

Mixed Research Method in Assessment of Rural Sanitation

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Abstract : Cleanliness and Sanitation are crucial for both the nation and its citizens. From a health perspective, Sanitation has been given a special importance in India. Mahatma Gandhi, the father of the nation, also stated that “political freedom is not as important as sanitation.” The bulk of people in India reside in rural areas, where they face numerous challenges like unemployment, poverty, a lack of access to healthcare, education, and structural amenities like roads and homes. Among these issues, one of the main ones in India is the absence of sanitation coverage and practice. There are a number of issues in rural regions following the Clean India mission Gramin and other initiatives. A mixed research approach is followed to find out the real reason and consequences of poor sanitation coverage. This study analyses the advantages and limitations of the two-research approach research e.g., Qualitative Research and Quantitative Research. Quantitative research involves collecting and transforming data into mathematical form and concluding inferences. However, qualitative research involves the factors to be analyzed in deep. Based on some published research papers, the study finds out that in assessing the rural area, one single approach cannot help. The mixed research approach is appropriate for recognizing the real rural problems. The study states that the rural sanitation coverage in India is satisfactory based on quantitative evaluation, but if we take the mixed research method to assess pictures of the real rural sanitation coverage, there only partial coverage is done. There is still a lot to do which we can't see in numbers only.

Keywords: Research Method, Qualitative Research, Quantitative Research, Sanitation Coverage, Clean India Mission-Gramin, Rural Development.

Introduction - “Cleanliness is next to Godliness, We can no more gain God's blessing with an unclean body than with an unclean mind” (Mahatma Gandhi). “Sanitation and cleanliness are very important for every individual and country as well.” Nation father Mahatma Gandhi also said, that Sanitation is more important than political freedom (Kumar, A., & Singh, R., 2024). Sanitation is a crucial issue that needs to be discussed in the present to increase awareness among rural people to fight against various diseases again (Kumar, A., & Singh, R., 2024).

Non-sanitation does harm not only human health but also generates environmental losses and economic burdens. Many waterborne diseases are growing due to non-sanitation and unhygienic activities, such as diarrhea and malaria, which ultimately increase the economic expenditure of families and the state as well. Stunting is also one of the major issues arising due to the non-sanitation environment around the house, in which a child's height does not grow as it should increase according to their age. For example, generally, it has been seen that the average height in a slum area is less than the average height of an environmentally clean area. Clean and hygienic

activities also make the individual's personality attractive. Many times, some unexpected cases such as women rape and female child assaults happen with rural women in rural areas during open defecation. Therefore, cleanliness and hygiene activities are linked with human self-respect and dignity.

Covid-19 become the most dangerous virus due to non-sanitation activities and unhygienic conditions. This virus has already vibrated the world's economies and health systems. However, Sanitation has played a vital role in protecting us from the challenging COVID-19 virus. the unavailability of good sanitation and hygiene practices was increasing the rate of spreading covid-19. On the other side, the people were being instructed to follow personal hygiene and sanitation to break the path of spreading this virus. Thus, awareness of good sanitation and hygiene practices and the availability of basic sanitation can stop the path of spreading any kind of virus. This is what was done during the covid-19 pandemic in developing countries.

The availability of basic facilities such as safe drinking water and sanitation is not only an important measure of the socioeconomic status of the household but also a

