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Methodological Pluralism in the Social Sciences: Integrating Quantitative and Qualitative Research for Robust Evidence

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ABSTRACT

Methodological pluralism is increasingly recognized as a defensible response to the complexity of social life, yet the use of quantitative and qualitative methods does not automatically produce stronger evidence. The decisive issue is integration: whether different forms of inquiry are connected through a clear logic that yields conclusions unavailable from either component alone. This conceptual review explains how purposeful quantitative-qualitative integration can improve the credibility, explanatory depth, contextual validity and practical usefulness of social-science research. It synthesizes contemporary mixed-methods scholarship with African and Nigerian work on indigenous methodologies, knowledge production, research capacity and evidence-informed policymaking. The paper distinguishes methodological pluralism from multimethod research, mixed methods and triangulation; examines pragmatist, critical realist, dialectical, transformative and indigenous foundations; and analyses integration across problem formulation, sampling, data collection, analysis and interpretation. Particular attention is given to African settings, where imported concepts, linguistic diversity, weak research-policy linkages, uneven methodological training and marginalization of local knowledge complicate the production of useful evidence. An Integrated Evidence Robustness Framework is developed around five connected stages: problem complexity, methodological differentiation, purposeful integration, integrative reasoning and warranted meta-inference. Six propositions specify the conditions under which plural designs are likely to strengthen evidence. The review concludes that methodological pluralism is best understood as disciplined openness rather than unrestricted eclecticism. Strong plural research protects the quality of each component, makes integration visible, treats divergence as evidence, and locates claims within their social, historical and institutional contexts. For African and Nigerian social science, this approach can support locally grounded theory, culturally credible measurement and more actionable links between research and public decision-making.

1. Introduction

Social phenomena rarely present themselves in a form that can be understood fully through one evidential lens. Poverty has measurable distributions, but it is also experienced through unstable work, strained relationships, institutional encounters and changing expectations. Educational inequality can be represented through enrolment, attendance and attainment, yet those indicators do not by themselves explain classroom interactions, family strategies or the meanings attached to schooling. Public trust can be estimated with surveys, while the histories and encounters that shape trust may require interviews, observation and documentary analysis. The methodological problem is therefore not simply how to collect more information, but how to connect distinct forms of evidence without erasing what makes each useful (Greene, 2007; Creswell & Plano Clark, 2018; Timans et al., 2019). Building on this point, the growth of mixed-methods research reflects this recognition. In this regard, quantitative inquiry contributes measurement, comparison, estimation and the examination of patterned variation. Similarly, qualitative inquiry contributes interpretations of experience, institutional process, social meaning and context. When the components are deliberately connected, researchers can move from prevalence to process, from association to plausible mechanism, and from average effects to the conditions under which outcomes differ. When they are merely placed next to one another, however, the project may

produce two parallel accounts rather than a stronger explanation (Fetters et al., 2013; Plano Clark, 2019; Bazeley, 2024).

Furthermore, this distinction is especially important in African social science. Research questions are often shaped by histories of colonial classification, imported theoretical categories, multilingual settings, institutional constraints and urgent policy demands. African scholars have long questioned systems in which knowledge about the continent is produced through concepts, publication structures and standards of relevance that are not always grounded in African intellectual or social realities (Arowosegbe, 2016; Ndlovu-Gatsheni, 2018). Methodological pluralism can help address this problem, but only when it includes plural ways of knowing and not simply a technical combination of a questionnaire and a few interviews (Chilisa, 2017, 2020).

