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Deductive and Inductive Method of Research – A Comparative Analysis

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ABSTRACT

"The goal of research is to perceive what others have seen and to think what no one else has thought, according to Nobel Prize-winning Hungarian biochemist Albert Szent-Gyorgyi". Research has become an integral part in all areas of human activity. Understanding research and its related tools and techniques are very much essential and crucial in Legal researches. Fascinated by the interest in researching laws, the author tries to specifically discuss on the inductive and the deductive methods of research and also draws inferences based on the available data, while studying the practical usage of the same in bring out law reforms.

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1. INTRODUCTION:

The Old French term re + cerchier, which meaning "to search intensively," is where the word research originates. Research is defined by Merriam-Webster as a systematic or exhaustive search, as well as a studious investigations, inspection, inquiry, or playing around, with the aim of discovering and analyzing facts, updating established theories or rules in light of emerging knowledge, implementing such updated or new theories or laws, or obtaining information on a particular subject. In a nutshell, research is the systematic analysis of data and sources to find facts and make new discoveries.

The design of the project is the overall strategy you choose to logically and persuasively integrate the many study components, ensuring that you will effectively tackle the research topic. Study techniques are the processes utilized to collect information and gather data in order to make conclusions. The goal of a research plan is to ensure that the evidence you collect enables you to approach the topic in the most direct, efficient, and logical way possible [1]. Typically, a hypothesis is formulated at the beginning of study and confirmed at the conclusion. A notion is a suggested response based on restricted data which serves as a foundation for further exploration. In certain cases hypothesis cannot be formed or need not be formed. In the former, deductive method has to be used and in the later, inductive method has to be used to analyse and reach a conclusion in a research. Inductive method of research starts with general observation and in the end of research a specific theory is propounded.

Deductive method of research starts with a proposition of hypothesis and at the end of the research the hypothesis is either confirmed or rejected. In the field of sociology, researchers employ both strategies, and when doing research and making inferences from the findings, the two are frequently combined. Both introspective and logic research methods are used in the majority of social studies [2].

2. STATEMENT OF PROBLEM

Whether the open-ended inductive method of research or the narrower deductive method of research is suitable for legal research and to trace out the difference between them.

SCOPE OF STUDY

This study's focus is on tracking down the source, meaning and developments of inductive and deductive method, keenly analysing the steps involved in it, finding the difference between them, discovering the Indian relevance and determining the suitable method amongst this for legal research.

RESEARCH QUESTIONS

1. What are deductive and inductive methods of research?
2. What is the origin and development of inductive and deductive method?
3. What are the steps involved in deductive and inductive methods?
4. What is the difference between inductive and deductive method? and
5. What is the Indian relevance and which one is suitable for legal research?

3. MEANING OF DEDUCTIVE METHOD

The term deductive comes the Latin word deducere, which means to presume [3]. The dictionary meaning of the term is to draw conclusion logically from the things already known [4]. This method was first described by Aristotle. In deduction, generalization is deduced from universal to particular. Deductive method is also called as analytical, abstract and a priorimethod. This method starts from a general concept or rule and ends with a specific conclusion. This also called as 'top-down method or approach' [5]. Deductive method is a part of scientific method. Deductive method uses general statement as the basis for an argument. With the intention of producing numerous statements that follow, the deductive approach begins with a small number of true statements. Logic is the supreme authority in the deductive approach, and if the data presented is accurate and the reasoning employed to arrive at the conclusion is sound, the result is assured. The deductive approach is more focused and focuses on verifying or testing hypotheses. An existing theory's validity is tested using the deductive technique [6]. The outcome or conclusion in Inductive method is only on probability but the outcome or conclusion in deductive method is a true and verified or disproved conclusion [7]. The narrower deductive method of research is suitable for doctrinal legal research to analyse the legal problem in detail and to trace out the solution.Most social researches involves both the inductive and deductive method of research [8].

MEANING OF INDUCTIVE METHOD

The word inductive is derived from the Latin inducere, meaning hypothetical. The inference of the general law from specific cases is what defines the term's dictionary meaning. The inductive approach starts with particular measurements and observations, then looks for trends and regularities, develops a preliminary hypothesis to test, and culminates in the creation of a broad conclusion or theory. This approach begins with a particular observation and concludes with more general or expansive theories. Another name for this is the "bottom-up method or approach" [9]. Starting with particular observations or actual instances of events, patterns, or social processes, inductive reasoning advances analytically to more comprehensive generalizations and theories derived from those observed situations. Using this approach, a researcher can create some hypotheses to test after spotting patterns and trends in a collection of data, and then go on to create some broad conclusions or theories. By definition, inductive research is more experimental and open-ended, particularly in the beginning. Inductive method is used to build or propound a new theory. The outcome or conclusion in Inductive method is only on probability but the outcome or conclusion in deductive method is a true and verified or disproved conclusion [10]. Inductive method has been applied to types of research which have doubtful claim either to the name or to classification as valuable knowledge [11]. The open-ended inductive method of research is more suitable for socio-legal or empirical-legal research. Most social researches involves both the inductive and deductive method of research [12].

