitative Data Analysis
Conversely, qualitative data analysis is concerned with identifying and exploring those types of qualities that cannot be easily defined by numbers and figures. Qualitative data is most often composed of observations: descriptions of behaviors and phenomenon that cannot be quantified by numbers.

Qualitative data analysis can be thought of as looking at the "how" or "why" of a particular issue, whereas quantitative data captures the "what". These observations are invaluable to researchers, as they assign reason and motivation behind an action. Knowing what motivates someone to make a particular action is what drives the majority of political research projects today.

Qualitative data can be broken down into three distinct types:
1. Ordinal Data
2. Binary Data
3. Nominal Data

Ordinal data exists on a ranging scale, and is one of the most prevalent types of questions found in a traditional survey. Questions that ask participants to share answers based on a sliding scale (such as "very unlikely" to "very likely") are a common form of ordinal data collection.

Binary data is represented numerically, and is most often used in the creation of statistical models. These models can be used to track the likelihood of an individual to make a certain choice, among other things.

Nominal data is used to label a subject without the use of numerical figures. These include multiple-choice survey responses, or cases where subjects are allowed to self-sort into a particular group.

Game Theory Models
Game Theory is a model for studying the decision-making process that goes on behind nearly every social interaction. Strategy, cost-benefit analysis, and optimal decision-making are all integral parts of the game theory model.

Researchers often use game theory models in order to better understand how individual actors come to a decision when faced with competition or consequence. The Prisoner's Dilemma - where two convicts are tasked with choosing whether or not to inform on the other, therefore risking jail time, is a classic example of game theory in action. [19,20,21]

Historical Analysis
Historical analysis is a hugely important tool for political science researchers, as it enables them to present history as more than just a series of events that happened in succession. Overcoming this traditional and simplistic way of stating history - like the way you might see it described in a children's textbook - is crucial for researchers looking to derive new insights from their political analysis. [22]

Researchers can draw upon historical inferences from a number of sources including historical texts, films, as well as first and second-hand accounts of events. Researchers will often build off of the works of prior authors in order to develop their own theories and outlooks.

Historical analysis is a common and very effective model for deriving new insights from history. For example, judges often make determinations on matters of law by using historical and legal precedence to inform their decision-making.

Scenarios
Scenarios are a flexible tool that can be used to develop models; models that can be used to drive everything from policy making down to law enforcement. [16,17,18]

Scenarios can be as vast and unspecific - or as calculated and precise - as you need them to be. Social scientists often develop broad scenarios centered around a specific issue or problem they want to explore. These theoretical scenarios are then used to answer key questions like:[13,14,15]

➢ How would (X) change if (Y) were to happen?

➢ What other factors could have influenced this outcome?

➤ Who are the key players in this scenario?

➤ What could we have done differently to prevent this?

➤ What variables exist outside of our control?

Theoretical scenarios are a cost-effective way for researchers to predict and forecast changing phenomena. They can also be used to argue for or against a particular course of action; enabling researchers to build up support for their conclusions, turning them into real-world action.

CONCLUSION
Analytical research is an integral part of any political science research. Knowing the different methods through which political researchers are able to analyze their research is crucial for anyone looking to develop new insight.

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