2. Statement of the Problem

Despite the growing acceptance of methodological pluralism, a persistent problem remains: the use of quantitative and qualitative methods is often treated as sufficient evidence of methodological sophistication even when the two components are poorly connected. In such studies, surveys and interviews may be conducted within the same project but analyzed as separate exercises, leaving the final discussion to place findings side by side rather than develop a genuinely integrated explanation. Consequently, methodological multiplicity can exist without methodological integration, and the promised gains in explanatory depth, validity and usefulness may not be realized (Fetters et al., 2013; Plano Clark, 2019; Bazeley, 2024; Fàbregues et al., 2024). Furthermore, the problem is particularly significant in African social science, where methodological choices intersect with colonial knowledge traditions, imported conceptual categories, linguistic diversity, institutional constraints and uneven research-policy relationships. More specifically, Nigerian studies have reported mono-method dominance, underrepresentation of qualitative inquiry, weaknesses in methodological transparency, limited discoverability of local scholarship and institutional barriers to evidence use (Ojebode et al., 2018; Egbetokun et al., 2020; Ngulube & Ukwoma, 2021; Olofinyehun et al., 2022; Uneke et al., 2023). These limitations affect not only research technique but also what questions are asked, whose experiences become visible and whether findings are sufficiently credible and context-sensitive for policy and practice.

Moreover, much of the mixed-methods literature explains design types and integration procedures, while African and Nigerian scholarship raises related concerns about epistemic location, indigenous knowledge, cultural validity and the institutional conditions of research use. These conversations are often discussed separately. As a result, there remains a need for a conceptually integrated account that connects the technical problem of quantitative-qualitative integration with the wider African questions of whose knowledge counts, how constructs travel across contexts and how evidence becomes usable in public decision-making (Arowosegbe, 2016; Chilisa, 2017, 2020; Ndlovu-Gatsheni, 2018; Aiyede & Muganda, 2023). Against this background, the central problem addressed in this paper is not whether researchers should use more than one method, but how distinct methodological contributions can be brought into a purposeful inferential relationship. The paper therefore argues that methodological diversity strengthens social-science evidence only when integration produces a warranted meta-inference - a conclusion derived from the relationship among evidence sources and not obtainable as convincingly from either component alone (Fetters & Freshwater, 2015; Fàbregues et al., 2024).

3. Objectives of the Study

The major objective of this paper is to develop a conceptually grounded explanation of how purposeful integration of quantitative and qualitative research can strengthen evidence in the social sciences, with particular attention to African and Nigerian research environments. The specific objectives of the paper include, to:

1. Clarify methodological pluralism, distinguish it from related methodological approaches, and examine the philosophical and epistemological foundations of quantitative-qualitative integration;
2. Analyze how purposeful integration strengthens credible, explanatory, context-sensitive and actionable evidence, with particular attention to african and nigerian knowledge-production practices and research-policy relationships; and
3. Identify common integration failures and quality safeguards, and develop an integrated evidence robustness framework with theoretical propositions for future research.

4. Methodology

Methodologically, the article adopts a theory-synthesis form of conceptual review. Conceptual reviews do not seek only to catalogue findings. Rather, they bring together ideas that have developed in partly separate conversations, clarify their relationships and construct a more coherent explanatory account (Jaakkola, 2020). The present synthesis connects five bodies of work: methodological pluralism, mixed-methods integration, philosophy of evidence, African indigenous and decolonial methodologies, and research-policy scholarship in Nigeria and Africa. In addition, literature was identified through iterative searches of academic publisher platforms, journal databases accessible through publisher sites, DOI records, academic search engines and backward reference chaining. Search combinations included methodological pluralism, mixed methods integration, meta-inference, evidential pluralism, African research methodology, indigenous mixed methods, Nigerian social science research, qualitative research in Nigeria, research-policy uptake and evidence-informed policymaking. Priority was given to peer-reviewed scholarship and authoritative academic books published from 2014 to 2026, while earlier foundational works were retained when they established concepts still central to the field. Bibliographic details and persistent identifiers were checked against journal or publisher records where available.

At the same time, this is not a systematic review and does not claim exhaustive retrieval or formal risk-of-bias assessment. Its value lies in conceptual coverage, critical comparison and the development of an integrative framework. The review is also intentionally selective in its African emphasis: the included studies illustrate recurring methodological and institutional issues rather than representing every national or disciplinary tradition on the continent. This boundary is important because Africa is not a homogeneous methodological setting, and Nigerian evidence should not be treated as a substitute for the continent as a whole (Aiyede & Muganda, 2023; Chilisa, 2020).