4. ORIGIN AND DEVELOPMENT OF DEDUCTIVE AND INDUCTIVE METHOD

The scientific knowledge began to grow rapidly and became very phenomenal at the end of 17th and the beginning of 18th century. The growth was due to the transformation into scientific method. The transformation of scientific method consist of combination of methods of reasoning and observation. Deductive and inductive method are parts of scientific method. Deductive method was first described by

Aristotle. The earlier scientific studies followed mainly the deductive method of research. But deduction method is indifferent to the validity of the property. Therefore, the veracity of the determination is questionable.

The tremendous growth as the result of industrial revolution owes its tribute to the application of true knowledge for solving problems. The modern scientific view is that the objects and the events are interrelated. The changes in a given phenomena can be traced back to the changes in related phenomena. Thus, by manipulating the appropriate phenomena and the desired kind of changes was made possible, this led to the development of inductive method.

Types or Laws of Deductive Reasoning

Law of detachment [13] **-** "Modus ponens" and "affirming the antecedent" are other names for the detachment law, which is the original using reasoning in deductive fashion method. A hypothesis (P) is presented together with a single conditional statement. The statement and the hypothesis are then used to get the conclusion (Q).

The simplest form is given below:

1. $P \rightarrow Q$ (conditional assertion)
2. P (expressed the hypothesis)
3. Q (Summary drawn)

Using the concept of detachment, we can infer Q from P in a deductive fashion. There is no conclusive conclusion, nevertheless, if the conclusion (Q) is presented in place of the hypothesis (P).

The syllogistic **law**14] **-** Two conditional statements are given to the law of syllogism, which combines the hypothesis of a single statement with the findings that follows to arrive at an outcome. By integrating the first statement's hypothesis with the second statement's conclusion, we were able to get the final assertion. We also concede that this remark might be untrue.

The general form is listed below:

1. $P \rightarrow R$
2. $R \rightarrow Q$
3. Therefore, $P \rightarrow Q$.

The law of opposing direction [15] **-** The law of contrapositive states that, in a conditional, if the conclusion is false, then the hypothesis must be false also.

This is the standard format:

1. $R \rightarrow P$.
2. ~P.
3. Therefore, we can conclude ~R.

Types or Laws of Inductive Reasoning

Generalization [16] - A premise of an examination leads to a declaration about everyone in a generalization. The quantity of people in the sample group, the number in the entire population, and the degree of how well the population portrays the population (which can be done by selecting a random sample) all affect how much the foundational data support the conclusion being drawn. Generalization fallacies include the biased sample and the hurried generalization.

Statistical reasoning [17] - A statistical syllogism starts with a generalization and ends with a conclusion regarding a specific person.

Simple Induction [18] - A premise about a sample group is followed by a conclusion about another person in simple induction. This is a hybrid of a statistical syllogism and a generalization, with the statistical syllogism's first premise becoming the generalization's conclusion.

Argument from Analogy [19] - Analogical inference is the process of identifying the characteristics that two or more entities have in common and drawing the conclusion that they also have further characteristics. Despite its widespread application in common sense, philosophical thought, and humanities disciplines, analogical reasoning is sometimes only recognized as a supplementary method. An advanced technique is case-based reasoning.

Causal Inference [20] - Based on the circumstances surrounding the occurrence of an effect, a causal inference makes a determination regarding a causal relationship. Although assumptions regarding the correlation between two items can suggest a causal relationship between them, further evidence is required to determine the precise nature of the causal relationship.

Prediction[21] - An assumption uses a historical sample to make an inference about a future person.

