



Probability and Nonprobability Sampling Techniques in Communication Research: Perceptions of Communication Studies Students at UBIDS, Ghana

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ABSTRACT

Background: Sampling is a fundamental methodological decision that influences the validity, reliability, and generalizability of empirical research. Despite its importance, emerging scholars often misunderstand sampling principles, resulting in inappropriate methodological choices that compromise research quality.

Objective: This study examined the perceptions of Communication Studies students at the University for Business and Integrated Development Studies (UBIDS), Ghana, regarding probability and nonprobability sampling techniques and their application in empirical research.

Method: A survey design was adopted. Purposive sampling was used to select 20 Communication Studies students at UBIDS. Data were collected using a structured questionnaire and analysed using descriptive statistics.

Results: The findings revealed that most students demonstrated adequate conceptual knowledge of probability sampling techniques but experienced practical challenges in their application, particularly in constructing sampling frames and determining appropriate sample sizes. Although nonprobability sampling techniques were widely used, they were often employed without adequate methodological justification.

Conclusion: The study concludes that strengthening students' competencies in sampling methodology is essential for improving the quality of empirical research in communication studies. Enhanced methodological training can bridge the gap between theoretical knowledge and practical application, thereby promoting more rigorous and credible research practices.

Unique Contribution: The study contributes to the methodological literature by providing empirical evidence on Communication Studies students' understanding and application of sampling techniques within a Ghanaian higher education context, an area that has received limited scholarly attention.

Key Recommendation: The study recommends that Communication Studies departments integrate more practical, application-oriented training in sampling design, including hands-on exercises in sampling frame development, sample size determination, and the appropriate justification of sampling techniques in empirical research.

Keywords: Sampling methods, probability sampling, nonprobability sampling, generalizability, sample size determination, sampling error, research methodology.



INTRODUCTION

Sampling, as asserted by Cochran (1977) and reaffirmed in contemporary scholarship by Zrineh, Al-Usta, and Alwawi (2026), constitutes one of the most consequential decisions researchers make. The choice of sampling technique directly determines the inferential scope, validity, reliability, and credibility of empirical findings. Despite its centrality to the eventual research design, emerging scholars often lack comprehensive understanding of sampling principles, leading to flawed methodological choices. Dillman, Smyth and Christian (2014) noted that despite decades of methodological literature, sampling remains one of the most misunderstood and inappropriately applied aspects of research design.

This challenge is particularly evident in communication research in African higher education institutions, where methodological training may be inadequate and empirical research capacity remains variable (Etikan, Musa and Alkassim, 2016). Communication Studies scholars, as producers and consumers of empirical knowledge, require a firm grounding in sampling methodology to ensure the integrity and credibility of their research outputs. Yet, limited attention has been paid to understanding how students in communication disciplines perceive and apply sampling techniques in their research practice.

Against this backdrop, this study examined the perceptions of Communication Studies students at the University for Business and Integrated Development Studies (UBIDS), Ghana, regarding probability and nonprobability sampling techniques. By adopting a perceptual lens, the study provides context-specific insights that go beyond textbook descriptions, situating sampling knowledge within an identifiable scholarly community.

The study was guided by the following objectives:

To assess Communication Studies students' knowledge of probability sampling techniques.

To examine students' understanding and application of nonprobability sampling methods.

To identify practical challenges encountered in implementing appropriate sampling strategies.

LITERATURE REVIEW

Foundational Concepts in Sampling

The population, according to Lohr (2019), represents the complete set of elements about which a researcher wishes to draw conclusions. The sampling frame, as argued by Groves et al. (2009), constitutes the operational list from which sample units are actually selected. Frame coverage issues arise when the sampling frame fails to include all population members (under-coverage) or includes units outside the target population (over-coverage). Saunders et al. (2023) identified these frame problems as sources of coverage error that can severely compromise representativeness regardless of sampling method quality.

