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Qualitative, Quantitative, and Mixed-Methods Approaches in the Social Sciences: A Critical Reflection

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Abstract. The choice among qualitative, quantitative, and mixed-methods approaches is one of the most consequential decisions in social science research because it determines how a problem is framed, what counts as evidence, and the kinds of conclusions that may legitimately be drawn. These approaches are often presented as rival methodological traditions, yet each rests upon distinct assumptions concerning social reality, knowledge, explanation, objectivity, and the relationship between the researcher and the researched. Qualitative research offers depth, context, and interpretive insight into lived experience, social meaning, institutional practice, identity, interaction, and power. Quantitative research provides the tools necessary for systematic measurement, comparison, hypothesis testing, statistical estimation, prediction, and, where supported by an appropriate design, causal inference and population-level generalisation. Mixed-methods research seeks to bring these strengths together by integrating numerical breadth with interpretive depth within a unified and purposeful inquiry. Such integration, however, cannot be achieved through the mere collection of both numerical and textual data; it requires deliberate connection, analytical coherence, and a clear justification for combining methods. This article argues that methodological quality should not be judged by loyalty to a particular tradition, but by the degree of alignment among the research problem, philosophical assumptions, research questions, design, sampling strategy, data collection, analytical procedures, ethical obligations, and conclusions. It further contends that qualitative and quantitative research should not be assessed through identical criteria, since they produce different forms of knowledge and rely upon different standards of methodological rigour. Methodological pluralism is therefore defensible only when it is theoretically grounded, transparently justified, and competently implemented. The most appropriate methodological approach is not the one considered universally superior, prestigious, or fashionable, but the one capable of producing the most credible, relevant, and ethically responsible understanding of the social problem under investigation.

Keywords. qualitative research, quantitative research, mixed methods, research paradigms, social science methodology, methodological pluralism

Introduction

The social sciences investigate a world that is simultaneously observable, measurable, interpreted, contested, and historically situated. Social researchers examine individuals, families, communities, institutions, markets, legal systems, political structures, identities, inequalities, cultures, and processes of social transformation. Unlike passive physical objects,

human beings interpret their circumstances, assign meanings to events, respond to classifications imposed upon them, and modify their conduct in relation to institutions and other persons. Social practices therefore possess both material and interpretive dimensions, and a methodology that attends exclusively to one dimension may produce only a partial account of the phenomenon (Berg, 2001; Fossey et al., 2002). Unemployment, for example, can be measured through labour-force statistics, but it may also be experienced through anxiety, loss of status, family conflict, social exclusion, and diminished expectations about the future. Access to justice may similarly be represented through numbers of complaints, cases, judgments, or remedies, although such figures may not reveal fear of retaliation, distrust of officials, procedural humiliation, or inability to understand legal processes. Qualitative inquiry is particularly valuable for investigating these dimensions of meaning and experience, whereas quantitative inquiry is necessary when the objective is to estimate distribution, compare groups, or evaluate relationships at scale (Ritchie & Lewis, 2003; Sukamolson, n.d.; Watson, 2015). The complexity of social reality therefore makes methodology more than a technical decision concerning whether to conduct interviews, distribute questionnaires, examine documents, or apply statistical software. Methodological choice concerns what researchers believe can be known, what evidence is appropriate, what claims may responsibly be advanced, and how the people studied should participate in the production of knowledge.

Qualitative and quantitative research have historically been presented as opposing methodological traditions. Quantitative research is ordinarily associated with numerical measurement, standardisation, hypothesis testing, statistical analysis, prediction, objectivity, and generalisation (Ghanad, 2023; Sukamolson, n.d.; Watson, 2015). Qualitative research is commonly associated with meaning, interpretation, lived experience, context, interaction, reflexivity, and detailed description (Berg, 2001; Fossey et al., 2002; Ritchie & Lewis, 2003). These distinctions are useful because the approaches frequently pursue different objectives and employ different procedures, but they become misleading when converted into a rigid opposition between numbers and words or between scientific and non-scientific research. Qualitative research is not defined simply by the absence of numerical information, because qualitative researchers may count categories, compare cases, or identify recurring patterns within textual material. Quantitative research is similarly not defined merely by the presence of numbers, because numerical data may be collected or reported without valid measurement, a defensible sampling strategy, or an appropriate analytical design. Berg (2001) cautions against reducing qualitative and quantitative inquiry to a simplistic contrast between description and counting, since methods are connected to theoretical orientations and impose particular perspectives upon the social world. Watson (2015) likewise explains that quantitative research is a systematic process involving conceptualisation, operationalisation, measurement, data collection, and analysis rather than the mere production of figures. The more meaningful distinction therefore concerns the purpose for which evidence is collected, the assumptions through which it is interpreted, and the inferential claims ultimately made from it.

Mixed-methods research developed partly in response to the limitations of treating qualitative and quantitative approaches as mutually exclusive. It proposes that some social problems require both an understanding of patterns across cases and an interpretation of the meanings, mechanisms, and contexts underlying those patterns (Doyle et al., 2009; Johnson & Onwuegbuzie, 2004). A study of educational inequality, for example, may require statistical evidence about differences in admission, attainment, or completion, together with qualitative evidence concerning discrimination, family expectations, institutional culture, and student experience. Johnson and Onwuegbuzie (2004) describe mixed methods as a methodological

movement that draws upon the strengths of qualitative and quantitative traditions rather than requiring researchers to pledge exclusive allegiance to one of them. Doyle et al. (2009) similarly argue that mixed methods can address multidimensional questions that cannot be investigated adequately through a single form of evidence. Caruth (2013) identifies complementarity, completeness, development, expansion, confirmation, compensation, and diversity as important purposes for combining methods. The emergence of mixed methods does not, however, mean that every research project should use both approaches or that philosophical differences have become irrelevant. A study does not become stronger merely because interviews have been added to a survey or because descriptive statistics have been placed beside a qualitative case study. Meaningful mixed-methods inquiry requires a clear justification for combining approaches, a planned relationship between the components, and an explicit process through which the findings are integrated.

This article critically reflects upon qualitative, quantitative, and mixed-methods approaches in social science research. It proceeds from the position that no method is inherently superior independently of the question to which it is applied. A carefully designed qualitative study may provide a more credible explanation of an institutional process than a poorly constructed national survey, while a properly conducted experiment may answer a causal question more persuasively than retrospective interviews or observational impressions. A well-integrated mixed-methods design may offer the strongest account where the research problem requires evidence about scale, experience, implementation, and consequences (Caruth, 2013; Doyle et al., 2009). The central issue is therefore whether the methodology is aligned with the research problem and whether the conclusions are warranted by the design and evidence. Fossey et al. (2002) emphasise congruence between philosophical perspective, research questions, methods, and interpretation as a fundamental characteristic of sound qualitative research. Watson (2015) makes an equivalent point within quantitative inquiry by connecting credible conclusions to measurement quality, reliability, validity, sampling, and research design. Johnson and Onwuegbuzie (2004) extend this reasoning to mixed methods by arguing that methodological choices should follow the research questions rather than paradigmatic loyalty. The article consequently examines the philosophical and historical foundations of the approaches, their characteristic designs, methods of sampling and analysis, standards of rigour, ethical challenges, and principal strengths and limitations. It ultimately argues for reflective methodological pluralism, which combines openness to multiple traditions with disciplined attention to conceptual coherence, evidentiary limits, transparency, and ethics.

1. Philosophical and Historical Foundations

1.1 Positivist, Interpretive, and Critical Traditions

Research methodology is informed by assumptions about the nature of reality, the possibility of knowledge, the place of values, and the relationship between the researcher and the phenomenon being studied. Ontology concerns what exists and whether social reality is independent of human interpretation, while epistemology concerns what may be known and how knowledge may be produced. Axiology addresses the role of values in selecting topics, framing questions, interpreting evidence, and determining the purposes to which research is directed. Fossey et al. (2002) distinguish among empirico-analytical, interpretive, and critical paradigms, each of which presents a different understanding of social reality and appropriate inquiry. The empirico-analytical tradition seeks observable patterns, regularities, relationships, and explanations that may support prediction, comparison, or control. The interpretive tradition is concerned with how people construct meaning, understand situations, and organise social

action within particular cultural and historical contexts. The critical tradition investigates how power, ideology, inequality, and institutional structures shape social experience and frequently seeks not only to interpret society but also to contribute to transformation (Fossey et al., 2002). Ritchie and Lewis (2003) similarly explain that qualitative research cannot be separated from questions about ontology, epistemology, purpose, participants, researchers, and audiences. These paradigms therefore influence the questions researchers formulate, whose voices they privilege, what they regard as credible evidence, and the standards through which their conclusions are evaluated.