fundamental element for the people's health (Tiwari, R., & Nayak, S., 2017). Sanitation generally means the provision of facilities and services for the safe disposal of human urine and feces (Van Minh, H., & Hung, N. V. 2011). Good sanitation generally involves closer toilet and bathroom facilities, less waiting time, and safely disposing of excreta (Van Minh, H., & Hung, N. V. (2011). According to WHO 2018 report, 2.3 billion people were not accessing adequate basic sanitation throughout the world. And, approximately 4.5 billion people were not having proper access to safely managed sanitation services, i.e., a toilet connected to a sewer or pit or septic tank that manages human waste and prevents us from exposure to disease. Due to the lack of toilets and poor hygiene, the Indian economy suffers an estimated yearly total loss of US\$ 54 billion (in terms of health, education access, time lost, and tourism) and over US\$ 38 billion in treatment costs for diseases caused by poor hygiene. India has recognized that sanitation is very essential. Many sanitation improvement programs have been introduced in India to improve the sanitation condition such as Total Sanitation Campaign (TSC) 1999, Nirmal Bharat Abhiyan (NBH) 1999, Swachh Bharat Abhiyan Urban, and Rural (SBA, U&R) 2014, and others on the local level. Swachh Bharat Abhiyan-Gramin (Rural) was one of the nationwide programs which were launched on 2nd October 2014 to make rural India free from non-sanitation and non-cleanliness conditions by 2nd October 2019. To improve the rural area's sanitation coverage, these were also implemented these programs to eliminate open defecation and improve sanitation infrastructure. Central rural sanitation program 1986 was the first effort to provide safe sanitation in rural areas, total sanitation campaign, Nirmal Gram Puraskar, and Clean India Mission-Gramin 2014. The environmental hygiene committee was established by the union government of India between 1948 and 1949, and it made a comprehensive plan for the public's access to clean water and sanitary facilities. In order to provide safe water and suitable sanitary facilities in rural areas, the National Water Supply and Sanitation Program was started in 1954. After that, the United Nations declared 1981 to 1990 the "International Drinking Water Supply and Sanitation Decade". In 1981 only 1 percent of rural households had toilets. There was no focused program for rural sanitation in India.

According to the Ministry of Jal Shakti, as of March 2021, more than 10.5 crore individual household toilets have been constructed across rural India under the SBM-G program, resulting in an increase in sanitation coverage from 39% in 2014 to 100% in 2021. This has resulted in the achievement of ODF status for all rural areas in India (Simplified UPSC, 2021).

Research is the most popular tool to enhance and brush up on the existing knowledge about any subject and about any person. In the field of economics, information & technology, science and social science, sociology, business,

and health, etc. there are two most common methods of carrying out the research, namely Qualitative Research and Quantitative Research. Qualitative research is all about verbal narratives like spoken or written data, however, quantitative research focuses on logical or mathematical observations to narrate the conclusions.

The issue of the study: For a long period, different governments and social institutions have been focused on various plans and policies to identify the real reason for poor sanitation coverage in rural areas in India. But due to a lack of real observation and a lack of real research methodology, they could not find the right way of observation. Thus, this study tries to focus on which observation method would be appropriate to see the basic problem of the rural area's sanitation coverage. Can sanitation coverage and the behavior of people towards sanitation and hygiene in rural areas understand by the absolute qualitative research approach? or should we have to follow the qualitative research approach to understand the real picture of the problem of rural sanitation coverage?

The Objectives of The Study: There are two following main objectives, the study tries to explain in detail:

1. To study the different dimensions of qualitative vs quantitative research approach.
2. To study the mixed research method concerning the rural sanitation assessment.

Review of literature

Kumar, A. (2019) assessed rural areas of Uttar Pradesh by taking a hundred households survey. This study evaluated a famous government program of sanitation coverage, i.e., the Clean India Mission Gramin. The quantitative search approach was adopted to observe the program's contribution change, such as how many toilets are built in the village and how many people or households are using that toilet to defecate. Based on quantitative search observation, the study says that the study area of Auraiya district in Uttar Pradesh is not completely open-defecation-free. The study recognized that only a quantitative research method is not enough, which is why the study also surveyed with the help of qualitative variables such as what are the reasons people not using the toilet and what is the human pattern of adopting sanitation activities in their daily life. Thus, the study is based on mixed research methods in which basis the study says that the village of Uttar Pradesh is not open-defecation-free, though the government of India has declared the entire country open-defecation-free.

Doyle, L., et al. (2009) stated in their article titled "an overview of mixed method research" that mixed method research is an evolution of social science research. This has been emergence due to the limitations of two other approaches, quantitative and qualitative research methods. This method provides researchers with a variety of ways to answer the research question that cannot be answered by applying a singular method. For solving healthcare-related

problems of the masses, this is the most appropriate method of research.

Whitehead, D., & Schneider, Z. (2007) explain how mixed-method research can help in the field of nursing and midwifery research. They also explain the types of mixed-method research or triangulation methods of analysis. According to the study, Mixed-methods research provides a way of making research more meaningful, purposeful, and complete, which can be achieved by using neither a singular qualitative research method nor a singular quantitative research method in social science. The study helps us understand the problem and the fundamentals of using mixed methods in research. For instance, mixed methods offer a toolbox to capture the true purpose of the study as well as the chance to combine various research traditions and provide the researcher with additional perspectives and insights that go beyond those provided by any one technique. The paper also demonstrates how mixed-method research has limitations.

