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Economic Research Methodology: Concepts, Approaches, Tools and Applications

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Abstract:- Research methodology is an important part of social science research. It provides a systematic way to identify a research problem, collect data, analyze information, and draw conclusions. A suitable methodology helps researchers improve the reliability, validity, and quality of their research. This paper reviews the major approaches used in social science research, with special focus on qualitative, quantitative, and mixed-method research. It also discusses research design, sampling, data collection, data analysis, and ethical issues. The review shows that qualitative and quantitative methods should not always be treated as opposite approaches. Both can be useful depending on the research problem and objectives. Mixed-method research provides an opportunity to combine numerical information with people's experiences and opinions. The study also finds that methodological choice should be based on the research question rather than on a fixed preference for a particular method. Recent developments such as digital data, online surveys, computational tools, and artificial intelligence are creating new opportunities for social science researchers. At the same time, they also create challenges related to data quality, privacy, ethics, and research transparency. The paper concludes that a clear, suitable, and transparent methodology is essential for producing reliable and useful social science research.

Keywords: Research Methodology, Social Science Research, Qualitative Research, Quantitative Research, Mixed-Method Research, Research Design, Sampling

Introduction:- Research is a systematic process of finding new knowledge and understanding existing social and economic issues. Social science research studies people, society, institutions, markets, political systems, education, and different forms of human behavior. Since social problems are often influenced by many factors, researchers need a proper methodology to study them. Research methodology provides a framework for conducting research. It helps the researcher decide what problem should be studied, what data are required, how the data should be collected, and which methods should be used for analysis. It is important to understand the difference between research methodology and research methods. Research methods are specific techniques used to collect and analyze data, such as questionnaires, interviews, surveys, observation, and statistical analysis. Research methodology is broader. It explains why a particular method is selected and how different research decisions are connected with the research objectives.

In recent years, research methodology has become more important because governments, institutions, and researchers increasingly depend on evidence for decision-making and policy formulation. This is particularly relevant to economics, education, sociology, political science, and other social science disciplines.

Traditionally, social science research has mainly used qualitative and quantitative approaches. Quantitative research focuses on numerical data and statistical analysis, while qualitative research focuses on people's experiences, opinions, perceptions, and social conditions. However, recent research shows that these two approaches do not always need to be treated as completely separate. Researchers can use them together when the research problem requires both numerical and contextual information.

This has increased interest in mixed-method research, which combines qualitative and quantitative approaches. However, simply using a questionnaire and interviews in the same study does not automatically make it a strong mixed-method study. The two types of information should be meaningfully connected during research design, analysis, or interpretation.

Research Problem:-

1. Social science researchers have access to many research methods and techniques. However, choosing the most suitable methodology is often difficult. Researchers may select a method because it is commonly used in their discipline rather than because it is most suitable for their research question.
2. Another important issue is the traditional division between qualitative and quantitative research. Although this distinction is useful, it may sometimes create the impression that researchers must choose only one approach.
3. The development of mixed-method research provides an alternative. It allows researchers to use both numerical data and detailed information about people's experiences. However, successful mixed-method research requires proper planning and integration.

Therefore, this study examines how different research approaches can be selected and used effectively in social science research.

Research Gap

A review of the existing literature shows several important gaps.

1. First, qualitative and quantitative research are still often presented as two completely different approaches. Recent literature, however, suggests that there can be considerable connection and overlap between them.
2. Second, although mixed-method research is becoming more common, researchers do not always clearly explain how qualitative and quantitative findings are connected.
3. Third, many discussions of research methodology focus mainly on individual techniques. Less attention is sometimes given to the complete connection between the research problem, research questions, research design, sampling, data collection, analysis, and interpretation.
4. Fourth, digital technologies are creating new forms of data and new research tools. These developments require researchers to reconsider traditional research practices while maintaining ethical and scientific standards.
5. This study attempts to address these gaps by providing a comparative review of qualitative, quantitative, and mixed-method approaches and by emphasizing the importance of selecting methods according to the research problem.

Objectives of the Study

The main objectives of the study are:

1. To understand the concept and importance of research methodology in social science research.
2. To examine the major features of qualitative research.
3. To study the role of quantitative research in social science.
4. To examine the importance of mixed-method research.
5. To compare qualitative, quantitative, and mixed-method approaches.
6. To identify major challenges in social science research methodology.
7. To examine recent developments in research methodology.
8. To suggest ways to improve the quality and reliability of social science research.

Research Questions

The study addresses the following research questions:

1. RQ1: What are the major features of qualitative, quantitative, and mixed-method research?
2. RQ2: What are the main strengths and limitations of these approaches?
3. RQ3: When is mixed-method research more useful than using a single research approach?
4. RQ4: What are the major methodological challenges faced by social science researchers?
5. RQ5: What new developments are influencing social science research methodology?

Meaning of Research Methodology

Research methodology refers to the systematic process used to conduct a research study. It explains how the researcher plans the study and why particular research methods are selected.