The quantitative tradition has historically been associated with positivism and the aspiration to develop social knowledge through systematic observation, measurement, and logical analysis. Classical positivism assumes that the social world contains patterns that can be discovered and represented through valid empirical indicators. Concepts are operationalised as variables, relationships are examined through standardised procedures, and the researcher attempts to minimise personal influence upon the findings. Contemporary quantitative inquiry is more accurately associated with postpositivism, because most researchers recognise that observations are imperfect, measurements contain error, and theories remain provisional. Postpositivism does not promise complete certainty or an entirely neutral view of reality, but it maintains that careful design, replication, statistical testing, critical scrutiny, and transparency can improve the credibility of knowledge. Watson (2015) illustrates this orientation by emphasising that quantitative authority depends upon measurement reliability, validity, error control, and the appropriateness of experiments or surveys. Sukamolson (n.d.) likewise warns that the correct selection of research design and data-collection instruments is more fundamental than the later application of statistical techniques. Ghanad (2023) stresses that quantitative research requires precise questions, measurable variables, suitable instruments, and statistical interpretation rather than simply numerical presentation. A numerical result is therefore not credible merely because it appears precise or has been produced through sophisticated software.

Interpretivism developed partly from dissatisfaction with the application of natural-science models to human life. Human beings act not only in response to external conditions but also in relation to meanings, beliefs, expectations, identities, memories, norms, and social relationships. The same observable action can carry different meanings in different circumstances, which means that description without interpretation may misrepresent the phenomenon. Silence during an interview or public meeting, for example, may express respect, fear, resistance, trauma, uncertainty, strategic avoidance, or culturally expected conduct. Counting instances of silence may establish frequency, but it cannot disclose what the silence meant to the person or how others interpreted it. Interpretive researchers consequently study how social actors make sense of their worlds and how those understandings influence action (Berg, 2001; Fossey et al., 2002). Ritchie and Lewis (2003) characterise qualitative inquiry as naturalistic and interpretive, with particular attention to the meanings that individuals attach to actions, beliefs, values, and decisions. Berg (2001) similarly emphasises the significance of symbols, roles, social interaction, and participants' definitions of situations. Constructivist approaches further maintain that categories such as disability, childhood, deviance, gender, ethnicity, poverty, or professionalism are shaped by law, culture, language, institutions, historical relations, and struggles over authority.

The critical paradigm shares the interpretive concern with meaning and context but places greater emphasis on domination, inequality, ideology, and emancipation. Critical researchers may examine how institutional rules, legal categories, economic structures, or dominant discourses reproduce class, racial, gendered, colonial, or other forms of disadvantage.

From this perspective, research is not value-free because selection of a topic, definition of a problem, and determination of whose knowledge counts are already connected to social and political values (Fossey et al., 2002). A study of labour regulation, for instance, may describe the formal rights available to workers while failing to investigate whether those workers can exercise their rights without retaliation, poverty, or insecurity. A critical approach would therefore consider not only the content of the rules but also the power relations that determine their accessibility and effectiveness. Fossey et al. (2002) explain that critical inquiry is directed towards understanding social and historical constraints in order to support reflection, participation, empowerment, and transformation. Berg (2001) similarly associates critical and emancipatory action research with participation and practical change rather than detached observation alone. The researcher may seek to amplify marginalised perspectives, reveal hidden institutional practices, and challenge categories presented as natural or inevitable. Nevertheless, critical commitment cannot substitute for evidence, and emancipatory objectives do not relieve the researcher of the obligation to demonstrate analytical rigour and consider alternative interpretations.

1.2 From the Paradigm Wars to Methodological Pluralism

The philosophical differences among traditions contributed to the so-called paradigm wars within the social sciences. Quantitative scholars sometimes characterised qualitative research as subjective, anecdotal, unrepresentative, and incapable of replication or generalisation. Qualitative scholars responded that quantitative inquiry was reductionist, detached from context, and unable to capture meaning, identity, institutional complexity, or the interpretation of social action. Johnson and Onwuegbuzie (2004) describe the resulting incompatibility thesis, under which qualitative and quantitative paradigms were considered philosophically opposed and incapable of legitimate combination. Doyle et al. (2009) similarly explain that researchers were traditionally expected to choose between positivist and interpretive traditions, often as though the two approaches occupied irreconcilable positions. This conflict encouraged researchers and postgraduate students to identify themselves with one methodological camp and to regard the other as intellectually deficient. Such methodological tribalism often shifted attention away from the research problem and towards defence of disciplinary identity. It also obscured the fact that both qualitative and quantitative researchers collect empirical evidence, organise data, construct explanations, consider rival accounts, and attempt to minimise error. Johnson and Onwuegbuzie (2004) note that both traditions use observation, description, interpretation, explanation, and safeguards against invalidity or untrustworthiness. Although their procedures and quality criteria differ, neither tradition possesses an exclusive claim to systematic or credible inquiry.

The history of quantitative social research is closely connected to censuses, administrative statistics, demographic studies, surveys, economic measurement, and the expansion of modern institutions. Governments and public agencies required information about population, employment, taxation, education, poverty, health, crime, and economic production. The development of probability theory and inferential statistics increased the capacity of researchers to draw conclusions from samples and estimate relationships among variables. Within sociology, psychology, political science, economics, communication, education, and public health, quantitative research became associated with identifying patterns and testing theoretical explanations (Ghanad, 2023; Sukamolson, n.d.). Surveys enabled researchers to examine attitudes and behaviour across large populations, while experimental and quasi-experimental designs created opportunities to investigate the consequences of interventions.

Watson (2015) identifies surveys and experiments as principal quantitative designs and emphasises the distinctive importance of randomisation, blinding, measurement, and longitudinal study. Numerical evidence acquired institutional authority because of its association with precision, comparison, prediction, and the methods of the natural sciences. Yet the history of quantification also shows that categories frequently developed in response to administrative and political priorities rather than emerging as wholly neutral representations of social life. Quantitative researchers must therefore examine the conceptual and institutional origins of the data they use rather than assuming that existing categories represent reality without distortion.

Qualitative research possesses equally important historical foundations in anthropology, sociology, psychology, history, social work, education, and related disciplines. Ethnography developed through sustained engagement with cultures, communities, and social settings, while interpretive sociology emphasised the need to understand action from the perspectives of participants. The Chicago School contributed to urban ethnography, life histories, case studies, and research on marginalised groups, and later traditions included phenomenology, symbolic interactionism, hermeneutics, ethnomethodology, grounded theory, feminist methodology, discourse analysis, narrative research, and critical theory (Berg, 2001; Ritchie & Lewis, 2003). These developments challenged the assumption that social reality could be represented adequately through variables separated from their historical and relational contexts. Qualitative methods were increasingly used to examine everyday practices, organisational cultures, identity formation, language, power, and the experiences of groups absent from official statistics. Ritchie and Lewis (2003) therefore describe qualitative research as a diverse field containing several philosophical and methodological traditions rather than a single uniform procedure. Berg (2001) similarly presents interviewing, focus groups, ethnography, action research, documentary analysis, historiography, case studies, and qualitative content analysis as distinct but potentially connected strategies. The historical development of qualitative inquiry thus reflects both a critique of positivist dominance and a constructive effort to develop rigorous methods appropriate to the interpretive dimensions of social life. Its growth should not be understood as a rejection of all quantification but as recognition that some aspects of social reality cannot be understood adequately through measurement alone.

Mixed-method practices existed before mixed methods became formally recognised as a methodological movement. Researchers had long combined surveys with interviews, administrative statistics with case studies, and historical records with observation. What changed was the development of an explicit language for describing the purpose, sequence, priority, connection, and integration of qualitative and quantitative components (Caruth, 2013; Doyle et al., 2009). Pragmatism became a prominent philosophical foundation because it shifts attention from the universal superiority of paradigms towards the consequences and usefulness of methodological choices. Johnson and Onwuegbuzie (2004) argue that researchers should choose combinations of methods that provide the best opportunities for answering their research questions, while recognising the fallibility and value-ladenness of all inquiry. Doyle et al. (2009) similarly present pragmatism as an alternative to the false dichotomy between positivist and non-positivist approaches. Pragmatism should not, however, be confused with unrestricted permission to combine techniques without conceptual justification. Doyle et al. (2009) acknowledge the criticism that “what works” is incomplete unless researchers also ask what is practical, for whom, and towards which end. Caruth (2013) stresses that mixed-methods researchers must explain their reasons for mixing, the priority and sequence of components, and

the procedures through which the designs are connected. Methodological pluralism is therefore defensible only when it remains reflective, transparent, and attentive to the assumptions and inferential limitations of the approaches being combined.