5. Theoretical Framework

Because this article is methodological rather than a study of one substantive social phenomenon, its framework is metatheoretical. It is anchored in pragmatism, critical realism and evidential pluralism, while transformative and indigenous perspectives provide the ethical, cultural and epistemic dimensions needed for African and Nigerian social research. Together, these lenses explain why different forms of evidence may be combined, how patterns can be related to mechanisms and meanings, and why integration must remain sensitive to context, power and local knowledge (Morgan, 2007; Shan & Williamson, 2021; Mukumbang, 2023; Mertens, 2024).

5.1 Pragmatism

Pragmatism emerged in the United States in the late nineteenth century and is most closely associated with Charles Sanders Peirce, William James and John Dewey. Peirce is widely regarded as the founder, with his 1878 essay “How to Make Our Ideas Clear” providing an early formulation; James later popularized the tradition and Dewey extended it into a philosophy of inquiry and problem solving (Peirce, 1878; Morgan, 2007; Kaushik & Walsh, 2019). The theory assumes that knowledge develops through inquiry, remains open to revision, and should be judged partly by its practical consequences; no method has permanent priority independently of the research problem. As part of its strengths, pragmatism supports methodological flexibility, problem-centred research and the purposeful combination of quantitative and qualitative evidence. However, If reduced to “whatever works,” it can leave unclear what counts as working, for whom, and according to which standards of validity or values (Hampson & McKinley, 2023).

5.2 Critical Realism

Critical realism is most closely associated with Roy Bhaskar, whose A Realist Theory of Science was first published in 1975 and later influenced social-science methodology (Bhaskar, 1975; Zachariadis et al., 2013). It assumes that reality exists independently of researchers’ descriptions, but knowledge of it is partial and fallible. Observable experiences and events may be generated by deeper structures and mechanisms, and social life operates in open systems where the same mechanism can have different effects under different conditions. The framework connects statistical patterns with contextual and mechanistic explanation and therefore supports explanatory depth rather than mere association. However, because mechanisms are not always directly observable, retroductive explanations can become speculative unless they are carefully linked to evidence; its terminology can also be demanding in applied research (Runhardt, 2022; Mukumbang, 2023).

5.3 Evidential Pluralism

Evidential pluralism developed from Federica Russo and Jon Williamson's 2007 argument that causal claims normally require both evidence of difference-making or probabilistic dependence and evidence of mechanisms. Shan and Williamson (2021) subsequently applied the approach explicitly to the social sciences and mixed methods (Russo & Williamson, 2007; Shan & Williamson, 2021). The theory is of assumptions that different evidence types perform different causal tasks and should be evaluated together rather than ranked automatically as substitutes for one another. It offers a direct philosophical basis for integrating quantitative estimates with qualitative, documentary or case-based evidence about mechanisms and context, and it discourages dependence on a single evidential hierarchy. However, it is important to note that evidence types may refer to different populations, levels or time periods; consequently, a mechanism observed in a few cases cannot automatically explain a population-level association, and conflicting evidence still requires careful weighting (Runhardt, 2022).

5.4 Transformative Paradigm

The transformative paradigm is strongly associated with Donna M. Mertens, who articulated its relationship to mixed methods and social justice in 2007 (Mertens, 2007). Like other, transformative paradigm assumes that knowledge production is not value-neutral; power, inequality, culture and historical exclusion influence research questions, participation and whose interpretations become authoritative. Research should therefore be ethically and culturally responsive. The paradigm makes representation, marginalized voices and social consequences visible within methodological decisions that might otherwise appear purely technical. However, critics argues that strong normative commitments may be perceived as advocacy if researchers do not distinguish evidence from preferred outcomes, and participation itself can reproduce local hierarchies when powerful stakeholders are treated as speaking for everyone (Chilisa & Mertens, 2021; Mertens, 2024).