5. STEPS INVOLVED IN INFERENCE METHOD

For deriving a deductive conclusion, the following steps are generally used;

1. **The exploration of the problem** – An indisposable preliminary to any investigation is the existence of a definite problem in the minds of the researcher. The problem must be the one of significant to the actual world.
2. **Setting up of the hypothesis from Assumptions**–The researcher has to select the assumptions from which the conclusion will be derived. The assumptions must be derived from observation and must be close to reality. On the basis of suitable assumption, hypothesis may be formulated. A hypothesis is a conjecture, a hunch of the possible connections between the two phenomena.
3. **Theoretical development of the hypothesis**– The nature and implication of the hypothesis have to be carefully analysed to formulate a theory and by logical reasoning the researcher has to deduce the consequences or conclusion. This is purely a deductive process.
4. **Verification of theories** –The conclusion derived at by the process of logical reasoning must be tested against reality [22].

Figure 1. Generally the deductive method or top-down approach moves the following way.

Steps Involved In Inductive Method

For deriving an inductive conclusion, the following steps are generally used;

1. **State the question**–What information the researcher wishes to elicit.
2. **Make observation** – In order to answer a series of questions, an investigator must conduct study, make direct observations of the participant, and document those observations.
3. **Form a hypothesis –** After gathering adequate information, the researcher has to apply what he has observed and predict an answer to the question.
4. **Test** – Conduct an investigation with a variable to test the presumption.
5. **Analyse** –Analyze and assess the experiment's findings to determine their implications.
6. **Make a determination –** Create an overall rule as a response to the query based on how the outcome is interpreted[23]

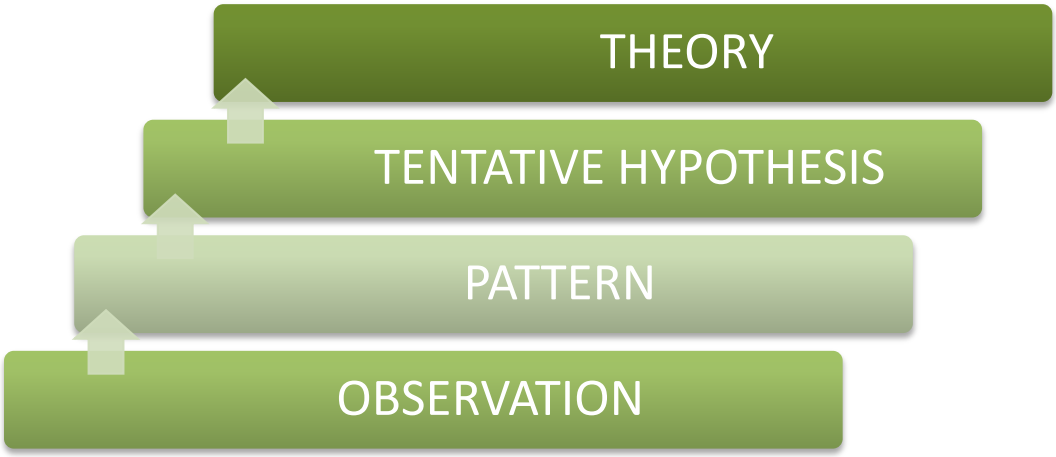

Figure 2. Generally the inductive method or bottoms-up approach moves the following way.

6. APPLICATION OF DEDUCTIVE AND INDUCTIVE METHOD

Reasoning is also involved in observation. But when we refer to reasoning as method of legal and scientific study the term implies deductive reasoning. On the other hand, inferences from observation are made through inductive reasoning based on own logic. Since the validity or truth of a set of propositions is tested by proving that the consequences inferred from the ratios are observable, a combination of the inductive and deductive approaches is required to gain real knowledge. We gather information by observation and inductive reasoning, which includes concepts, facts, and empirical generalizations. Known generalizations are used to build a theoretical model in deductive reasoning, from which additional assumptions and hypotheses are derived. Now, observation is used to test the inferred hypothesis. It is acknowledged that the mathematical framework from which the theories have been derived is also true if the hypotheses are confirmed. If there have been enough tested hypotheses, a study does not always need to begin with observation. The researcher can immediately develop a theoretical model, draw conclusions, and use observation to test the hypothesis. This study concludes with observation after beginning with argumentation [24].

7. DIFFERENCE BETWEEN DEDUCTIVE AND INDUCTIVE METHOD

The deduction or deductive reasoning deduces a single idea from a complexities of observed behaviour. They use reasoning to arrive at a particular idea from observed situation. The proposition deducted, however has to be tested or compared with the available propositions and ideas to see if it is consistent, only if consistent such propositions and ideas will be accepted as generalisation. The induction or inductive reasoning is a process of reasoning from particular to a whole group of ideas, phenomena or situations. It does not approach an object or event by attempting to grasp or explain it in its entirety. The simplest form of induction is that of generalisation from specific group, classes or categories to which they belong [25]. The deductive approach is more focused and focuses on verifying or testing hypotheses. By definition, inductive research is more experimental and open-ended, particularly in its inception. Deductive method is used to test the validity of an existing theory and inductive method is used to build or propound a new theory [26]. The outcome or conclusion in deductive method is a true and verified or disproved conclusion but the outcome or conclusion in inductive method is only on probability.