2. Qualitative Research in the Social Sciences

2.1 Nature, Designs, and Data Generation

Qualitative research is a broad family of approaches concerned with meaning, experience, context, language, identity, interaction, practice, and social process. Its principal objective is not simply to produce non-numerical data but to understand how individuals and groups interpret their circumstances and how social realities are constructed, maintained, and transformed. Berg (2001) explains that qualitative inquiry addresses meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions that cannot always be represented adequately through numerical measures. Fossey et al. (2002) similarly maintain that qualitative research should illuminate participants' subjective meanings, actions, and social contexts as understood by them. Pathak et al. (2013) describe qualitative inquiry as particularly suitable for investigating beliefs, experiences, attitudes, behaviour, and interpersonal interaction. Ritchie and Lewis (2003) emphasise that qualitative research typically uses flexible designs, purposive samples, detailed data, and analyses that remain open to emergent ideas and contextual explanations. These approaches are therefore appropriate where a phenomenon is poorly understood, where existing categories may be unsuitable, or where researchers seek to examine processes and mechanisms rather than outcomes alone. Qualitative inquiry can reveal how institutional policies operate in practice, why people avoid formally available services, how identities are negotiated, and how authority is exercised through ordinary routines. Its distinctive value lies in bringing the researcher closer to the experiential and contextual dimensions of social life.

Qualitative inquiry includes several distinct but overlapping methodological designs. Ethnography involves sustained engagement with a community, organisation, profession, or social setting and commonly uses observation, participation, interviewing, informal conversation, and documentary analysis. Phenomenological research examines lived experience and seeks to understand how individuals encounter conditions such as displacement, discrimination, illness, unemployment, violence, migration, or professional responsibility (Fossey et al., 2002). Grounded theory aims to develop explanatory concepts and relationships from data through iterative collection, coding, comparison, and theoretical sampling. Case-study research provides an intensive examination of a bounded case, which may be an institution, community, legal dispute, policy programme, organisation, or historically significant event (Berg, 2001). Narrative research studies how individuals and groups construct stories about experience, recognising that narratives are shaped by memory, sequence, audience, culture, and identity. Discourse analysis investigates how language produces social objects, categories, identities, authority, and power within legal, political, institutional, media, or everyday communication. Action research links inquiry to practical change and often involves participants in defining problems, implementing action, evaluating consequences, and revising practice (Berg, 2001). These designs share an interpretive orientation but differ in their objects of analysis, procedures, and forms of explanation.

The selection of a qualitative design should reflect the precise nature of the research question rather than a general preference for interviews or textual evidence. A phenomenological study of the lived experience of forced migration differs substantially from an ethnographic study of organisational culture or a discourse analysis of political speeches.

Although each may involve interviews or documents, their philosophical assumptions, analytical objectives, and forms of explanation are not identical. Researchers sometimes describe a study as phenomenological, grounded-theoretical, or ethnographic without applying the procedures associated with that tradition. Such labelling creates an appearance of methodological sophistication while obscuring what was actually done. Fossey et al. (2002) emphasise that sound qualitative research is characterised by congruence between the paradigm informing the questions and the methods used to address them. Ritchie and Lewis (2003) likewise argue that qualitative design must be constructed around the research setting, population, timeframe, questions, and data-collection requirements. A defensible design should therefore explain why the chosen tradition is appropriate and how it shapes sampling, fieldwork, analysis, and reporting. Methodological flexibility is valuable, but flexibility should not become vagueness or the absence of an identifiable analytical logic.

Interviews are among the most frequently used methods of qualitative data generation. Structured interviews use predetermined questions in a consistent form, while unstructured interviews give participants greater freedom to shape the discussion. Semi-structured interviews combine a planned thematic framework with flexibility to seek clarification, pursue unexpected issues, and examine the meaning of particular responses (Berg, 2001; Mwita, 2022). Effective interviewing requires more than reading questions from a schedule because the interview is a social interaction affected by language, authority, trust, memory, and expectations. The interviewer's age, gender, profession, institutional affiliation, and perceived power may influence what participants disclose and how they frame their experiences. Ritchie and Lewis (2003) emphasise the importance of probing, question formulation, rapport, breadth, depth, and responsiveness in conducting in-depth interviews. Researchers must listen attentively, avoid unnecessarily leading questions, and remain sensitive to distress, silence, contradiction, and culturally specific forms of communication. They should also recognise that interview accounts are interpretations produced within a particular encounter rather than transparent records of objective events. The quality of interview evidence therefore depends on both the depth of engagement and reflexive examination of how the encounter shaped the data.

Focus groups generate evidence through interaction among participants rather than merely collecting several individual responses at once. They can reveal how opinions are formed, contested, reinforced, or modified in relation to the views of others. Participants may stimulate one another's memories, expose disagreements, construct collective narratives, or reveal social norms that would not emerge in individual interviews (Berg, 2001; Ritchie & Lewis, 2003). The moderator must balance the need to guide the discussion with the need to allow participants to interact and pursue relevant issues. Group composition is important because differences in status, gender, profession, age, or institutional power may affect who speaks and who remains silent. Ritchie and Lewis (2003) explain that a good focus group uses group processes to generate reflective discussion, explore divergence, and identify relationships among participants' experiences. Confidentiality is more difficult to guarantee because the researcher cannot fully control what participants disclose outside the group. Focus groups may also be unsuitable for highly sensitive experiences where participants fear stigma, retaliation, or emotional exposure. Their strength lies in studying collective meaning and interaction, but their effective use requires careful attention to group dynamics, power, facilitation, and ethical risk.

Observation enables researchers to examine actions and interactions as they occur within natural or institutional settings. Participant observation involves some degree of involvement in the activities of the group, while non-participant observation maintains greater

distance. Observation can be particularly valuable where formal policies and participants' descriptions differ from routine practice. A hospital, court, school, workplace, or administrative office may officially follow procedures that operate very differently in everyday encounters. Berg (2001) emphasises that ethnographic inquiry requires researchers to watch, listen, learn, record field notes, and interpret social action within its setting. Field notes should record not only visible actions but also spatial arrangements, language, sequences of events, informal rules, emotional atmospheres, and the researcher's own responses. Documentary analysis may complement observation through examination of legislation, judicial decisions, policies, correspondence, minutes, diaries, photographs, digital communication, media material, and archival records. Mwita (2022) notes that documentary review may provide access to information from absent participants or contexts in which direct data collection is impossible or dangerous. Documents must nevertheless be interpreted as products created by particular actors for particular purposes rather than as neutral containers of fact.

2.2 Sampling, Analysis, and Standards of Quality

Qualitative sampling is generally purposive rather than probabilistic because participants or cases are selected for their relevance to the research question. The objective is ordinarily not to reproduce the demographic proportions of a large population but to include information-rich cases capable of illuminating the phenomenon. Maximum-variation sampling includes diverse cases so that the researcher can identify both common patterns and meaningful differences. Typical-case sampling focuses on cases considered relatively ordinary, while extreme- or deviant-case sampling examines unusual cases that may reveal mechanisms hidden in routine circumstances. Critical-case sampling selects a case of particular strategic or theoretical importance. Snowball sampling may be used where participants are difficult to identify or access, although it can reproduce the social networks and biases of initial participants. Theoretical sampling, commonly associated with grounded theory, develops progressively as emerging categories guide the selection of additional cases (Fossey et al., 2002; Ritchie & Lewis, 2003). Each strategy should be justified in relation to the analytical purpose rather than presented as a convenient substitute for probability sampling. The adequacy of qualitative sampling is consequently determined by relevance, diversity, depth, and conceptual contribution rather than statistical representativeness.

Sample size in qualitative research cannot be determined through a universal numerical formula. It depends upon the scope of the question, diversity of participants, complexity of the setting, type of data, analytical tradition, and intended depth of inquiry. A detailed phenomenological study of a narrowly defined experience may involve a relatively small number of participants, while a multi-site organisational study may require a broader and more varied sample. Researchers frequently invoke saturation to explain when data collection ended. Saturation generally refers to the point at which additional data no longer generate substantially new categories, properties, or explanations. The concept should not be used mechanically or merely asserted after a predetermined number of interviews has been completed. Ritchie and Lewis (2003) emphasise the relationship among purposive selection, information richness, sample diversity, and the intended form of inference. Mwita's review also identifies flexibility and detailed data generation as qualitative strengths, although those strengths may increase analytical complexity and the volume of material to be examined (Mwita, 2022). Researchers should therefore explain what form of saturation or sufficiency they sought, how collection and analysis occurred iteratively, and why the evidence was adequate for the intended claims. A

declaration that saturation was reached is not methodologically persuasive unless the process through which it was assessed is made transparent.