5.5 Indigenous Research Methodologies

Although indigenous methodologies have multiple intellectual traditions, an influential African formulation is associated with Botswana scholar Bagele Chilisa, whose Indigenous Research Methodologies was first published in 2012 and substantially developed in its 2020 second edition (Chilisa, 2012, 2020). It is of the assumptions that knowledge is culturally and historically situated, relationships are central to responsible inquiry, and local languages, community knowledge and relational accountability should inform research rather than appear only as supplementary material. This approach can improve cultural and construct validity, reduce extractive knowledge practices and reveal meanings overlooked by imported categories. It major criticism is that it can become essentialist if "African culture" is treated as homogeneous; moreover, context-specific concepts may complicate cross-setting comparison unless translation, equivalence and internal differences are handled transparently (Chilisa et al., 2017; Chilisa & Mertens, 2021).

5.6 Synthesis and Relevance to the Current Paper

Taken together, the frameworks are complementary rather than interchangeable. Pragmatism explains why methods may be chosen around the problem; critical realism explains why patterns, events and mechanisms may require different forms of inquiry; evidential pluralism clarifies why causal and explanatory claims benefit from distinct evidence types; the transformative paradigm adds power, ethics and representation; and indigenous methodologies locate evidence within culture, language and relational responsibility. A dialectical stance is also retained in the paper's treatment of contradictory findings: disagreement is examined as potential evidence rather than forced into artificial consensus (Greene, 2007; Uprichard & Dawney, 2019). Accordingly, the theoretical position of this article is disciplined methodological pluralism: openness to multiple forms of evidence, combined with rigorous component quality, explicit integration, reflexivity and warranted limits on the final meta-inference.

6. Conceptual Review

This section reviews the major concepts underpinning methodological pluralism in the social sciences. It clarifies the relationships among methodological pluralism, mixed methods, multimethod research, triangulation, integration and meta-inference, thereby providing the conceptual foundation for understanding how quantitative and qualitative approaches can be combined to produce robust evidence.

6.1 Method, methodology and methodological pluralism

A method is a specific procedure for generating or analyzing material, such as a survey, interview, experiment, observation, regression model or thematic analysis. Methodology is the reasoning that connects a research problem, assumptions, design choices, evidence and claims. Methodological pluralism operates at this broader level. It recognizes that more than one methodological tradition may be legitimate and necessary because different approaches disclose different aspects of social reality (Greene, 2007; Johnson et al., 2007).

Importantly, pluralism does not mean that all methods are equally suitable for every question. It means that no method has universal authority independent of the problem and intended claim. A national probability survey may be the strongest approach for estimating prevalence, but a weak instrument cannot capture concepts that participants understand differently from the researcher. Similarly, an ethnography may reveal institutional process in exceptional depth, but its findings do not automatically estimate population distribution. Disciplined pluralism requires the researcher to identify the evidential task assigned to each component and the limits that remain after integration (Runhardt, 2022).

6.2 Multimethod research, mixed methods and triangulation

Multimethod research uses more than one method, but those methods may remain within the same broad tradition. A quantitative project can combine a survey, administrative records and an experiment; a qualitative project can combine interviews, observation and documents. Mixed-methods research specifically connects qualitative and quantitative elements within a study or coordinated programme. The defining feature is not the presence of words and numbers, but a relationship among the components at the level of design, analysis or inference (Johnson et al., 2007; Creswell & Plano Clark, 2018). Similarly, triangulation is one purpose for methodological combination. It examines whether evidence produced through different routes supports a compatible conclusion. Mixed methods may also serve development, complementarity, expansion, initiation or explanation. For example, interviews may help develop a survey instrument; statistical patterns may guide case selection; one component may expand the scope of another; and disagreement may initiate theoretical revision (Greene et al., 1989; Denzin, 2012). Treating triangulation as synonymous with integration is therefore too narrow.