Strijker, D. et al. (2020) state in their study that there has been an increased application of mixed-method research in the context of rural area research. The scope of the mixed research method has increased in rural journals. The Journals of Rural Studies were traditionally oriented toward qualitative research. In last few years, Mixed-Method research approaches have played a visible role in the journals of rural studies (around 20% in 2016). The mixed methods approach has been proven to present more insight into a real-world problem. And even more than average Ph.D. projects have been written with mixed-method research.

Quantitative Research: Quantitative research is expressed in numbers, graphs, and tables. It is used to validate theories and perceptions. This kind of study establishes the facts to generalize the conclusion regarding things and people. The most common example of this method is experiment and observations which are quantifiable and can be served with close-ended questions. In other words, a quantitative study is predicated on quantifying some characteristics. It applies to events that can be described by numbers or quantities. (C R Kothari, 2014). Numerous numerical data are gathered during the quantitative study. It involves techniques like experiments, structured observations, and questionnaires. Quantitative research targets to produce information and a better understanding of society. The scholars of social science including communication and commerce use quantitative study to understand the phenomena and to influence the people with conducted results.

Why should we Collect Quantitative Data?

In the process of collecting information related to the sanitation behavior of rural people, such as why you prefer to go outside for defecation and why the people are not willing to build their toilets? these qualitative questions can have the risk of being too vague. This is why we go for the

quantitative survey to avoid confusion among our respondents. They can easily respond to how many times they clean their hand in a day to prevent diseases. How many people have a toilet in the village and using? Also, how many schools are having separate toilets for girls' students? This information can be taken in only the form of numbers.

Qualitative questions take a long time to answer, such as why and what are the reasons for not cleaning the toilet and outlet by yourself? When the respondent starts to answer, they take a longer time to complete their answer. In this situation, both respondents, as well as the interviewer have to wait longer and sometimes get bored, which can impact the quality of the answer. On the other hand, using quantitative questions helps us to include more questions in our survey and we receive more responses out of it in minimum time. In the quantitative method of the questionnaire, we can even provide the options to reduce the time of answering. The quantitative method helps the interviewer to approach the maximum number of households and respondents in their study. In the case of sanitation coverage in the village, the interviewer can meet many women and men in a day. Which can reduce their time and money as well.

Quantitative questions are more quantifiable and easier to ask and write it down. With these kinds of questions, we can assign the numerical value to a word response or categorical variable and then can convert it into indicators and graphs. An example can be the Likert scale. It means that the overall quality of the data is better and easy to understand and makes others understand by presenting with the tables and graphs. For example (Kumar, A. 2019) exposed the toilet built in a randomly selected village that only 72 percent of households were having a toilet in the village of Uttar Pradesh, while the data from the Ministry of Jal Shakti was saying that there is 100 percent of households with a toilet in the village.

With the quantitative research approach, we can reach the maximum information related to sanitation coverage, such as how many members of the family are open defecating and how many are not. (Kumar, A. 2019) was able to collect how much expenditure the household did to build their toilet in the house? how many persons are getting sick due to unclean areas around the house? Therefore, the quantitative research approach covers the maximum information from the rural area with the limited time and expenditure of responders.

Qualitative research: Qualitative research expresses the results in words. It is used to understand concepts, thoughts, or experiences. This type of research makes the researcher find the knowledge or facts from depth insights of topics that are not well understood or some time to check the fact of the existing phenomena. In general, these techniques include a verbal explanation of observed facts, and the inquiry fetched from open-ended interviews. These