Qualitative analysis involves organising, coding, comparing, interpreting, and explaining data rather than merely presenting selected quotations. Thematic analysis identifies patterns of meaning by moving from familiarisation and initial coding towards broader themes that address the research question. A theme should represent more than a frequently mentioned topic because frequency alone does not establish analytical significance. Fossey et al. (2002) describe thematic analysis as a progressive process of classifying, comparing, grouping, and refining textual material in order to develop meaningful categories. Grounded-theory analysis uses constant comparison among incidents, cases, codes, and categories to construct an explanatory framework. Narrative analysis examines how stories are structured, sequenced, and connected to identity and cultural expectations. Discourse analysis investigates how language constructs social realities, positions subjects, and legitimises particular forms of authority. Framework analysis arranges data within matrices of cases and themes, enabling systematic comparison while retaining contextual detail (Ritchie & Lewis, 2003). Computer-assisted qualitative data-analysis software may facilitate coding and retrieval, but software cannot determine what the evidence means or whether the explanation is persuasive. Analytical quality ultimately depends upon the researcher's ability to develop and justify an interpretation grounded in the dataset.

The rigour of qualitative research has often been questioned because it does not ordinarily rely upon statistical tests, random sampling, or standardised instruments. Such criticism is justified where studies provide little information about sampling, interviewing, observation, coding, interpretation, or researcher influence. It is not justified where it assumes that statistical procedures are the only means of producing systematic knowledge. Credibility concerns whether the findings offer a convincing and adequately supported account of the phenomenon. Transferability concerns whether findings may be relevant to other settings and is supported by sufficiently rich description of context and participants. Dependability concerns transparency and consistency in the research process, while confirmability concerns whether conclusions are grounded in the evidence rather than reflecting the researcher's preferences (Fossey et al., 2002). Fossey et al. (2002) connect methodological rigour with authenticity, coherence, transparency, and faithful representation of participants' meanings. Ritchie and Lewis (2003) similarly address reliability, validity, generalisation, and the boundaries of wider inference in qualitative research. Qualitative research should therefore be evaluated according to standards appropriate to its philosophical orientation and claims, not through the mechanical application of criteria developed for experimental measurement.

Reflexivity is a central component of qualitative quality because researchers frequently exercise substantial influence over access, interaction, coding, interpretation, and representation. Researchers should consider how personal identities, disciplinary commitments, language, professional status, institutional affiliations, and relationships with participants affect the study. Reflexivity does not mean that researchers can eliminate their influence or achieve an impossible position of complete neutrality. It requires them to identify and critically examine that influence rather than concealing it behind an impersonal account. Berg (2001) emphasises the researcher's voice and reflexive role in ethnography and action research. Fossey et al. (2002) similarly connect qualitative trustworthiness with openness concerning the researcher-participant relationship and the process through which interpretations were formed. A researcher studying an institution in which they hold authority may receive deferential responses or suppress criticism unintentionally. An outsider may encounter different limitations

because participants may distrust the researcher or assume that contextual practices require no explanation. Reflexive notes, transparent discussion of positionality, and consideration of competing interpretations can therefore strengthen the credibility of the research. The objective is not confessional writing about the researcher but a disciplined examination of how the claimed knowledge was produced.

2.3 Strengths, Limitations, and Ethical Challenges

The principal strength of qualitative inquiry is its capacity to preserve context, complexity, and social process. It can examine how people interpret events, how institutional arrangements operate in practice, and how relationships influence behaviour over time. It permits unexpected issues to emerge rather than restricting participants entirely to categories predetermined by the researcher. Qualitative evidence can identify concepts missing from existing theories, questionnaires, or administrative datasets. It is particularly valuable for studying marginalised populations whose experiences may not be represented in official records or whose circumstances cannot be understood through standardised indicators alone. Mwita (2022) identifies flexibility, detailed information, methodological variety, contextual sensitivity, and the incorporation of human experience as important qualitative strengths. Pathak et al. (2013) similarly argue that qualitative research can give participants a voice and add dimensions to research that cannot be obtained through measurement of variables alone. Qualitative studies can also generate hypotheses, improve survey instruments, explain quantitative findings, and reveal mechanisms through which social outcomes are produced (Fossey et al., 2002). Their contribution is therefore explanatory and theoretical as well as descriptive.

Qualitative inquiry also contains significant limitations that must be acknowledged rather than defensively dismissed. Purposive samples ordinarily cannot support precise claims about prevalence across large populations. The close involvement of the researcher may create bias, although distance does not necessarily eliminate bias in other methodological approaches. Data collection and analysis can be time-consuming, especially where interviews require transcription and where researchers must compare large volumes of detailed material. The flexibility of qualitative design can become a weakness when changes are undocumented or when the researcher provides no clear account of how interpretations were developed. Mwita (2022) identifies researcher subjectivity, complex analysis, limited statistical generalisation, difficulties of replication, and challenges to anonymity among the principal weaknesses of qualitative inquiry. Anonymity may be especially difficult to preserve in case studies or small communities because contextual information can identify individuals even when names are removed. Replication may also be challenging because social settings change and research relationships cannot be reproduced exactly. These limitations do not render qualitative research inferior, but they define the scope of claims that can responsibly be made. A qualitative study may provide a compelling explanation of how a policy operates without establishing how frequently the relevant experience occurs nationally.

Ethical issues in qualitative research extend beyond obtaining a signed consent form. Interviews and observations may involve disclosure of violence, discrimination, illness, political fear, workplace abuse, illegal conduct, family conflict, or other sensitive experiences. Participants may become identifiable through detailed quotations, occupational roles, institutional locations, or combinations of contextual characteristics. Researchers must therefore consider whether particular details are necessary and how reporting may affect participants, communities, and institutions. Consent may need to be treated as an ongoing

process because the direction of a qualitative interview or ethnographic study may develop over time. Fossey et al. (2002) emphasise that qualitative ethics and rigour are interconnected because faithful representation, transparency, power relations, and participant involvement affect both moral and methodological quality. Berg (2001) similarly discusses informed consent, confidentiality, anonymity, data security, covert research, and researcher safety as central concerns rather than secondary procedural requirements. The emotional consequences of recounting traumatic experiences should be anticipated, and researchers should avoid creating expectations of assistance that they cannot fulfil. Power differences may influence the voluntariness of participation where students, employees, patients, prisoners, or vulnerable communities are involved. Ethical qualitative research consequently requires care in recruitment, relationship building, confidentiality, interpretation, quotation, and dissemination.

3. Quantitative Research in the Social Sciences

3.1 Concepts, Variables, and Measurement

Quantitative research involves the systematic measurement and numerical analysis of social phenomena. It is particularly appropriate for questions concerning magnitude, frequency, distribution, association, difference, prediction, and causal effect. Ghanad (2023) explains that quantitative inquiry collects, analyses, and interprets measurable information to describe patterns, compare groups, and test hypotheses. Sukamolson (n.d.) similarly defines quantitative research through the collection of numerical data and use of mathematically based methods, particularly statistics, to explain phenomena. Watson (2015) describes quantitative research as a range of methods that gather measurements, examine trends and relationships, and verify the quality of those measurements. The approach can answer questions such as how many persons experience a problem, whether an attitude differs among groups, whether two variables are associated, or whether an intervention changes an outcome. Quantitative inquiry is therefore indispensable where policymakers, institutions, or scholars require evidence about the scale and distribution of social conditions. Its authority nevertheless depends upon conceptualisation and measurement rather than the mere appearance of numbers. A sophisticated statistical analysis cannot repair a concept that has been inadequately defined or an instrument that measures something other than what the researcher claims.

Quantitative research begins by translating abstract concepts into observable indicators and variables. Social trust, discrimination, political participation, wellbeing, access to justice, institutional legitimacy, job satisfaction, and social exclusion are concepts rather than directly measurable objects. Researchers must determine which observable responses, behaviours, or records will represent those concepts. An independent variable is commonly treated as a predictor or possible cause, while a dependent variable represents the outcome to be explained (Watson, 2015). Control variables are included to address alternative explanations, mediators may explain the process through which a relationship operates, and moderators indicate whether a relationship differs across groups or conditions. Hypotheses state expected relationships among variables and provide propositions that can be evaluated through data. Ghanad (2023) emphasises the importance of precise, observable, and measurable research questions and hypotheses within quantitative designs. Sukamolson (n.d.) similarly explains that social attitudes and beliefs can be transformed into numerical form through appropriately designed questionnaires and rating scales. The quality of the resulting analysis depends upon whether those operational definitions capture the substantive meaning of the underlying concepts. Operationalisation is consequently not a minor preliminary step but one of the most important intellectual stages of quantitative research.