6.3 Integration, meta-inference and robust evidence

Integration is the purposeful creation of relationships among components. It can involve connecting samples, building one phase from another, merging findings, embedding one dataset within another, transforming data or comparing results in a joint display. Integration becomes analytically meaningful when it affects what the researcher concludes rather than merely how the report is organized (Fetters et al., 2013; Bazeley, 2024). Furthermore, a meta-inference is a conclusion developed by considering the components together. It should state what has been learned from convergence, complementarity, qualification or divergence and how the quality and limits of each component affect the final claim. Robust evidence, as used here, is evidence that remains credible after suitable scrutiny of measurement, interpretation, context, alternative explanations and inferential boundaries. Robustness is not certainty; it is warranted resilience under critical examination (Shan & Williamson, 2021).

Table 1

Distinguishing the principal concepts

Concept	Core meaning	Defining question	Typical contribution
Methodological pluralism	Openness to multiple methodologies and evidential forms.	Are choices justified by the problem and intended claim?	Broadens legitimate routes to knowledge while retaining standards.
Multimethod research	Use of several methods, possibly within one tradition.	Are multiple procedures used, regardless of qualitative-quantitative mixing?	Adds coverage, comparison or checking within a methodological family.
Mixed-methods research	Purposeful connection of qualitative and quantitative elements.	Do the strands interact in design, analysis or inference?	Links different evidential contributions in one inquiry.

Concept	Core meaning	Defining question	Typical contribution
Triangulation	Comparison across methods, sources, researchers or theories.	Does evidence obtained through different routes support, qualify or challenge a claim?	Tests convergence and exposes method-specific limitations.
Integration	The interface through which components influence one another.	What is connected, when, how and for what purpose?	Converts methodological diversity into analytic added value.
Meta-inference	An overarching conclusion derived from integrated evidence.	What is understood only after considering the components together?	States the warranted combined claim and its limits.

Source: Synthesized from Greene et al. (1989), Johnson et al. (2007), Creswell and Plano Clark (2018), Bazeley (2024) and Fàbregues et al. (2024).

7. Literature Review

The literature is reviewed thematically to connect empirical and methodological evidence on African and Nigerian knowledge production with the wider scholarship on integration, evidential benefits and quality safeguards. This thematic organization makes it possible to move from the regional research context to the practical stages of integration, the benefits claimed for plural inquiry, the proposed synthesis framework and the conditions under which integration remains credible (Timans et al., 2019; Aiyede & Muganda, 2023; Fàbregues et al., 2024).

7.1 Methodological pluralism in African and Nigerian social science

This subsection examines methodological pluralism within African and Nigerian social science, particularly in relation to knowledge production, indigenous perspectives, research practices and evidence use. Furthermore, it highlights how cultural, institutional and epistemic contexts shape the integration and usefulness of different forms of evidence.

7.1.1 Knowledge production and epistemic location

Methodological choices in Africa cannot be separated from the political economy of knowledge production. Research agendas, theoretical canons, publication incentives and funding relationships influence which problems are visible and which explanations appear authoritative. Arowosegbe (2016) shows that debates about African scholarship are also debates about the location and conditions under which knowledge about Africa is produced. Ndlovu-Gatsheni (2018) describes epistemic freedom as the capacity to think from African histories and experiences rather than merely apply externally established categories. Importantly, this critique does not imply rejection of methods developed elsewhere. Probability sampling, regression, interviewing and thematic analysis are not owned by one geography. The concern is whether concepts and instruments are treated as context-free. A measure developed in another setting may have weak construct validity when translated into a different linguistic, institutional or cultural environment. Equally, local narratives can be romanticized if they are accepted without critical examination. Pluralism is useful because it permits standardized comparison and contextual interrogation to inform one another (Chilisa, 2020).