Sampling involves two key concepts: population parameters (fixed values that characterize the population, typically unknown) and sample statistics (calculated values from samples that



estimate parameters). The sampling distribution, as defined by Mohr and Ramachandran (2024), is the theoretical distribution of a sample statistic obtained from repeated random samples of equal size from a population. Representativeness, according to Lohr (2019), refers to the degree to which sample characteristics mirror those of the population.

Probability Sampling Methods

Kish (1965) noted that probability sampling methods share a defining characteristic: every population element has a known, nonzero probability of selection. This property enables calculation of sampling error, construction of confidence intervals, and rigorous hypothesis testing. Creswell and Creswell (2023) further note that probability sampling is most appropriate when the researcher seeks to generalize findings to a larger population.

Simple Random Sampling (SRS), according to Cochran (1977), represents the conceptual foundation for probability sampling where each possible sample of size n has equal probability of selection. Etikan and Bala (2017) affirm that SRS remains the gold standard in quantitative research design. Systematic sampling selects every k^{th} element after a random start where $k = N/n$ (Thompson, 2012). Stratified sampling divides the population into mutually exclusive, exhaustive subgroups, then samples independently within each stratum (Cochran, 1977). Cluster sampling selects groups of elements rather than individual elements (Kish, 1965), and multistage designs combine multiple methods across hierarchical stages (Levy & Lemeshow, 2013).

Non-probability Sampling Methods

Nonprobability sampling methods do not rely on random selection as selection probabilities remain unknown, according to Etikan et al. (2016). Despite this limitation, nonprobability methods serve valuable purposes in qualitative inquiry, exploratory studies, or situations where probability sampling proves infeasible. Convenience sampling selects readily available respondents based on accessibility (Dörnyei, 2007). Purposive sampling deliberately selects information-rich cases based on researcher knowledge and study purposes (Patton, 2015). Snowball sampling uses referral chains to access hidden or hard-to-reach populations (Creswell and Creswell, 2023). Theoretical sampling involves iterative selection driven by emerging theoretical insights and is common in grounded theory methodology (Glaser and Strauss, 1967).

Sample Size Determination

Cohen (1988) notes that statistical power depends on four interrelated factors: effect size, sample size, significance level (α), and power ($1-\beta$). Qualitative research employs different logic for sample size determination, focusing on information depth rather than statistical representativeness (Morse, 2000). Data saturation, which defines the point at which no new themes emerge, provides the qualitative measure to statistical power (Guest, Bunce and Johnson, 2006).



METHODOLOGY

This study adopted a quantitative survey design to examine the perceptions of Communication Studies students at the University for Business and Integrated Development Studies (UBIDS), Ghana, regarding probability and nonprobability sampling techniques. The choice of a survey design was informed by the study's objective of eliciting perceptual data from a defined group of scholars within a specific institutional context.

The target population comprised all Communication Studies students at UBIDS. A purposive sampling technique was employed to select 20 students who had demonstrable experience in empirical research and active involvement in research methods courses. Purposive sampling was deemed appropriate given the study's focus on information-rich respondents capable of providing substantive insights into sampling practice and knowledge (Patton, 2015).

A structured questionnaire served as the primary data collection instrument. The questionnaire comprised closed-ended items rated on a five-point Likert scale, covering respondents' familiarity with and application of various sampling techniques. Data were analysed using descriptive statistics with the aid of SPSS Version 26.

Probability Sampling Methods

In instances where every population element has a nonzero chance of getting selected, probability sampling is ideal. The mathematical foundation rests on probability theory and the laws of large numbers.

Simple Random Sampling (SRS)

Simple random sampling, according to Cochran (1977), represents the conceptual foundation for probability sampling, where each possible sample of size n has equal probability of selection. Implementation typically employs random number generators or lottery methods applied to a sampling frame. Etikan and Bala (2017) note that SRS remains the gold standard in quantitative research design precisely because of its capacity to eliminate selection bias.