Operationalisation is especially difficult in the social sciences because many significant phenomena are multidimensional. Access to justice, for example, cannot be represented fully through the number of cases filed or judgments delivered. It may include legal awareness, affordability, physical accessibility, language, representation, procedural fairness, institutional trust, timeliness, enforcement, and protection from retaliation. A researcher who uses only one indicator may produce a precise but conceptually narrow estimate. Similar problems arise when wellbeing is reduced to income, educational quality to examination scores, or political participation to voting. Watson (2015) explains that good instruments must balance breadth and directness while avoiding questions that measure phenomena unrelated to the intended construct. Sukamolson (n.d.) warns that data-collection tools must be designed carefully to convert otherwise non-numerical phenomena into meaningful numerical evidence. Ghanad (2023) similarly connects quantitative quality to observable variables and instruments capable of responding to the research questions. Quantitative researchers must therefore justify their indicators, examine whether multiple measures are required, and acknowledge aspects of the phenomenon that remain unmeasured. Numerical precision should never be mistaken for conceptual completeness.

Watson (2015) distinguishes among nominal, ordinal, interval, and ratio levels of measurement. Nominal variables classify observations into categories without an inherent order, such as nationality, institutional type, or geographical region. Ordinal variables contain ranked categories, such as degrees of satisfaction or agreement, but the distances between categories may not be equal. Interval measures contain meaningful and equal distances among values but lack an absolute zero. Ratio measures include equal intervals and a meaningful zero, enabling direct comparisons of magnitude. The level of measurement influences which descriptive and inferential procedures may appropriately be applied. Researchers risk producing misleading results when they treat ordinal responses as though they possess a degree of mathematical precision not supported by the instrument. Assigning numbers to categories does not automatically transform subjective judgments into exact quantitative measurements. Watson (2015) further explains that much social-science measurement occurs at nominal, ordinal, or interval levels rather than through perfect ratio scales. Understanding these distinctions is necessary both for selecting statistical procedures and for interpreting what numerical differences actually signify.

Reliability concerns whether an instrument produces consistent measurements under comparable conditions. Validity concerns whether the instrument measures the concept the researcher intends to investigate. A measure can be reliable without being valid if it consistently produces the same inaccurate or irrelevant result. Content validity assesses whether the instrument adequately covers the dimensions of a concept, while construct validity considers whether the measure behaves in accordance with theoretical expectations. Criterion validity examines the relationship between a measure and an established external standard. Watson (2015) presents reliability and validity as methods of estimating and minimising error associated with quantitative measurement. Ghanad (2023) similarly emphasises standardised instruments, objectivity, and reliability as defining characteristics of sound quantitative designs. Internal validity concerns whether an observed relationship can reasonably be attributed to the factor being investigated rather than to confounding influences, while external validity concerns whether findings can be generalised beyond the study. Quantitative credibility therefore depends upon several interconnected forms of validity rather than upon a single statistical test. A statistically significant finding obtained through an invalid instrument remains substantively unpersuasive.

Measurement error cannot be eliminated entirely and must be recognised within both research design and interpretation. Instrument error may arise from ambiguous questionnaire items, inconsistent scales, faulty recording devices, or inadequate coding rules. Human error can occur through inconsistent administration, data entry, interpretation, or participant misunderstanding. Random error reflects unpredictable variation that produces fluctuations in measurement. Watson (2015) distinguishes instrument, human, and random errors and explains that the first two can be reduced, although not every source of variation can be controlled. Researchers may improve measurement through piloting, clear instructions, training, standardisation, repeated assessment, and use of established instruments. Nevertheless, an instrument validated in one country, language, profession, or cultural context may not operate identically in another. Translation can alter meaning, while respondents may interpret apparently equivalent categories differently. Sukamolson (n.d.) stresses that quantitative instruments must be designed in relation to the population and phenomenon being studied rather than used mechanically. Quantitative research should consequently treat measurement as a substantive methodological problem rather than a routine technical stage preceding statistical analysis.

3.2 Designs, Sampling, and Statistical Analysis

Descriptive quantitative research seeks to represent the characteristics, distribution, or frequency of a phenomenon. Surveys may be used to estimate public attitudes, experiences, behaviours, demographic characteristics, or institutional practices. Descriptive statistics organise data through frequencies, percentages, averages, medians, ranges, and measures of variation. Correlational research examines whether variables change together and whether the relationship is positive, negative, or absent. Ghanad (2023) identifies descriptive, correlational, experimental, and causal-comparative designs as major categories of quantitative inquiry. A correlation does not establish that one variable causes another because the relationship may result from reverse causality, an omitted factor, measurement error, or coincidence. Researchers must therefore distinguish carefully between association and causation. Descriptive and correlational designs remain valuable even where causal inference is not possible because they can identify patterns requiring further explanation. Their limitation arises when findings are presented as proof of effects that the research design cannot establish.

Experimental research investigates causal effects through manipulation of an independent variable and comparison of outcomes. Random assignment is used to create treatment and control groups that are expected to be similar apart from the intervention. Where the design is feasible and ethically acceptable, experiments can provide strong internal validity because randomisation reduces systematic differences among groups. Watson (2015) identifies randomisation and blinding as central techniques for minimising allocation and observation bias within experiments. Many social questions, however, cannot be investigated through random assignment. Researchers cannot ethically or practically assign individuals to poverty, discrimination, war, educational deprivation, or other harmful conditions. Quasi-experimental designs attempt to estimate causal effects without complete randomisation by using matched comparison groups, interrupted time series, natural experiments, regression discontinuity, or related strategies. Ghanad (2023) notes that experimental and quasi-experimental research differ in their degree of control, manipulation, and ability to support causal conclusions. Such designs require careful examination of assumptions because pre-existing differences may influence the observed outcome. Causal language should correspond to the strength of the design rather than to the researcher's hopes or theoretical preferences.

Cross-sectional studies collect data at a single point or within a relatively limited period. They are useful for estimating prevalence and examining associations, but they are often unable to establish temporal ordering. Longitudinal studies collect data across multiple periods and can examine change, development, and sequences of events. Watson (2015) distinguishes trend, cohort, and panel studies and explains that longitudinal designs provide more information about change than cross-sectional surveys, although they are more difficult to conduct and vulnerable to attrition. Panel studies repeatedly examine the same individuals, whereas cohort studies follow members of a defined group and trend studies draw repeated samples from a population. Quantitative content analysis applies systematic coding rules to texts, images, legal decisions, media reports, or institutional documents and transforms selected features into numerical categories. Its reliability depends upon clear coding definitions and consistent classification by coders. Its validity depends upon whether the categories capture the substantive meaning of the material rather than merely counting superficial features. The selection of design should consequently be determined by whether the research concerns a single distribution, change over time, association, or causal process.

Probability sampling is generally preferred where researchers seek to generalise from a sample to a defined population. Simple random sampling gives each eligible unit a known probability of selection, while stratified sampling ensures representation from relevant subgroups. Cluster sampling selects naturally occurring groups, and systematic sampling selects units at regular intervals from an ordered list. Non-probability approaches, including convenience, quota, purposive, and snowball sampling, may be necessary where populations are difficult to identify or access. However, such approaches reduce the strength of population-level generalisation because the probability of selection is unknown. Sukamolson (n.d.) emphasises that survey research uses scientific sampling and questionnaire design to estimate characteristics of populations with statistical precision. Ghanad (2023) similarly links quantitative generalisation to sufficiently large and appropriately selected samples. Sample size should be determined in relation to statistical power, expected effect size, population variability, desired precision, research design, and likely non-response. A large sample is not automatically representative, and a large biased sample may produce highly precise estimates of the wrong population. Researchers should therefore distinguish between sample size, sample quality, and the legitimate scope of inference.

