

Research Methodology PYQ 2020

Q1. What are the different characteristics of the research process? Explain briefly the types of research from the viewpoint of applications and objectives perspective.

Ans1. The research process is characterized by several key features, which include:

Systematic and organized approach: Research follows a systematic and organized approach, involving a series of steps such as defining the research problem, reviewing existing literature, formulating research questions or hypotheses, collecting and analyzing data, and drawing conclusions.

Empirical evidence: Research is based on empirical evidence, which means that it relies on data that is collected through observation, measurement, or experimentation, rather than on opinions or conjectures.

Objective and unbiased: Research aims to be objective and unbiased, focusing on facts and evidence rather than personal opinions or biases. Researchers strive to minimize biases and ensure the reliability and validity of their findings.

Replicable: Research should be replicable, meaning that the study can be repeated by other researchers using the same methods and procedures to obtain similar results. This enhances the credibility and reliability of research findings.

Logical and analytical: Research involves logical and analytical thinking, where researchers critically analyze and interpret data to draw valid conclusions and make evidence-based recommendations.

Types of research can be classified from different perspectives, including:

Applications perspective: Based on the application or context in which research is conducted, it can be categorized into basic research and applied research.

Basic research: Also known as pure or fundamental research, this type of research aims to expand the existing knowledge and understanding of a subject or phenomenon without any specific practical application in mind. It is typically driven by curiosity and the pursuit of knowledge for its own sake.

Applied research: Applied research, on the other hand, is conducted with the specific aim of addressing practical problems or providing solutions to real-world issues. It is typically carried out in industries, organizations, or communities to solve practical problems, develop new products or technologies, or improve existing processes.

Objectives perspective: Based on the objectives or goals of the research, it can be categorized into exploratory research, descriptive research, and explanatory research.

Exploratory research: Exploratory research is conducted to explore and identify new ideas, concepts, or trends, or to gain a better understanding of a research problem or phenomenon. It is typically used when the research problem is unclear or when little existing information is available, and it aims to generate insights and generate hypotheses for further research.

Descriptive research: Descriptive research aims to describe and document the characteristics, features, or relationships of a research problem or phenomenon. It involves the collection and analysis of data to provide a detailed picture or description of the research topic, often using statistical techniques.

Explanatory research: Explanatory research, also known as causal or relational research, is conducted to identify cause-and-effect relationships between variables or to explain why certain phenomena occur. It involves the manipulation of variables and the testing of hypotheses to establish causal relationships between variables.

These are some of the different characteristics of the research process and types of research from the viewpoint of applications and objectives perspective. Researchers need to carefully consider the research design and approach that best aligns with their research problem, objectives, and context to ensure valid and reliable findings.

Q2. What is the role of literature review in research and what are the different steps involved in conducting a literature review?

Ans2. The literature review is an essential component of any research study, and it plays a crucial role in shaping the research design, methodology, and interpretation of findings. The main role of a literature review in research is to provide a comprehensive overview of the existing knowledge and research on the topic of interest, identify gaps, inconsistencies, or controversies in the literature, and establish the context and rationale for the research study. It serves as the foundation for the research and helps researchers build on existing knowledge and make meaningful contributions to the field.

The steps involved in conducting a literature review generally include the following:

Identifying the research question or problem: The first step in conducting a literature review is to clearly identify the research question or problem that needs to be addressed. This helps in defining the scope and focus of the literature review and ensures that it aligns with the research objectives.

Searching and selecting relevant literature: The next step is to search for relevant literature using appropriate databases, libraries, or other sources. Relevant literature may include scholarly articles, books, conference proceedings, reports, and other published or unpublished materials that are related to the research topic. The selected literature should be critically evaluated for its quality, relevance, and reliability.

Reading and analyzing the literature: Once the relevant literature is selected, it should be carefully read, analyzed, and synthesized to identify key concepts, theories, methods, and findings related to the research topic. This involves taking notes, summarizing, and critically evaluating the literature to identify trends, patterns, and gaps in the existing knowledge.

Organizing and synthesizing the literature: The literature review should be organized and presented in a coherent and logical manner. This may involve categorizing the literature based on themes, concepts, or theories, and synthesizing the findings to provide a comprehensive overview of the current state of knowledge on the research topic.

Critically evaluating and synthesizing the literature: The literature review should critically evaluate the strengths and weaknesses of the existing literature, identify gaps, inconsistencies, or

controversies, and provide a synthesis of the findings. This helps in establishing the context and rationale for the research study and identifying research questions or hypotheses.