techniques also include literature reviews that examine ideas and theories. In qualitative research, narratives are gathered and analyzed using techniques like focus groups discussion, interviews, and ethnographies. Thus, qualitative research can be described as a process of naturalistic inquiry in which we aim to gain knowledge of social phenomena in their original setting. It is only done through the direct experiences of the research issue and concentrating on the logic of “why” rather than what of the social phenomena. To investigate human phenomena with this type of research method, the researcher uses a variety of techniques such as case study, historical analysis of any events, biography of the legends, discourse analysis, esophagography, phenomenology, and grounded theory. To understand the basic sanitation problem of rural area, a qualitative research approach must be followed because the developmental change in numbers cannot shows exactly what changes is happening in the village. Under the Swachh Bharat Abhiyaan-Gramin, a toilet is provided to every household, but why a member of the family is not using the toilet, we have to know. Qualitative research helps us to know why and how the changes have been taking place in the form of development in rural areas. As (Kumar, A. 2019) surveyed 100 households in a randomly selected village in Uttar Pradesh and found that people are not using toilet facilities because they think going outside in the morning is better for the health and soil of the field, even they can look after their field when they go outside to defecate.

In rural areas, there happen many cases in which severity cannot be captured only by the quantitate method because the impact of these cases is very different such as rape and women molestation during their open defecation. (Sweta Khandelwal et. all 2020) states in their research paper that there have been happening many cases of rape and sexual assault in rural areas but after implementation, these cases have been reduced. It is happed due to the availability of sanitation infrastructure information on independent household latrines. This has resulted that in 2016, sexual assaults have downsized to 65 percent and by the year 2018 the percentage dip in the reduction of violence against women is more than 90 percent. this kind of research can be only done with the help of qualitative research (Kumar, A., & Singh, R., 2024).

Mixed Research Method: After understanding the quantitative and qualitative research methods, there is also a third way of answering the questions with the use of mixed-method research. Mixed method research is a procedure for collecting, analyzing, and “mixing” quantitative and qualitative methods in a single study or a series of studies to understand a research problem (Creswell & Plano Clark, 2011).

The purpose of this form of research method is to providing the better understanding of a research problem and answer it with maximum perfection of facts. Because

one method has its own limitation and other one its own. Thus, mixed method research combines the techniques of both Research methods and provide the researcher a most appropriate way of conducting research. Mixed methods research is a worldwide accepted methodological approach to social science nowadays.

Mixed methods are also more prevalent today than they were in recent past years in rural area research. One might anticipate that mixed methods approaches would predominate in the methodological realm since the goal of rural studies is to contribute to the solution of practical issues. Even though this strategy is becoming more popular, this is still not followed by the majority. One explanation could be that mixed-methods research requires more effort and requires the scholar to become proficient in more research methods. Another reason might be that the traditional line between qualitative and quantitative still governs the journal output from big projects that aim to provide answers to societal questions. Furthermore, given the increased acceptance of mixed methods and the tendency for rural studies to analyze complex (rural) world problems, where mixed methods have an obvious advantage, one could anticipate that these methodologies will eventually receive recognition in the top journals (Kumar, A., & Singh, R., 2024).

The mixed-method research approach can be particularly valuable in assessing rural sanitation, as it can provide a more comprehensive understanding of the challenges and opportunities related to sanitation in rural areas. There are several benefits of using mixed-method research to find the researchable facet of rural India:

1. By using a mixed-method research approach, researchers gain more comprehensive understanding of the rural sanitation behavior of people. Because one (quantitative research) provides numerical data and statistical analysis of physical facilities in rural areas while the other one (qualitative research) provides a deeper understanding of the people’s perspective and why and how much they are giving importance to sanitation issues.
2. Mixed method research allows researchers to use multiple sources of data to corroborate or confirm their findings, increasing the validity and reliability of the study. By combining quantitative data, such as surveys or water quality tests, with qualitative data, such as focus groups or key informant interviews, researchers do cross-validation of their findings and gain a deeper understanding of the issues related to rural sanitation.
3. The use of both methods in a single study help to overcome from the limitations of each method and provide a more complete understanding of the topic. This method enhances the generalizability of the findings.
4. Mixed method research provides flexibility to research design of the study, which allow researchers to adapt the research tool based on the needs of the study and the research questions.

5. Mixed method research can be particularly useful in applied settings, such as program evaluation or policy research, where the integration of quantitative and qualitative methods can provide more useful information for decision-making.

6. Qualitative research approach helps to identify contextual factors that may impact sanitation practices in rural areas, such as cultural beliefs, social norms, or economic constraints.