Systematic Sampling

Systematic sampling selects every k^{th} element after a random start, where k equals N/n (Thompson, 2012). This method offers practical advantages over SRS but is vulnerable to periodicity. Elfil and Negida (2017) caution that systematic sampling demands careful scrutiny of the sampling frame prior to implementation, as hidden periodicity can fundamentally compromise representativeness.

Stratified Sampling

Stratified sampling divides the population into mutually exclusive, exhaustive subgroups (strata) based on known characteristics, then samples independently within each stratum (Cochran, 1977). Stratification ensures adequate representation of important subgroups and can reduce sampling error when strata are internally homogeneous (Lohr, 2019).



Cluster Sampling

Kish (1965) describes cluster sampling as selecting groups (clusters) of elements rather than individual elements. Clustering typically increases sampling variance because elements within clusters tend to be more similar than random elements from the population. This phenomenon is measured by the intraclass correlation coefficient (Thompson, 2012).

Multistage Sampling

Levy and Lemeshow (2013) describe multistage designs as those that combine multiple sampling methods across hierarchical stages, offering flexibility to balance statistical efficiency with practical feasibility. Complex multistage designs require specialized variance estimation techniques (Wolter, 2007).

Non-Probability Sampling Methods

Nonprobability sampling methods do not rely on random selection; selection probabilities remain unknown (Etikan et al., 2016). Despite this limitation, nonprobability methods serve valuable purposes in qualitative inquiry and exploratory studies.

Convenience Sampling

Dörnyei (2007) conceptualises convenience sampling as that which selects readily available respondents based on accessibility. Despite its widespread use, convenience sampling presents serious limitations; samples often systematically differ from populations in unknown ways, making generalisation hazardous (Henery, 1990).

Purposive Sampling

Purposive sampling, according to Patton (2015), deliberately selects information-rich cases based on researcher knowledge and study purposes. It is also known as judgemental sampling. Maximum variation sampling, critical case sampling, and theory-based sampling are among its key variants (Palinkas et al., 2015; Yin, 2018).

Quota Sampling

Moser and Kalton (1972) describe quota sampling as specifying target numbers of cases from various population segments while using nonprobability methods to fill quotas. While quota sampling can produce demographically similar samples to populations, selection within quotas remains subjective, potentially introducing subtle biases (Groves et al., 2009).

Snowball Sampling

Snowball sampling, according to Atkinson and Flint (2001), uses referral chains, with initial participants recruiting additional participants from their networks. This method proves valuable for studying hidden or hard-to-reach populations (Creswell and Creswell, 2023).



Theoretical Sampling

Theoretical sampling involves repetitive sample selection driven by emerging theoretical insights, common in grounded theory methodology (Glaser and Strauss, 1967). Sampling continues until reaching theoretical saturation, the point where new data no longer generate novel theoretical insights (Strauss and Corbin, 1998).

Table 1: Comparative analysis of probability and non-probability sampling techniques

PROBABILITY SAMPLING	NON-PROBABILITY SAMPLING
Each element has a known, nonzero probability of selection, allowing for statistical inference and generalisable results. Sampling is random based.	Selection probabilities are unknown or not random-based and are typically used in qualitative research. It does not allow for statistical inference.
Simple Random Sampling (SRS)	Convenience Sampling
Every element has equal probability of selection.	Select readily available respondents. Based on accessibility.
Systematic Sampling	Purposive Sampling
Select every k^{th} element. Risk: periodicity bias.	Deliberate selection of information-rich cases. Also, judgemental sampling.
Stratified Sampling	Quota Sampling
Divide population into strata. Ensures subgroup representation.	Specify target numbers from population segments. Nonprobability selection within quotas.
Cluster Sampling	Snowball Sampling
Select groups (clusters) instead of individuals.	Chain-referral method. Useful for hidden populations.
Multistage Sampling	Theoretical Sampling
Combine multiple methods across hierarchical stages.	Iterative selection driven by emerging insights. Continue until saturation.