A research methodology normally includes:

1. Identification of the research problem
2. Review of existing literature
3. Research questions or hypotheses
4. Selection of research approach
5. Research design
6. Sampling
7. Data collection
8. Data analysis
9. Interpretation of results
10. Ethical considerations

A good methodology helps the researcher conduct the study in a clear and organized manner. It also reduces errors and researcher bias and improves the quality of the findings.

Major Approaches to Social Science Research

Qualitative Research-: Qualitative research focuses on understanding people's experiences, opinions, attitudes, perceptions, and social behavior. It mainly uses non-numerical information.

Common methods include:

1. Interviews
2. Focus group discussions
3. Observation
4. Case studies
5. Ethnography
6. Narrative research
7. Document analysis

Qualitative research is useful when the researcher wants to understand how people think, what they experience, and why they behave in a particular way.

For example, if a researcher wants to study why rural women do not use digital banking services, interviews can help understand their experiences, fears, difficulties, and opinions.

Strengths

1. Provides detailed information
2. Helps understand social experiences
3. Provides information about social context
4. Can identify new ideas and themes
5. Useful for exploratory research

Limitations

1. Usually uses smaller samples
2. Findings may not be statistically generalizable
3. Data collection can take considerable time
4. Researcher interpretation may influence findings

Quantitative Research

Quantitative research uses numerical data to measure variables and identify relationships or patterns.

Common methods include:

1. Surveys
2. Structured questionnaires
3. Experiments
4. Official statistical data
5. Administrative datasets
6. Econometric analysis

Quantitative research is useful for measuring the size of a problem, comparing groups, testing hypotheses, and examining relationships between variables.

For example, a researcher studying digital payment adoption may collect data from 500 households and examine whether income, education, and digital literacy influence the use of digital payments.

Strengths

1. Provides measurable results
2. Allows statistical analysis
3. Useful for testing hypotheses
4. Can allow comparison between groups
5. Can support generalization when appropriate sampling is used

Limitations

1. May not fully explain people's experiences
2. Results depend on data quality
3. Incorrect measurement can affect findings
4. Statistical results may not explain the social reasons behind a relationship

Mixed-Method Research-; Mixed-method research combines qualitative and quantitative approaches in the same research study. The main purpose is to obtain a broader understanding of the research problem. For example, a researcher may first conduct a survey to find out how many rural households use digital payments. The researcher may then conduct interviews to understand why some households use digital payments while others do not.

Thus, quantitative data may answer:

“How much or how many?”

while qualitative data may help answer:

“Why and how?”

Mixed-method research can therefore provide both numerical evidence and detailed explanations.

However, the two approaches should be properly connected. Simply using two different methods does not automatically make a study a strong mixed-method study. Recent literature emphasizes the importance of proper integration between qualitative and quantitative evidence.

Research Design-: Research design is the overall plan of a research study. It explains how the study will be conducted, what type of data will be collected, and how the data will be analyzed.

Common research designs include:

1. Descriptive Research
2. It describes the characteristics of a population or a social phenomenon.
3. Exploratory Research
4. It is used when a problem is not clearly understood and the researcher wants to explore it further.
5. Analytical Research
6. It examines available information to identify relationships, patterns, or explanations.
7. Experimental Research
8. It is used to examine cause-and-effect relationships by controlling or changing specific variables.
9. A suitable research design should be selected according to the research problem and objectives.

Sampling Techniques-: Sampling means selecting a smaller group from a larger population for research.

Studying the entire population may not always be possible because of limitations of time, money, and resources. Therefore, researchers often select a sample.

1. Probability Sampling
2. Under probability sampling, population units have a known chance of being selected.
3. Major types include:
4. Simple random sampling
5. Systematic sampling
6. Stratified sampling
7. Cluster sampling
8. Non-Probability Sampling

In non-probability sampling, participants are selected according to specific research requirements or accessibility.

Major types include:

1. Purposive sampling
2. Convenience sampling
3. Snowball sampling
4. Quota sampling

The sampling method should be clearly explained and justified because it affects the quality and applicability of research findings.

Data Collection-: Data can mainly be divided into primary data and secondary data.

Primary Data-: Primary data are collected directly by the researcher.

Examples include:

1. Questionnaires
2. Interviews
3. Surveys
4. Observation
5. Focus group discussions
6. Schedules

Secondary Data-: Secondary data are collected from already available sources.

Examples include:

1. Government reports
2. Census data
3. Economic Survey
4. Research papers
5. Books and journals
6. International organizations
7. Official statistical databases
8. Institutional reports

Secondary data are particularly useful in economics and social science research because they can provide large-scale and historical information.

Data Analysis-: Data analysis involves organizing and examining collected information to answer research questions.

Quantitative Data Analysis

Common techniques include:

1. Frequency
2. Percentage
3. Mean
4. Median
5. Standard deviation
6. Correlation
7. Regression
8. t-test
9. Chi-square test
10. ANOVA

Software such as Excel, SPSS, R, and other statistical tools can be used for quantitative analysis.