7. Understanding the motivations and barriers to behavior change is critical to designing effective sanitation interventions. Mixed method research helps researchers explore the factors that influence behavior change in rural communities, which can then be used to develop targeted interventions.

8. Mixed method research is used to evaluate the effectiveness of sanitation interventions in rural areas. Quantitative data provide information on changes in sanitation practices or health outcomes; however, qualitative data provide insights into the acceptability and feasibility of the intervention.

Quantitative Versus Qualitative Approaches:

Quantitative research focuses on testing hypotheses or theories through numerical data analysis. It is often used to measure or quantify phenomena, such as the prevalence of a particular disease or the effectiveness of an intervention. Qualitative research, on the other hand, is focused on exploring phenomena in depth, often through open-ended interviews or observations. It is used to gain an understanding of complex social or cultural issues, such as the experience of living with a chronic illness or the impact of a particular policy on a community.

Quantitative research is based on structured data collection methods, such as surveys or experiments, that produce numerical data that can be analyzed statistically. While Qualitative research is based on unstructured information-collecting methods, such as observation or interview, that produce textual or narrative data that must be analyzed using qualitative methods.

Quantitative research uses statistical methods to analyze numerical data and test hypotheses. While, Qualitative research uses a range of techniques to analyze textual or narrative data, such as content analysis or grounded theory.

Quantitative research often uses probability sampling methods to ensure the representative sample of the population. However Qualitative research often use purposive or convenience sampling methods to select participants on basis of their requirement of the research question.

Quantitative research aims for generalizability, or the ability to generalize findings from a sample to a larger population. Qualitative research, on the other hand, aims for transferability, or the ability to transfer findings to similar contexts.

In social science research, both approaches use various research techniques to collect and analyze primary observed information. Though both approaches have a different way of concluding the inference from the collected information, both approaches contain the core scientific principles, and both approaches have their strengths and limitations. But to understand the full range of social science research and to solve the contemporary research problem, we have to understand both research approaches simultaneously. In actuality, both approaches are complementary to one another in nature as Ragin (1994) states that "The key features common to all qualitative methods can be seen when they are contracted with quantitative data techniques. Both approaches condense the data to see the big picture. Qualitative methods are best understood as data enhancers. When data are enhanced, it is possible to see critical aspects of cases more clearly."

If we see the basic difference between both of these methods, we find that the Quantitative Approach measures the objective facts and variables. the reliability of data is the key factor of this method. On the other hand, constructing the social reality, and cultural meaning, and focusing on interactive processes & events are measured with qualitative research approaches. And the authenticity of the fact is the key factor of this method.

In quantitative research the information is in form value-free, we put the value in numbers and we can discuss the theory and data separately however in the qualitative research approach we see the value of the object in itself. The value is written in the exact form as it exists. For example, people believe there should not be toilets in the home near to kitchen and temple because these can make the other place impure. For this people may have different-different values to not building the toilet in the house premises. It can be only observed by the qualitative research approach.

When we study any societal issue with the help of a quantitative research method, we can take many cases and subjects together to analyze the issue because all these issues are judged by analyzing the number statistically. This means we can find the correlation of many cases in the same period and spot. But on the other hand, in qualitative approaches to research, only a few cases and subjects are analyzed at any specific time and place. The information is collected with a deep collection of experience, which means it is impossible to think of the different cases in the same way. This method is analyzed based on themes (thematic analysis).

In the quantitative research method, the researcher plays an independent role. The researcher can collect the information from people in numbers and then correlate try to see whether there is a correlation between them or not. On the other hand, the researcher in qualitative involves himself in the society and observes the information, and

brings that as an inference. For example, India has been declared as open defecation free based on providing toilet facilities to the rural people. But the real picture of the defecation pattern of rural people has been declared based on a qualitative study that this village is not open defecation free.

Discussion and Quantitative vs Qualitative vs Mixed Research Methodology: Quantitative research consists of collecting and converting data into numerical form and concluding inferences. However, qualitative research involves the factors to be analyzed in deep. Based on some published research papers, the study finds out that to assess the rural area, one single approach cannot help. Therefore, the mixed research approach is appropriate for recognizing the real rural problems. the study absorbed that the rural sanitation coverage in India is satisfactory based on quantitative evaluation if we take the mixed research method to assess the rural area there, only partial coverage is done. there is still a lot to do which we can't see in numbers only.