Properly citing and referencing the literature: It is important to properly cite and reference all the literature that is included in the literature review to give credit to the original authors and avoid plagiarism. Following appropriate citation and referencing styles, such as APA, MLA, or Chicago, is crucial in maintaining academic integrity.

Revising and updating the literature review: The literature review should be revised and updated as the research progresses and new literature becomes available. This ensures that the literature review remains current and relevant throughout the research study.

Overall, the literature review is a critical component of the research process, and conducting a thorough and well-organized literature review helps in establishing the foundation for the research study, identifying gaps in the existing knowledge, and guiding the development of research questions or hypotheses.

Q3. Explain the concept of sampling. What are the principles of sampling? What are the methods of drawing a random sample?

Ans3. Sampling is the process of selecting a subset of individuals or items from a larger population for the purpose of making inferences about the population as a whole. Sampling is widely used in research and statistical analysis as it is often impractical or impossible to study the entire population due to time, cost, and logistical constraints.

The principles of sampling include:

Representativeness: The sample should be representative of the population of interest, meaning that it should accurately reflect the characteristics of the population being studied. This ensures that the findings from the sample can be generalized to the larger population.

Randomness: The selection of individuals or items in the sample should be random, meaning that each member of the population has an equal chance of being included in the sample. This helps to eliminate bias and ensure that the sample is not systematically skewed.

Adequacy: The sample size should be large enough to provide meaningful results and statistical power. A larger sample size generally leads to more accurate estimates and stronger inferences about the population.

Methods of drawing a random sample include:

Simple Random Sampling: In this method, each member of the population has an equal chance of being selected, and the selection is done without replacement. For example, using a random number generator to select individuals from a list or using a random sampling table.

Stratified Random Sampling: In this method, the population is divided into homogeneous subgroups called strata, and then a simple random sample is drawn from each stratum. This method ensures that each stratum is represented in the sample proportionally to its size in the population.

Cluster Random Sampling: In this method, the population is divided into clusters or groups, and then a random sample of clusters is selected. All individuals within the selected clusters are included in the sample. This method is useful when it is not feasible or cost-effective to sample individuals from the entire population directly.

Systematic Random Sampling: In this method, a random starting point is chosen, and then every k th member of the population is selected to be included in the sample. For example, selecting every 10th student from a list of students.

These are some of the commonly used methods for drawing a random sample. Each method has its advantages and limitations, and the choice of sampling method depends on the research objectives, population characteristics, available resources, and the desired level of precision and representativeness in the sample.

Q4. Describe the stakeholders in research and also explain the ethical issues a researcher should consider while conducting research.

Ans4. Stakeholders in research refer to individuals, groups, or entities that have an interest or involvement in the research process or outcomes. They can be categorized into different types based on their roles and interests in the research:

Participants: These are the individuals or groups who are directly involved in the research as subjects or respondents. They may include human participants, animals, or other entities being studied.

Researchers: These are the individuals who conduct the research and are responsible for designing, implementing, and analyzing the study. They may include principal investigators, co-investigators, research assistants, and other members of the research team.

Funding agencies/sponsors: These are the organizations or entities that provide financial support for the research. They may include government agencies, foundations, private organizations, or industry sponsors.

Institutions: These are the organizations or institutions where the research is conducted, such as universities, research institutes, or hospitals.

Peer reviewers and editors: These are the individuals who review and evaluate the research before it is published or disseminated. They play a critical role in maintaining the quality and integrity of the research.

Policy-makers and practitioners: These are the individuals or groups who may use the research findings to inform policies, practices, or decision-making in their respective fields.

Ethical issues are important considerations that researchers need to address throughout the research process. Some of the ethical issues that researchers should consider while conducting research include:

Informed consent: Researchers should ensure that participants are fully informed about the nature, purpose, risks, and benefits of the research, and that they voluntarily provide their informed consent to participate.

Confidentiality and privacy: Researchers should protect the confidentiality and privacy of participants by ensuring that their personal information and research data are kept secure and used only for the purposes of the research.

Research integrity: Researchers should conduct their research with honesty, accuracy, and transparency, and should not engage in fraudulent or unethical practices such as plagiarism, fabrication, or falsification of data.

Conflict of interest: Researchers should disclose any potential conflicts of interest that may compromise the objectivity or integrity of the research, such as financial interests, affiliations, or biases.

Respect for diversity and cultural sensitivity: Researchers should be respectful of the diversity and cultural values of participants, and should ensure that the research is conducted in a culturally sensitive manner, taking into consideration potential biases, stereotypes, or discrimination.