Descriptive statistics summarise the observed data, while inferential statistics support estimates or tests extending beyond the sample. Common analytical procedures include t-tests, chi-square tests, analysis of variance, correlation, and regression. Regression models estimate the relationship between an outcome and one or more predictors while holding other measured factors constant. Statistical control does not automatically eliminate confounding or establish causation because relevant variables may be omitted or measured inadequately. Watson (2015) explains that quantitative data must be stored securely, checked carefully, and analysed through procedures suited to their level and purpose. Ghanad (2023) similarly stresses that statistical analysis must be interpreted in relation to research questions, hypotheses, previous studies, and predicted patterns. Statistical significance indicates whether an observed result is relatively unlikely under a specified null model, but it does not establish practical, legal, or social importance. Very small effects may become statistically significant in large samples, while substantively meaningful effects may fail to reach conventional significance in small samples. Researchers should therefore consider effect sizes, confidence intervals, uncertainty, and practical implications rather than relying solely on threshold-based significance. Statistical

software can perform calculations, but it cannot determine whether the concepts, assumptions, design, or causal interpretation are defensible.

3.3 Strengths, Limitations, and Ethical Challenges

The principal strength of quantitative research is its capacity to identify patterns across large numbers of cases. It can estimate the prevalence and distribution of social conditions, compare groups, examine change over time, test theoretical relationships, and evaluate interventions. Standardised instruments permit consistent data collection and can support replication and comparison across institutions, periods, or countries. Quantitative evidence is especially important where public authorities must allocate resources or identify which populations experience the greatest disadvantage. A qualitative study may establish that workers experience retaliation when using a grievance procedure, while a quantitative study may estimate how widespread the experience is and whether it differs according to sector, gender, or employment status. Ghanad (2023) emphasises quantitative research's ability to quantify phenomena, identify patterns, construct statistical models, and generalise findings where sampling is appropriate. Watson (2015) highlights its distinctive capacity to test theories formally through hypotheses and statistical analysis. Sukamolson (n.d.) likewise identifies objectivity, numerical comparison, prediction, and population analysis among the important advantages of quantitative inquiry. Its comparative and estimative capacity makes it indispensable to social policy, economics, epidemiology, education, public administration, and many other fields.

The limitations of quantitative inquiry arise partly from the reduction of complex phenomena to measurable indicators. Standardised questionnaires may impose categories that do not correspond to participants' understandings or may conceal important cultural and institutional differences. Numerical data may appear objective even though they depend upon decisions concerning definitions, question wording, sampling, coding, missing information, model specification, and interpretation. Sukamolson (n.d.) observes that not every phenomenon is best studied quantitatively even though many attitudes and beliefs can be converted into numerical form. Watson (2015) similarly explains that some physical properties are easier to measure than thoughts, feelings, and social experiences. The pressure to obtain statistically significant findings may encourage selective reporting, multiple testing, or exaggerated conclusions. Cross-sectional associations are sometimes described as causal effects even though temporal ordering and alternative explanations have not been addressed. Large datasets can create a false impression of comprehensiveness despite reflecting only what institutions chose to record. A technically sophisticated model cannot compensate for inadequate conceptualisation, biased sampling, or unreliable measurement. The appropriate response is not to reject quantification but to recognise its boundaries and interpret numerical evidence with conceptual and contextual caution.

Quantitative research also raises important ethical concerns concerning consent, privacy, data protection, and the social consequences of classification. Large administrative or digital datasets may contain information collected for purposes other than research, and individuals may be unaware that their records are being analysed. A dataset that appears anonymous can become identifiable when combined with geographical, occupational, demographic, or behavioural information. Statistical models may reproduce institutional biases if the underlying data reflect discriminatory practices or unequal access to services. Experiments introduce additional questions about deception, unequal allocation of benefits, treatment of control groups, and exposure to risk. Watson (2015) specifically emphasises

secure, anonymous storage and responsible handling of quantitative data. Researchers should consider not only whether collection is legally permissible but also whether analysis may stigmatise communities, facilitate surveillance, or generate harmful policy classifications. Ethical quantitative inquiry requires data minimisation, secure management, accurate reporting, and consideration of the consequences of prediction and categorisation. Technical efficiency should never be treated as sufficient justification for using sensitive personal data. Methodological quality and ethical responsibility remain inseparable even in research where the investigator has little direct contact with individual participants.

4. Mixed-Methods Research in the Social Sciences

4.1 Rationales and Principal Designs

Mixed-methods research involves the deliberate collection, analysis, and integration of qualitative and quantitative evidence within a single study or coordinated programme of inquiry. Its defining feature is integration rather than the mere coexistence of numbers and words. A questionnaire containing an optional open-ended item does not necessarily constitute a mixed-methods design, just as a qualitative study reporting basic participant characteristics does not automatically become mixed. Doyle et al. (2009) define mixed methods as research in which investigators collect and analyse both qualitative and quantitative data, integrate the findings, and draw inferences from their combination. Johnson and Onwuegbuzie (2004) present mixed methods as a pluralistic and complementary approach that permits use of induction, deduction, and abductive reasoning. Caruth (2013) identifies complementarity, completeness, development, expansion, corroboration, compensation, and diversity as major reasons for mixing methods. These rationales demonstrate that mixed methods should respond to a specific intellectual need rather than a desire to appear methodologically comprehensive. The combination is justified when it produces an understanding that neither component could provide adequately on its own. A study that merely reports separate findings from interviews and questionnaires without connecting them may be multi-method, but it has not necessarily achieved genuine mixed-method integration.

A convergent design collects qualitative and quantitative data during approximately the same period and analyses the components separately before comparing or merging their findings. Researchers may examine whether the results converge, complement one another, or reveal contradiction. A study of student satisfaction, for example, may combine a large survey with interviews and classroom observation. The survey may demonstrate generally positive ratings while qualitative evidence identifies concerns about assessment, discrimination, or unequal access to academic support. Divergence should not automatically be treated as evidence that one method failed. It may disclose differences between public and private accounts, between institutional categories and lived experience, or between population-level tendencies and particular subgroups. Doyle et al. (2009) explain that mixed-method designs can overcome the artificial dichotomy between breadth and depth and can produce more complete accounts of complex phenomena. Caruth (2013) similarly notes that words and narratives can add meaning to numbers, while numbers can add precision to qualitative evidence. A strong convergent design therefore investigates the source and meaning of inconsistency rather than suppressing inconvenient findings. Integration should produce an interpretation of how the different forms of evidence modify the overall conclusion.

An explanatory sequential design begins with quantitative data collection and analysis and follows with qualitative inquiry intended to explain or elaborate the numerical findings. A survey may show that awareness of a workplace grievance procedure is high while actual use

remains low. Interviews can then investigate whether workers fear retaliation, distrust management, consider the procedure ineffective, or depend upon informal intermediaries. The quantitative phase identifies a pattern, while the qualitative phase examines mechanisms and experiences underlying that pattern. Participants for the second phase may be selected from contrasting groups, outliers, or respondents demonstrating unexpected outcomes. Caruth (2013) describes explanatory sequential research as beginning with quantitative evidence and using subsequent qualitative data to enhance interpretation of the initial findings. Doyle et al. (2009) similarly identify sequential approaches in which one methodological component develops or explains another. The connection between phases should be planned rather than developed only after researchers encounter results that cannot be interpreted. An explanatory design is especially useful where statistical relationships require contextual understanding or where the same measured outcome may arise through different processes. Its success depends upon whether the qualitative component genuinely explains the numerical evidence rather than merely providing illustrative quotations.

An exploratory sequential design begins with qualitative inquiry and uses the findings to develop a quantitative instrument, theory, classification, or larger-scale investigation. Interviews with migrant workers, for example, may identify barriers to justice that existing questionnaires fail to measure, including language dependency, confiscation of documents, recruitment debt, fear of deportation, or reliance upon unregulated intermediaries. These findings can then be transformed into survey items and examined across a larger sample. Exploratory sequencing is valuable where concepts developed in other cultural or institutional settings may not be appropriate to the population being studied. Caruth (2013) explains that exploratory sequential designs begin with qualitative investigation and subsequently use quantitative methods to examine or explain the resulting categories. Fossey et al. (2002) also note that qualitative evidence can improve the contextual validity of instruments later used in quantitative studies. The qualitative findings should therefore influence instrument construction, sampling, hypotheses, or the analytical model in a visible and systematic manner. The quantitative phase may then assess the prevalence, relationships, or broader relevance of the identified phenomena. This design connects theory generation and measurement development within a coherent programme of research.