A study conducted by (Kumar. A., 2019) titled "The Economic Assessment of Swachh Bharat Abhiyan Gramin: A Case Study of Auraiya District". The study is based on mixed-method research. The result of the study reveals that more than 85 percent of households are having toilet facilities in rural areas, and most of the toilets are being used. After the construction of toilets under the Clean India mission, 50 percent of people have started to use the toilet. The increased number in using the toilet shows that there is a positive contribution to the program.

It can only be observed with the help of mixed-method research that the Definitions for assessing ODF communities vary but often include numerous points which can only be assessed with the help of mixed-method research. Such as (1) there must be complete Eradication of open defecation from the community, (2) Household toilets should be hygienic, there should be providing the safe contaminant of fesses, and must be offering privacy with a lid on the defecation hole and a roof on the head. All these aspects can only be covered with the help of qualitative and quantitative approaches.

Handwashing is one of the most essential practices of being hygienic and clean, which protects us from different infections and diseases. To survey the hand-washing activities of rural people is a little difficult because many times, people even do not wash their hands after critical activities such as defecation and pissing out. People say that they go for a hand when they are asked with the help of a quantitative survey method, but if we ask them indirectly or qualitative basis, the time of washing hands goes down. Thus, knowing the real picture of the hand washing of rural people can only be surveyed mixed-method research approach. The researcher goes with the mixed-method research approach to learn about Safe drinking water storage and handling them and food hygiene. On the other

hand, Social and behavioral sustainability only can be evaluated by mixed-method research in rural India. it also ensures a deep understanding of the sustainable change in social and behavioral activities in the area. The final accurate result related to sanitation coverage conducted with the help of this method motivates us to not follow the open defecation.

Conclusion: India has recognized that sanitation is very essential and there, many sanitation improvement programs have been introduced in India to improve the sanitation condition such as the Total Sanitation Campaign (TSC) 1999, Nirmal Bharat Abhiyan (NBH) 1999, Swachh Bharat Abhiyan Urban, and Rural (SBA, U&R) 2014, and others on the local level. Swachh Bharat Abhiyan-Gramin (Rural) is one of the nationwide programs which was launched on 2nd October 2014 to make rural India free from non-sanitation and non-cleanliness conditions by 2nd October 2019. The mixed-method research approach is particularly valuable in assessing rural sanitation, as it provides a comprehensive understanding of the challenges prevailing in rural areas and it also provides an understanding of ways to come out from the problems related to poor sanitation coverage in rural areas. There are several benefits of using mixed-method research to find the researchable fact of rural India, Complementarity, Triangulation, Enhancing generalizability, Increased flexibility, and Practicality. Mixed method research can be particularly useful in applied settings, such as program evaluation or policy research, where a combination of quantitative and qualitative methods can provide more useful information for decision-making.

References:-

1. Kumar, A. (2019). The Economic Assessment of Swachh Bharat Abhiyan (Gramin) in Uttar Pradesh: A Case Study of Auraiya District.
2. Doyle, L., Brady, A. M., & Byrne, G. (2009). An overview of mixed methods research. *Journal of research in nursing*, 14(2), 175-185.
3. Whitehead, D., & Schneider, Z. (2007). Mixed-methods research. *Nursing and Midwifery research: methods and appraisal for evidence-based practice*, 249-267.
4. Ahmad, S., Wasim, S., Irfan, S., Gogoi, S., Srivastava, A., & Farheen, Z. (2019). Qualitative vs. quantitative research. *population*, 1(43), 2828-2832. Link- Qualitative v/s Quantitative Research | Request PDF (researchgate.net).
5. Strijker, D., Bosworth, G., & Bouter, G. (2020). Research methods in rural studies: Qualitative, quantitative, and mixed methods. *Journal of Rural Studies*, 78, 262-270.
6. Simplified UPSC, 2021. Weblink (<https://simplifiedupsc.in/swachh-bharat-mission-sbm/>).Referenced date 21/05/2023
7. Kumar, A., & Singh, R. (2024). The Rural Sanitation Coverage: Infrastructural Enhancement In Rural Uttar Pradesh. *www.jamshedpurresearchreview.com*, 19.