Most social researches involves both the deductive and inductive method of research [27]. Deduction and induction are inseparable part of system of reasoning. The distinct process of the inductive and deductive reasoning do not exist, where we arrive at proposition deductively by logical operation from the established, known, or self evident facts.

8. DEDUCTIVE AND INDUCTIVE METHOD - INDIAN RELEVANCE

Circumstantial evidence and deductive method

Evidence that has been demonstrated to be associated to the occurrence in discussion in terms of a causal relationship and that leads to an adequate answer is known as accidental proof. It is tied to several other facts in question. The deductive approach is the use of circumstantial evidence to establish a case through factual analysis. The Supreme Court ruled in Ashish Batham v. State of MP that circumstantial evidence might be used to support a conviction. The Supreme Court and the High Court adopted the deductive approach and relied on the circumstantial evidence to pronounce judgements in Dhananjay Chatterjee vs. state [28], State vs. Manu Sharma [29] and Sushil Kumar vs. State [30].

Relevancy of facts and inductive reasoning

Sections 6 to 9 of Indian Evidence Act deals with relevancy of facts. It asserts that the facts in question are pertinent facts because they relate to the same transactions, event, cause, effecting, motive, and behavior. Facts are related to each other, the form a component of principal facts. The relevancy is determined by human experience.

Presumption in law and deductive reasoning [31]

Presumption as to documents – Section 79 to 90 of the Indian Evidence Act, 1872 states that when a certificate or certified copy of a document is produced, the court shall presume that the copy is a genuine copy and the contention that there is a mistake in the document cannot claimed.

Presumption about legitimacy – According to Section 112 of the Indian Evidence Act, 1872, a child birth when a mother and a man were still married in law or within 280 days of the wedding ending and the mother was single at the moment is presumed to be the father's legitimate kid.

Presumption on a married woman's ability to prevent suicide – According to Sections 113-A of the Indian Evidence Act of 1872 and 304-A of the Indian Penal Code of 1860, a court will assume that a woman's suicide was encouraged by the man she married or other family members if she kills herself within

seven years of being married or if she has been the victim of cruelty displayed by her husbands or other family members.

Presumption as to dowry death – According to Sections 113-B of the Indian Evidence Act of 1872 and 304-B of the Indian Penal Code of 1860, the court will assume that the passing of the dowry was triggered by the individual who demanded the dowry if it can be demonstrated that the woman was the victim of any kind of abuse for or in conjunction with her request prior to her fatalities.

Presumption as to existence of certain facts – When it comes to the facts of the specific case, Section 114 of the Indian Evidence Act, 1872, gives the court the authority to make an assumption the existence of any fact that it believes is likely to have occurred, taking into account the normal course of foreseeable events, human behavior, and private as well as public operations.

Use of Deductive and Inductive Method in Judicial Decisions

Judges consider similar situations that have already been handled by a previous court or a higher court before rendering a decision. They derive a general rule from specific situations and apply it appropriately to the case at hand. This approach is purely inductive. The law created by statutes is given greater weight in various legal systems. The civil law system is the name given to such a legal framework. The majority of the law in the field of civil law is codified. Judges make legal decisions based on the codes established by the code; they do not search for cases that have already been decided that are comparable. This approach is deductive [32].

9. CONCLUSION

Any legislation, rule or decision of Supreme Court and High Courts is based on the logic and reasoning. The inductive and deductive method of research helps the legislation and the courts to come to the conclusion with legal reasoning and logic. So, in this way, inductive and deductive method of research is a tool of legal reasoning in crime. The deductive approach is more focused and focuses on verifying or testing hypotheses. By definition, inductive research is more experimental and open-ended, particularly in the beginning. The narrower deductive method of research is suitable for doctrinal legal research to analyse the legal problem in detail and to trace out the solution. The open-ended inductive method of research is more suitable for socio-legal or empirical-legal research. Thus I conclude the analysis by validating my hypothesis that the open-ended inductive method of research is more suitable for socio-legal or empirical-legal research and the narrower deductive method of research is suitable for doctrinal legal research to analyse the legal problem in detail.

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