AG Publishing House

Advanced Research Techniques: Theories, Methods, And Practices (Volume-2)

Volume 2
Year: 2025

AG PH Books

Advancements in Data Collection Methods: Online Surveys, Interviews, and Beyond

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Abstract

After a well-designed study, data is the primary source of information required for studying a research topic. Data collection is essential because without the precise information obtained, research cannot be carried out. In this article review the various literature's study on advancements in data collection methods. It concluded that advancements in online survey and interview methods have revolutionized data collection, especially in the wake of the COVID-19 pandemic. The rise of digital tools and self-recorded video statements has enabled multimodal data capture, enhancing both qualitative and quantitative research. Online platforms offer cost-effective, wide-reaching, and convenient solutions for collecting accurate data. While some areas of survey research adopt innovations cautiously, others embrace rapid transformation driven by digital engagement and user preferences. As internet usage grows, online data collection continues to evolve, supporting dynamic research strategies and fostering a more agile, visually oriented, and globally connected research environment.

Keywords: Data collection method, Online survey, Qualitative methods, Interview, Quantitative methods, Focus groups, Observation, etc.

1 Introduction

The task of gathering data starts when the study topic has been determined and the research strategy or plan has been laid out. There are two primary methods for collecting data about circumstances, particular problems, or any other occurrence. Sometimes all that is needed is to retrieve the information that is already there [1]. The researcher must next decide which of the two data collection procedures will be

[*] ISBN No. - 978-93-49028-02-9

employed to determine the kind of data that will be used for the study. Data collection is, by definition, the process of acquiring, evaluating, and analysing precise understandings for study using accepted, established techniques. The information acquired may be used by a researcher to assess the hypothesis [2]. The most critical phase of the procedure is almost always the collection of data, irrespective of the studied subject. The methods of data collection for different fields of research vary depending on the critical information [3]. The primary objective of data collection is to safeguard "the information-rich and unquestioning data" that is collected for statistical analysis and to facilitate the development of data-driven research judgements [4].

A. Data collection

Data collection is the process of collecting and analysing data or information from a variety of sources to resolve "research issues, provide answers to queries, assess results, and predict trends and probability". This critical phase is essential for research, analysis, and decision-making in a variety of disciplines, such as "the social sciences, business, and healthcare". Researchers are required to ascertain the types of data, its sources, and the methodologies employed during the data collection process. The collection of data is essential in "the government, business, and research sectors" [5].

1. Quantitative Methods

Quantitative methods frequently employ statistical instruments for market research and demand forecasting. These methods anticipate demand by using previous data. These fundamental methods of gathering data are often used to create long-term estimates. Techniques for statistical analysis are particularly reliable since they are very objective [6].

Time Series Analysis: When a variable's values are arranged sequentially at equal intervals of time, it's called a time series. Using patterns, a business may predict how much demand there will be for its products and services over a certain period of time.

Smoothing Techniques: When there are no discernible patterns in the time series, smoothing methods may be used. In order to determine patterns and demand levels for estimating future demand, they remove random fluctuation from the previous demand. For demand forecasting smoothing, the most popular methods are "the weighted moving average and simple moving average approaches".

Barometric Method: Based on current developments, researchers use this method—also known as the leading indicators approach—to forecast future trends. Events from the past that are utilised to predict future events are known as leading indicators.

2. Qualitative Methods

Qualitative data is information that provides a description and explanation of an object. It can be visible, observed, and documented. This data type is not numerical in character. Among other techniques, focus groups, observations, and one-on-one interviews are used to collect this kind of data. Qualitative data in statistics is also referred to as categorical data [7]. This type of data is categorised according to the attributes and properties of an object or a phenomenon. Qualitative data collection is a potent instrument

for revealing the complex tapestry of human experiences. Through techniques like focus groups, interviews, and observations, researchers may chronicle the why behind behaviours and reveal motives, emotions, and narratives that data alone cannot convey. This method is indispensable for comprehending the tangible consequences of policies, programs, and products [8].

Interviews: One-on-one interviews are a commonly used data collecting strategy in qualitative research because they allow for the direct collection of highly personalised information from the subject. Interviews are significantly more advantageous for gathering data on sensitive subjects, as respondents are more likely to discuss "their beliefs, motivations, opinions, and experiences in a one-on-one setting than in a group setting" [9].