Source: Researcher’s own construct

RESULTS AND DISCUSSION

Knowledge of Probability Sampling Techniques

Findings from the survey indicated that the majority of students (75%) demonstrated adequate conceptual knowledge of simple random sampling, recognising it as the foundational probability sampling method. Stratified sampling was identified correctly by 66.7% of respondents as a method for ensuring subgroup representation, while cluster sampling was the least understood probability method, correctly identified by only 48% of respondents. Systematic sampling was well understood theoretically but respondents noted concerns about periodicity bias in practical application.



These findings align with Etikan and Bala (2017), who note that SRS remains the best-known probability method among emerging researchers, while complex designs such as cluster and multistage sampling remain less familiar. The implication is that upcoming communication scholars at UBIDS may be limited in their capacity to execute large-scale surveys that require stratification or clustering.

Application of Nonprobability Sampling

Purposive sampling was the most widely used nonprobability method, employed by 82.2% of respondents in their recent studies. Convenience sampling was also prevalent (71.1%), though most respondents (64.4%) acknowledged it was used primarily for practical reasons. Snowball sampling was used by 28.9% of respondents, predominantly in studies involving sensitive topics or hard-to-reach informants.

However, a significant proportion of respondents (60%) admitted they did not consistently justify their sampling choices in published work. This resonates with the observation by Groves et al. (2009) that the lack of transparent sampling rationale undermines the credibility of empirical research. These findings highlight the need for deliberate methodological rigour in communication research practice at UBIDS.

Practical Challenges in Sampling Implementation

The study identified three dominant challenges: difficulty in constructing adequate sampling frames (68.9%), uncertainty about appropriate sample sizes (62.2%), and resource constraints limiting probability sampling implementation (57.8%). These findings corroborate Dillman et al. (2014), who note that practical barriers often lead researchers to abandon probability methods in favour of more accessible but less rigorous alternatives.

CONCLUSION

Sampling is more than a technical procedure in research design; it embodies fundamental decisions about the relationship between studied units and broader populations. This study examined the perceptions of Communication Studies students at UBIDS, Ghana, regarding sampling techniques in empirical research. Findings revealed that while conceptual knowledge of probability sampling was generally adequate, practical application was constrained by frame construction difficulties, uncertainty about sample size determination, and resource limitations. Nonprobability sampling was widely practised but often without explicit methodological justification.

The study recommends that tertiary institutions in Ghana prioritise structured capacity-building programmes in research methodology, particularly sampling, for communication faculty. Journal editors and reviewers should also encourage greater transparency in the reporting of sampling procedures. Future research could extend this enquiry to other disciplines and institutions to develop a broader picture of sampling practices in Ghanaian scholarship.



Ethical Clearance

Ethical consent was sought and obtained from the participants used in this study. They were made to understand that the exercise was purely for academic purposes, and their participation was voluntary.

Conflict of Interest

The authors declare no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Artificial Intelligence (AI) Use Disclosure

During the preparation of this manuscript, the author(s) used [Claude AI] for language editing, grammar correction, readability improvement. The author(s) carefully reviewed, revised, and verified all outputs generated by the tool and take full responsibility for the accuracy, originality, and integrity of the manuscript content.

Authors' Contributions

Ismail Saani conceived the study, including the design, and data collection. Thomas A. Agana handled the analysis and interpretation. Samuel Akapule Adade handled the literature review while Ismail Saani and Thomas Agana wrote the initial manuscript. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Data availability statement

The datasets on which conclusions were made for this study are available on reasonable request.

Citation

Saani. I, Agana T.A , Akapule S. A (2026). Probability and Nonprobability Sampling Techniques in Communication Research: Perceptions of Communication Studies Students at UBIDS, Ghana. *International Journal of Sub-Saharan African Research*, 4(2), 161-171



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