An embedded design places a secondary methodological component within a dominant qualitative or quantitative design. A randomised evaluation may include interviews examining participant experience, implementation challenges, and unintended consequences. A qualitative organisational case study may incorporate administrative statistics to describe patterns of staffing, complaints, expenditure, or service use. The embedded component performs a specific supportive function and does not necessarily carry equal weight. Mixed methods may also be organised as a multiphase research programme involving an initial qualitative exploration, a survey, and a later intervention evaluation. Caruth (2013) identifies embedded, transformative, and multiphase designs in addition to convergent and sequential approaches. Doyle et al. (2009) similarly explain that mixed-method typologies differ according to timing, priority, and the relationship between components. These designs are especially relevant to complex policy and institutional questions that develop over time. Researchers must explain the priority, sequence, and function of each component so that readers can understand how the overall inference was produced. Mixed methods should therefore be regarded as a design logic rather than a simple inventory of techniques.

4.2 Integration, Quality, and Limitations

Integration may occur at the level of research questions, sampling, data collection, analysis, interpretation, or reporting. At the design stage, the questions may be formulated so that both numerical and interpretive evidence are necessary. At the sampling stage, participants identified through a survey may be invited for interviews, or qualitative findings may determine the subgroups included in a later quantitative phase. During analysis, evidence may be compared, transformed, connected, or presented through joint displays that place numerical patterns beside qualitative themes. At the interpretation stage, researchers develop meta-inferences based upon the relationship among the components. Doyle et al. (2009) stress that difficulties commonly arise when researchers attempt to articulate how the qualitative and quantitative elements relate to one another. Caruth (2013) similarly states that a credible mixed-methods report should identify sequence, priority, rationale, data-analysis procedures, and the design's overall structure. The objective is not merely to state that one set of findings "supported" the other. Integration should demonstrate how one form of evidence explains, qualifies, extends, contradicts, or changes interpretation of the other. Where components remain wholly separate until a brief concluding paragraph, the project may be methodologically plural but not fully integrated.

The quality of mixed-methods inquiry depends first upon the quality of each component. A poorly sampled survey does not become credible because it is accompanied by interviews, and superficial interviews do not become rigorous because they follow a statistically sophisticated analysis. The researcher must meet the standards of measurement, validity, sampling, and inference expected within quantitative research. The qualitative component must similarly demonstrate purposeful sampling, analytical transparency, reflexivity, contextual depth, and grounding of interpretations in evidence. Mixed-methods quality also requires a defensible rationale for combination and a coherent integration process (Caruth, 2013; Doyle et al., 2009). Johnson and Onwuegbuzie (2004) refer to the need to combine approaches in a manner that uses their complementary strengths and avoids their non-overlapping weaknesses. Researchers should identify the priority and sequence of components and explain how contradiction was addressed. They should also consider whether the forms of evidence concern the same population, period, level of analysis, and conceptual definition. Integration can produce misleading conclusions where apparently similar terms represent different phenomena within the qualitative and quantitative strands.

Mixed methods can provide breadth and depth, estimate distribution, explain mechanisms, and examine both outcomes and processes. It can strengthen theory development by combining exploratory interpretation with later testing. It can improve instrument validity by grounding survey items in participants' accounts. It can evaluate not only whether a policy or programme produced an outcome but also how implementation occurred, why effects differed, and whether participants experienced unintended burdens. Doyle et al. (2009) argue that mixed methods is especially appropriate for complex and multifaceted research problems that cannot be addressed adequately by a singular method. Caruth (2013) similarly concludes that mixed methods may generate richer insights, cover a wider range of questions, and capture information missed by a monomethod design. Divergent findings can expose assumptions, reveal subgroup differences, and generate new research questions. Mixed methods may therefore provide a more comprehensive account of complex institutional and social problems in education, public health, legal studies, organisational research, social policy, and development studies. Its strength, however, arises from purposeful integration rather than from the sheer quantity or diversity of data collected.

The approach also contains important limitations. Mixed-methods research requires competence in qualitative design, quantitative design, and the distinctive procedures of integration. It may require more time, personnel, funding, software, and data-management capacity than a single-method project. Researchers may underestimate the difficulty of collecting and analysing two substantial datasets while maintaining coherence between them. Methodological imbalance may result in quantitative data being treated as the principal evidence while qualitative material is used merely for decoration, or the reverse may occur where numerical findings are too limited to contribute meaningfully. Doyle et al. (2009) identify the considerable time, resources, and multidisciplinary knowledge that may be required, particularly where components are undertaken concurrently or sequentially. Caruth (2013) similarly describes mixed methods as a more advanced and complex design that may necessitate a research team. Pragmatism can also become an excuse for philosophical avoidance if researchers simply claim to use whatever works without explaining what counts as working or whose purposes are served. Integration may increase ethical risks because linking interviews, surveys, and administrative records can make participants easier to identify. A single well-designed approach is therefore preferable to an unnecessarily complex mixed-methods project lacking expertise, justification, or genuine integration.

5. Comparative and Critical Reflection

5.1 Selecting an Appropriate Methodological Approach

The selection of a methodology should begin with the research problem and the form of knowledge required. Questions concerning meaning, identity, experience, language, institutional practice, and social process generally require qualitative evidence. Questions concerning prevalence, distribution, comparison, association, prediction, or effect generally require quantitative evidence. Questions requiring both forms of knowledge may justify a mixed-methods design. A qualitative study can explain why individuals distrust a public institution, while a quantitative study can estimate how widely that distrust is distributed and whether it differs across groups. A mixed-methods study can investigate both the distribution of distrust and the experiences through which it developed. Johnson and Onwuegbuzie (2004) argue that the research question should guide methodological choice rather than a preconceived commitment to one paradigm. Watson (2015) similarly maintains that disputes over the general superiority of quantitative or qualitative research are unproductive because researchers may select either or combine them according to the question. Fossey et al. (2002) emphasise that the philosophical position, questions, methods, and evaluation criteria should remain congruent. Researchers should therefore not begin with a preferred instrument or software package and then search for a question that fits it.

The intended form of claim should also guide methodology. A descriptive claim requires a different design from a causal claim, and a claim about lived experience requires different evidence from a claim about national prevalence. Researchers cannot legitimately generalise statistically from a small convenience sample simply because the findings appear plausible. They cannot establish causation from a cross-sectional correlation merely because the association is statistically significant. Qualitative researchers should similarly avoid presenting themes identified among purposively selected participants as universal facts. Fossey et al. (2002) distinguish probabilistic population generalisation from the analytical or contextual applicability of qualitative findings. Ritchie and Lewis (2003) likewise argue that qualitative inference depends upon detailed understanding of cases, concepts, processes, and the boundaries of relevance rather than statistical representativeness. Watson (2015) shows that

quantitative claims about causation depend upon design features such as randomisation, controls, temporal sequence, and measurement. The unit and level of analysis must also be clarified because evidence about individuals cannot automatically support conclusions about institutions or societies. Appropriate methodology consequently depends not only on the topic but also on the exact scope, level, and character of the inference the researcher intends to advance.

Practical constraints are relevant, but they should be acknowledged transparently rather than disguised as methodological justification. Limited funding may make a national probability survey impossible, while political sensitivity may restrict access to institutions or vulnerable participants. A researcher may need to narrow the question, select a case-study design, or qualify the scope of generalisation. It is methodologically preferable to conduct a smaller coherent study than to make unsupported claims from inadequate evidence. Collaboration may enable researchers with different methodological skills to undertake a stronger mixed-methods project. Caruth (2013) and Doyle et al. (2009) both recognise that mixed-methods studies may require teams because few individual researchers possess equal expertise in every relevant form of data collection and analysis. Training should therefore encourage social scientists to understand multiple traditions, even where they ultimately specialise in one. Qualitative researchers benefit from understanding measurement, sampling, and statistical inference, while quantitative researchers benefit from understanding meaning, context, reflexivity, and the construction of categories. Methodological literacy across traditions improves communication and reduces the tendency to dismiss unfamiliar forms of evidence. It also allows researchers to identify when collaboration or a different design would produce a more defensible answer.

5.2 Methodological Hierarchy, Rigour, and Ethics

One persistent problem in the social sciences is methodological hierarchy. Quantitative research has often been treated as inherently more scientific because it uses numbers, standardised instruments, large samples, and statistical procedures. Qualitative inquiry has sometimes been characterised as preliminary, subjective, or useful only for generating hypotheses to be tested quantitatively. This hierarchy is intellectually unsustainable because numerical data are not independent of interpretation. Quantitative researchers decide how concepts are defined, which indicators are selected, how questions are phrased, which populations are sampled, how missing data are treated, and which models are reported. A statistically precise result may therefore rest on weak conceptual foundations or reproduce institutional categories that conceal social realities. Berg (2001) argues that methods impose distinctive lines of sight upon reality, while Ritchie and Lewis (2003) show that all social research reflects assumptions about what should be investigated and how. Qualitative research can be equally unconvincing where researchers provide unsupported themes, selective quotations, vague sampling, or no explanation of analysis. The relevant distinction is not between inherently scientific and non-scientific methods but between conclusions that are warranted by the evidence and conclusions that exceed it. Methodological labels cannot compensate for poor design or weak reasoning.