Focus Groups: While focus groups and unstructured interviews have many characteristics, the main difference is that the goal is to collect data from many participants at once. One of the most frequently used data collection instruments in qualitative research is focus groups, which are effective in gathering information based on collective perspectives. When doing a series of individual interviews is too lengthy or difficult to arrange, they are very helpful [10]. In the collection of data from a specific group of individuals, such as donors or clients from a particular demographic, focus groups are most beneficial. In an effort to ascertain the perspectives of the participants and the rationale behind them, the researcher should meticulously moderate and guide the discussion to a specific topic. Because participants are more likely to divulge when others are doing the same, group feedback often produces more thorough data than one-on-one interviews. Furthermore, the sharing of information by one participant may prompt an insight from another that would not have been apparent otherwise [11].

Observation: Qualitative research employs observation as one of its most effective data collection instruments for the acquisition of information through subjective methods. In addition to psychologists, sociologists, behaviour experts, and product developers, modern marketers also often use qualitative observation as a method. Information that is not readily quantifiable or measurable is the primary objective. The participants themselves provide virtually no cognitive input [12]. Researchers typically observe subjects and their responses as they conduct their daily activities and record comprehensive field notes from which to extract data. The extent of participant interaction during observational techniques varies [13]. Certain qualitative observations necessitate the researcher's complete immersion over an extended period. For example, participating in the same volunteer organisations, society meetings, church, or clinic as the participants. Researchers will almost certainly observe the most authentic responses in this scenario, as opposed to relying on behaviours that are elicited in a simulated environment. Based on the nature of the investigation and the intended objective, they may or may not elect to identify themselves as researchers during the process [14].

Open-Ended Surveys and Questionnaires: In the absence of an in-person meeting, organisations can gather the views and opinions of respondents through open-ended surveys and questionnaires. They can be transmitted electronically and are regarded as one of the most cost-effective qualitative data collection instruments [15]. Open-ended questions, in contrast to closed-question surveys and questionnaires, enable participants to provide extended and comprehensive responses that can be used to extrapolate

substantial quantities of data. There are no consistent responses, which can make it difficult to analyse the results of open-ended surveys and questionnaires. It is a common practice to categorise sentiments as positive, negative, or neutral and then analyse the data in greater detail [16].

2 Literature Review

(Lau & Bratby, 2024) [17] The video statements presented in this research are an alternative video method. Participants self-record their experiences while adhering to a guideline to capture multimodal (visual, auditory, and textual) data, which is both cost-effective and time-efficient. Consequently, it is feasible to accumulate video statements remotely. During our sample research, the methodology produces authentic impressions, offering a glimpse into a new organisational phenomenon. Participants employ the output as a source of data and as a foundation for subsequent discussions in order to enhance the significance of the video representations. In general, video statements provide a unique method of data acquisition that assists researchers in the provision of more comprehensive knowledge for business organisations and management.

(Wallwey & Kajfez, 2023) [6] Research designs that creatively use mixed methodologies may accept and support complex theoretical frameworks, like those often used in psychology research. This manuscript investigates a mixed-methods engineering education study that utilised artifact-based interviewing to enhance data collection. Visual representations of quantitative artefacts from the mixed methods research phase were implemented during subsequent interviews. Using quantitative artefacts as visual aids during interviews improved the quality of the data collected because they gave participants the language and visuals they needed to create data on the fly. This integration ensured that the theoretical underpinnings of the study were in alignment with the interview discussions, while simultaneously fostering an engaging interview environment.

(Jain, 2021) [18] Comparing surveys with in-person interviews as methods for gathering data in qualitative exploratory research is the aim of this work. Analysis was based on memos that were recorded throughout the data gathering process. A methodical three-step coding approach was used to examine the memoranda in order to determine the advantages and disadvantages of using each of the two data gathering instruments. For the chosen case study, the author contrasts the advantages and disadvantages of each approach using content analysis of the field notes and memoranda that were recorded throughout the research. For exploratory research, interviews are a helpful substitute for surveys when conducted methodically. Other research approaches and more data gathering instruments might be compared in this study's expansion.