Qualitative Data Analysis-: Qualitative data may be analyzed through:

1. Thematic analysis
2. Content analysis
3. Narrative analysis
4. Coding
5. Categorization

The researcher identifies important themes and patterns from interviews, observations, documents, or other qualitative information.

Mixed-Method Analysis-; In mixed-method research, qualitative and quantitative findings should be compared and connected. The researcher may identify whether the findings:

1. support each other,
2. provide additional information,
3. show different results,
4. or explain different aspects of the same problem.

Reliability and Validity-: Reliability and validity are important for maintaining research quality.

1. Reliability refers to the consistency of a research instrument or measurement.
2. Validity refers to whether the research instrument actually measures what it is intended to measure.
3. For example, if a questionnaire is designed to measure financial literacy, its questions should actually measure financial knowledge and skills rather than unrelated characteristics.
4. Researchers should therefore test and improve their research instruments before collecting final data.

Ethical Considerations-: Ethics is an important part of social science research. Researchers should protect the rights and privacy of participants.

Important ethical principles include:

1. Informed consent
2. Voluntary participation
3. Confidentiality
4. Privacy
5. Protection from harm
6. Honest reporting
7. Avoidance of plagiarism
8. Proper citation of sources
9. Responsible use of research data
10. These practices help increase trust in research and protect research participants.

Major Findings of the Review

The review provides the following major findings.

1. **No Single Method Is Suitable for Every Research Problem** The choice of research methodology should depend on the research question, objectives, available data, and research context.
2. **Qualitative and Quantitative Methods Can Complement Each Other** Qualitative methods provide depth and context, while quantitative methods provide measurement and statistical evidence.
3. **Mixed Methods Can Provide a More Complete Understanding** When a research problem requires both measurement and explanation, mixed-method research can provide valuable additional evidence.
4. **Integration Is Important** A mixed-method study should clearly explain how qualitative and quantitative findings are connected.
5. **Sampling and Data Quality Matter** Even advanced analytical techniques cannot produce reliable results if the sample or data is poor.
6. **Transparency Improves Research Quality** Researchers should clearly report their research design, sampling, data collection, analytical methods, limitations, and sources.
7. **Digital Research Is Creating New Opportunities** Online surveys, digital datasets, social media data, and computational methods are creating new opportunities for social science research. At the same time, researchers need to address issues of privacy, ethics, data quality, and representation.

Discussion:- The findings show that research methodology in social sciences is moving towards greater flexibility and methodological pluralism.

1. Qualitative and quantitative research continue to have different strengths. Quantitative research is useful when researchers need numerical measurement and statistical analysis. Qualitative research is useful when researchers need detailed information about people's experiences, opinions, and social conditions.
2. However, many social problems require both types of information.
3. For example, consider a study on women's participation in the digital economy. A quantitative survey can show the percentage of women using digital platforms for employment or entrepreneurship. However, interviews can explain the problems women face, such as lack of digital skills, family restrictions, lack of access to technology, or concerns about online safety.
4. Therefore, combining the two approaches can provide a better understanding of the issue.
5. At the same time, researchers should not use mixed methods simply because it appears more advanced. If a research question can be answered effectively through a single method, using an additional method may not be necessary.
6. The most important principle is therefore methodological suitability.

Emerging Trends in Research Methodology

1. **Methodological Pluralism** Researchers are increasingly using different methodological approaches according to the nature of their research questions rather than following a single research tradition.
2. **Digital Data** The growth of digital platforms has created new sources of social science data. Examples include:
 - Online surveys
 - Social media data
 - Digital records
 - Online databases
 - Administrative data
3. **Computational Methods** Computational tools and machine-learning techniques are increasingly being used to analyze large amounts of social data. Recent research has also explored ways of combining traditional social science methods with machine learning and researcher or practitioner involvement.
4. **Greater Focus on Transparency** Researchers are increasingly expected to clearly explain how studies are designed, conducted, and reported. PRISMA 2020, for example, provides a structured framework for transparent reporting of systematic reviews.
5. **Ethical Research** The increasing use of digital data has made issues such as privacy, consent, confidentiality, and responsible data use more important.

Conclusion:- Research methodology is the foundation of good social science research. It provides a systematic way to identify a research problem, collect appropriate data, analyze information, and draw reliable conclusions. The review shows that qualitative and quantitative approaches have different but valuable strengths. Quantitative research is useful for measurement and statistical analysis, while qualitative research provides deeper understanding of people's experiences, opinions, and social conditions. Mixed-method research provides an opportunity to combine these strengths. However, the success of mixed methods depends on proper planning and meaningful integration of qualitative and quantitative evidence. The study also shows that research methodology is changing with the development of digital technologies, computational tools, and artificial intelligence. These developments provide new opportunities but also create new challenges related to ethics, privacy, data quality, and transparency.

The most important conclusion of the study is that researchers should not choose a methodology simply because it is popular or commonly used. The methodology should be selected according to the research question, objectives, context, and type of evidence required. A well-planned, transparent, ethical, and appropriate methodology ultimately improves the credibility and usefulness of social science research and helps generate evidence that can contribute to better academic understanding and policy decisions.

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