Rigour across traditions begins with alignment among the question, design, sampling, data, analysis, and conclusion. Quantitative research uses concepts such as reliability, measurement validity, internal validity, external validity, statistical power, and model adequacy. Qualitative research emphasises credibility, transferability, dependability, confirmability, reflexivity, contextual depth, and analytical transparency (Fossey et al., 2002).

Mixed-methods research must satisfy the standards of each component and demonstrate the integrity of integration (Caruth, 2013; Doyle et al., 2009). Although the terminology differs, all three approaches are concerned with whether evidence has been gathered systematically and whether the resulting claims are justified. Transparency allows readers to evaluate how participants were selected, how instruments were constructed, how codes were developed, and how rival explanations were considered. Limitations should be treated as part of responsible scholarship rather than as admissions that automatically undermine a study. A credible paper demonstrates not that the research is perfect but that its strengths, weaknesses, assumptions, and inferential boundaries have been understood. Rigour therefore requires methodological self-awareness as well as technical competence.

Reflexivity should not be confined exclusively to qualitative research. Quantitative researchers also operate within theoretical, institutional, professional, and political contexts that influence the questions they ask and the outcomes they measure. The decision to measure productivity rather than dignity, formal complaints rather than unreported experiences, or examination scores rather than broader educational development reflects normative assumptions. Funding agencies and institutions may privilege evidence that can be counted, compared, or converted into performance indicators. Johnson and Onwuegbuzie (2004) recognise that researchers are embedded within communities and that inquiry is affected by beliefs, experiences, and values. Doyle et al. (2009) similarly question the assumption that a detached quantitative researcher is wholly free from value judgments. Qualitative researchers have developed a more explicit language for examining positionality, but all social researchers should reflect on how institutional locations and theoretical commitments influence knowledge production. Mixed-methods researchers face an additional responsibility to consider whether one form of evidence is being granted automatic authority over another. Reflexivity therefore concerns the architecture of the study as well as the personal position of the researcher. It asks whose categories are used, whose voices are regarded as credible, and whose interests the final interpretation may serve.

Ethics is inseparable from methodological quality. Qualitative research may expose participants through detailed narratives, quotations, institutional roles, or descriptions of small communities. Quantitative research may create risks through data linkage, profiling, surveillance, predictive models, or secondary use of administrative records. Mixed methods may intensify identification risk by connecting interviews, surveys, and institutional datasets. Fossey et al. (2002) emphasise the interconnection of ethics, authenticity, power, and trustworthiness in qualitative research. Berg (2001) addresses informed consent, confidentiality, anonymity, data protection, covert research, and the safety of both participants and researchers. Watson (2015) stresses secure and anonymous storage within quantitative inquiry. Consent should be meaningful, proportionate to risk, and responsive to the evolving character of a study. Researchers must also consider the consequences of publication, including whether findings may stigmatise communities, damage employment, expose political vulnerability, or be used to justify harmful policy. Ethical approval by an institution is necessary, but it does not exhaust the continuing responsibilities of the researcher. Responsible social inquiry requires sustained attention to autonomy, privacy, fairness, harm, representation, and the distribution of benefits arising from research.

6. Implications for Contemporary Social Science Research

Contemporary social problems increasingly require methodological breadth because they operate across multiple levels and contain both measurable and interpretive dimensions.

Climate vulnerability involves environmental exposure, economic resources, institutional capacity, political power, community knowledge, and lived experience. Migration involves demographic movement, labour-market patterns, legal status, family relations, identity, discrimination, and transnational networks. Platform work can be studied through income records, working hours, algorithmic allocation, contractual status, worker narratives, and observation of digital practices. Access to justice involves measurable case outcomes as well as trust, fear, legal consciousness, language, and institutional culture. Public-health behaviour similarly combines epidemiological patterns with cultural beliefs, relationships, political communication, and experiences of health systems. Ritchie and Lewis (2003) emphasise that social-policy questions are often multifaceted and require attention to both theoretical understanding and practical application. Doyle et al. (2009) argue that mixed methods is especially useful for multidimensional problems, although complexity alone does not mean that every study should adopt a mixed design. The research design should be proportionate to the question rather than to the prestige associated with methodological comprehensiveness. Researchers should use multiple methods only where their combination adds explanatory, evaluative, or ethical value.

The expansion of digital and administrative data creates new methodological possibilities and risks. Large datasets can reveal population-level patterns and changes that would be difficult to observe through conventional interviews or small surveys. Digital traces may provide information about communication, movement, networks, or service use, although such records are rarely neutral or complete representations of human behaviour. Individuals who do not use particular technologies may be excluded, while platform algorithms shape which activities become visible and recordable. Quantitative analysis can identify distribution and association, but qualitative research can investigate how individuals experience digital systems and how institutional categories are constructed. A mixed-methods design can connect large-scale patterns with interviews, ethnography, or documentary analysis, but integration must respect privacy and avoid re-identification. Watson (2015) underscores the importance of secure data storage and appropriate analysis, while Fossey et al. (2002) demonstrate the need to preserve social context and participants' meanings. The availability of more data does not eliminate the need for theory, conceptualisation, consent, interpretation, and ethical restraint. Methodological sophistication in the digital era therefore requires critical judgment as well as technical capacity.

Research education and publication practices should encourage methodological appropriateness rather than hierarchy. Students should learn that qualitative research is not simply interviewing, quantitative research is not simply statistics, and mixed methods is not simply using both. Training should connect philosophical assumptions to research questions, design, sampling, analysis, ethics, and reporting. Berg (2001) and Ritchie and Lewis (2003) both emphasise that qualitative techniques require systematic design, fieldwork skills, analytical discipline, and ethical awareness. Sukamolson (n.d.), Ghanad (2023), and Watson (2015) similarly show that quantitative competence involves conceptualisation, instrument construction, measurement, sampling, and interpretation rather than statistical calculation alone. Caruth (2013), Doyle et al. (2009), and Johnson and Onwuegbuzie (2004) demonstrate that mixed-methods competence requires knowledge of both traditions and explicit integration. Journals should assess research according to standards appropriate to the chosen methodology rather than imposing quantitative expectations upon qualitative work or accepting superficial claims of methodological mixing. Reviewers should distinguish among statistical generalisation, analytical generalisation, theoretical transfer, and contextual relevance.

Supervisors should discourage students from selecting methods solely because they appear easier or avoid unfamiliar forms of analysis. A pluralistic research culture becomes possible only when different forms of evidence are valued while the standards appropriate to each remain firmly applied.

Conclusion

Qualitative, quantitative, and mixed-methods approaches represent distinct but overlapping traditions of social inquiry. Qualitative research provides access to meaning, lived experience, institutional context, interaction, identity, and social process, and its credibility depends upon purposive sampling, contextual engagement, systematic analysis, reflexivity, and transparent interpretation (Berg, 2001; Fossey et al., 2002; Ritchie & Lewis, 2003). Quantitative research enables measurement, comparison, population estimation, hypothesis testing, prediction, and assessment of relationships or effects, but its authority depends upon conceptual clarity, valid instruments, appropriate sampling, defensible design, suitable analysis, and restrained inference (Ghanad, 2023; Sukamolson, n.d.; Watson, 2015). Mixed-methods research offers the possibility of connecting numerical breadth with interpretive depth when the research problem genuinely requires both forms of evidence (Caruth, 2013; Doyle et al., 2009; Johnson & Onwuegbuzie, 2004). None of these approaches is inherently superior independently of the question, evidence, design, and conclusion. Qualitative findings should not be criticised merely because they do not provide statistical generalisation, and quantitative findings should not be regarded as objective merely because they are expressed numerically. Mixed methods should not be adopted as a symbol of sophistication where the components are weak or remain analytically disconnected. The appropriate methodological approach is the one that creates the strongest alignment among the research problem, philosophical position, questions, sampling, data, analysis, ethics, and conclusions. Methodological quality is therefore not a property of labels such as qualitative, quantitative, or mixed methods, but of the coherence and integrity with which research is designed, conducted, interpreted, and reported. The future of social science lies not in the victory of one methodological tradition over another but in reflective methodological pluralism capable of producing credible, useful, and ethically responsible knowledge about the social world.

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