(Braun et al., 2020) [19] Qualitative researchers may benefit greatly from "surveys that prioritise qualitative research values" and use the vast potential of qualitative data, especially with the advent of online delivery methods. Nevertheless, the method is not widely employed, and there is still a lack of methodological discourse regarding qualitative surveys. The underutilisation and little methodological debate may be explained by the prevalence of interviews in "qualitative research" and (erroneous) presumptions about the depth of qualitative survey data. Through an analysis of our interaction with the

creation of online surveys as a resource for qualitative research, we aim to challenge preconceived notions about qualitative surveys and to demonstrate that they are a flexible, exciting method with a broad range of applications and benefits for participants as well as researchers.

(Brühlmann et al., 2020) [20] However, crowdsourced samples are becoming more prevalent in a variety of academic disciplines, despite recent apprehensions regarding data quality. The objective of this study was to employ a variety of detection methods and measures to comprehensively evaluate negligence in a crowdsourced sample (N = 394). An analysis of the latent profile indicated that 45.9% of the participants exhibited some form of negligent behaviour. In an experiment that was included in the survey, the effect size was enhanced by excluding these participants. In accordance with our discoveries, we have provided a number of straightforward recommendations for evaluating data quality.

(Utibe Monday, 2020) [21] Investigated, in light of the researcher's fieldwork experience, the consequences of using interviews as a data gathering technique in the social sciences. The study came to the conclusion that although interviews are a useful tool for learning about interviewees' perspectives, they may also complement other techniques that provide deeper insights into participants' core values and beliefs. For example, by supplementing interviews with personal observation, researchers might examine participants' internal beliefs and exterior behaviours. Thus, the report emphasised that, although it depended on the research topics, adopting several data collecting instruments would assist get richer data and validate the research results.

(Mergel et al., 2019) [22] In order to improve public service delivery, boost efficiency and effectiveness in their designs, and achieve objectives such as "greater transparency, interoperability, or citizen satisfaction", governments are modifying their working methods in response to the influence of supranational agreements and the evolution of expectations. In contrast to the accessibility of consulting reports, there is a dearth of systematic comprehension regarding the definition of digital transformation in the daily operations of public administrators, their approach to digital transformation projects, and the anticipated outcomes. Describe digital transformation using an empirically supported definition derived from expert interviews. Describe the rationale, steps, and expected outcomes of the public sector's digital transformation in a conceptual framework.

(Couper, 2017) [23] Explores the most recent technological and methodological advancements in the acquisition of survey data. For the purpose of expanding and improving the survey instrument, consider how the survey profession has responded to these developments and obstacles. Look at the shift from "telephone surveys to self-administered (mail and/or Web) modalities", the rise in address-based sampling that followed, and the fall in random digit dialling over time. Analyse the increase in nonprobability sampling methods, particularly those that are linked to online data collection. Additionally, I evaluate surveys that are frequently referred to as "big data alternatives." At last, examine a variety of contemporary technological and methodological developments that have been implemented to transform the survey methodology. Conclude that surveys continue to be a reliable and adaptable approach to the collection of data on, and the formulation of inferences about, populations, despite the numerous significant obstacles they encounter.

3 Conclusion

In conclusion, the advancement of online survey and interview methods has significantly transformed data collection in the digital era. The COVID-19 pandemic accelerated this transformation, pushing researchers to adopt innovative, contactless approaches. One such evolution is the use of video statements—self-recorded, multimodal data capturing tools—which cater to a visually engaged generation and offer rich, nuanced insights beyond traditional text-based responses. While some areas of survey research remain cautious in adopting change, competitive sectors like political polling and market research have embraced digital tools more readily. Online surveys, enabled through SMS, email, websites, and social media platforms, offer vast reach, cost-efficiency, and convenience, making them ideal for both qualitative and quantitative research. These methods not only improve response rates but also provide real-time data for faster decision-making. As digital transformation continues to influence public and private sectors, researchers must align with emerging technologies and preferences to remain effective. Overall, the integration of video-based self-reporting and online data collection has reshaped the survey landscape, making it more adaptable, inclusive, and efficient for modern research needs.

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