Ethical treatment of animals: If the research involves the use of animals, researchers should follow established ethical guidelines and regulations for the humane treatment of animals, and obtain appropriate approvals and permits from relevant authorities.

Data management and sharing: Researchers should manage research data responsibly, ensure its accuracy and integrity, and consider appropriate ways to share or disseminate research findings while protecting the privacy and confidentiality of participants.

These are some of the ethical issues that researchers should consider and address in their research to ensure that it is conducted in an ethical and responsible manner, and that the rights and well-being of participants and other stakeholders are protected.

Q5. Explain the different methods of data collection using primary sources.

Ans5. Primary sources of data are original, first-hand information collected directly from the source or participants themselves. There are several methods of data collection using primary sources. Some of the commonly used methods are:

Surveys: Surveys involve gathering data from a sample or a population through questionnaires or interviews. Surveys can be conducted in person, via telephone, mail, or online, and can collect a wide range of data, including quantitative and qualitative information.

Interviews: Interviews are conducted in person or through phone or online communication, and involve direct interaction between the researcher and the participant. Interviews can be structured (with predetermined questions), semi-structured (with some flexibility to explore new areas), or unstructured (open-ended discussions), and can collect in-depth qualitative data.

Observations: Observations involve systematically watching and recording behavior, events, or phenomena as they occur in their natural settings. Observations can be participant (where the researcher is actively involved) or non-participant (where the researcher is an observer without active involvement), and can collect qualitative or quantitative data.

Focus groups: Focus groups involve a small group of participants who discuss a particular topic or issue in a guided discussion led by a moderator. Focus groups can provide insights into participants' perceptions, opinions, and attitudes and can generate qualitative data.

Experiments: Experiments involve manipulating variables to observe their effects on a dependent variable in a controlled setting. Experiments can be conducted in laboratories or field settings, and can collect quantitative data.

Case studies: Case studies involve in-depth investigation and analysis of a particular case or situation, such as an individual, a group, an organization, or an event. Case studies can involve various data collection methods, including interviews, observations, and document analysis, and can generate rich qualitative data.

Document analysis: Document analysis involves examining and analyzing existing documents, records, or artifacts to collect data. Documents can include written or printed materials, such as reports, newspapers, letters, diaries, or official records, and can provide historical, contextual, or qualitative data.

These are some of the methods of data collection using primary sources. The selection of the appropriate method(s) depends on the research objectives, the type of data needed, the characteristics of the participants or the research setting, and other relevant factors. Researchers need to carefully plan, design, and implement the data collection process to ensure the validity, reliability, and ethical integrity of the data collected from primary sources.

Q6. What are the main considerations that should be taken into account in writing the research report?

Ans6. Writing a research report involves several important considerations that should be taken into account to ensure that the report is comprehensive, accurate, and effectively communicates the research findings. Some of the main considerations include:

Clear structure and organization: A research report should have a clear and logical structure with a well-defined introduction, literature review, methodology, results, and conclusion. Each section should be organized in a coherent manner, with a flow of ideas and information that is easy to follow.

Clarity and conciseness: The language used in the research report should be clear, concise, and free from jargon or technical terms that may be difficult for the readers to understand. The report should be written in a concise manner, avoiding unnecessary repetition and ambiguity.

Accuracy and validity: The research report should accurately represent the research findings and provide evidence to support the conclusions drawn. The data presented should be reliable, valid, and relevant to the research objectives, and any limitations or assumptions should be clearly acknowledged.

Adequate referencing: Proper referencing and citation of sources used in the research report is important to give credit to the original authors and to provide a basis for readers to verify the information presented. Appropriate citation style should be followed consistently throughout the report.

Appropriate use of visuals: Visuals such as tables, charts, graphs, and diagrams can enhance the presentation of research findings and make complex information more accessible to readers. However, visuals should be used appropriately and should be clearly labeled and explained in the text.

Ethical considerations: Researchers should consider ethical issues such as confidentiality, privacy, and informed consent when writing the research report. Any ethical concerns or considerations should be addressed in the report, and steps taken to protect the rights and well-being of the research participants should be clearly documented.

Review and revision: A research report should be thoroughly reviewed and revised to ensure that it is free from errors, inconsistencies, and inaccuracies. It is important to carefully proofread the report and make necessary revisions before finalizing it for submission.

These are some of the main considerations that should be taken into account when writing a research report. Adhering to these considerations can help ensure that the research report is well-written, accurate, and effectively communicates the research findings to the intended audience.

UniNotes.in