7.1.2 Indigenous and relational integration

African indigenous-methodology scholarship broadens integration beyond the technical mixing of data types. Chilisa and Tsheko (2014) demonstrate how indigenous methods, relationship building and sequential mixed methods can be used to design culturally meaningful interventions. The lesson is that integration can occur among epistemologies, social relationships and forms of evidence, not only between numerical and textual datasets. Furthermore, relational integration changes the role of participants. Communities may contribute to defining outcomes, interpreting apparent contradictions and deciding how evidence should be communicated. In turn, this can improve construct validity because measures are tested against local meanings. It can also expose power differences within communities, since no group has a single uncontested voice. Culturally responsive research therefore requires reflexivity and attention to gender, generation, status and language rather than an undifferentiated appeal to “African culture” (Chilisa et al., 2017; Chilisa & Mertens, 2021).

7.1.3 Methodological patterns in Nigeria and South Africa

Empirical reviews indicate that plural research is present in African scholarship but its execution and reporting remain uneven. Ngulube and Ukwoma (2021) found shortcomings in methodological transparency within mixed-methods publications in Nigerian and South African library and information science. Their findings reinforce the wider point that adopting mixed methods does not by itself guarantee explicit or well-reported integration. Similarly, Nigerian disciplinary studies reveal both imbalance and opportunity. Ojebode et al. (2018) linked mono-method dominance in communication research to scholar-policy disengagement and argued that mixed methods can generate broader evidence for social problems. Their analysis does not imply that mixed methods is always superior; rather, it shows how habitual reliance on one approach may narrow the questions asked and the audiences reached. In addition, there is also a dissemination problem. The Nigerian social-science research system includes substantial scholarly activity, yet local outputs can be difficult to discover and may circulate weakly beyond disciplinary or institutional networks. The Doing Research in Nigeria assessment examined production, diffusion and uptake through a mixed-methods design and identified structural constraints affecting research quality and use (Egbetokun et al., 2020). Olofinyehun et al. (2022) further show that diffusion depends on institutional channels and researcher relationships, not merely on the existence of published findings.

7.1.4 Public policy and evidence use

Furthermore, African public-policy scholarship makes a strong case for methodological complementarity. Kilonzo and Ojebode (2023) argue that policy research must address both the distribution of a problem and the contextual processes that shape it, while Aiyede (2023) stresses that communication is part of the route from research to policy action. Integration therefore extends beyond analysis: it includes how findings are framed for actors who operate under political, administrative and resource constraints. Similarly, recent Nigerian evidence also shows why a single hierarchy of evidence is insufficient. Aremu et al. (2026), using survey data from federal ministries and the legislature, identified distinct patterns of evidence engagement, including an “eclectic” group that regularly used systematic and non-systematic evidence. In turn, this suggests that policy actors draw on multiple evidential forms in practice. The methodological challenge is not to deny that plurality but to distinguish careful synthesis from selective use. Moreover, institutional capacity shapes whether integrated findings influence decisions. Uneke et al. (2023) show that organizational roles, research funding, partnership structures, leadership and infrastructure influence evidence use across Nigerian ministries. Consequently, methodological quality must be considered alongside the systems through which evidence is commissioned, interpreted and acted upon.

Taken together, this African and Nigerian scholarship points to a broader understanding of methodological pluralism than the simple coexistence of quantitative and qualitative techniques. One strand concerns epistemic location: concepts, measures and standards of relevance should be examined in relation to the histories and institutions through which knowledge about African societies is produced (Arowosegbe, 2016; Ndlovu-Gatsheni, 2018). A second strand concerns indigenous and relational integration. Here, local knowledge, community relationships and culturally grounded interpretation are treated as sources that can shape constructs, instruments and explanations rather than as illustrations added after analysis (Chilisa & Tsheko, 2014; Chilisa, 2017, 2020).

Additionally, a third strand is methodological self-examination within African disciplines. Reviews of Nigerian and South African scholarship show that the presence of multiple methods does not by itself guarantee transparent or meaningful integration. Problems include unclear design labels, limited explanation of sequence or priority, weak reporting of integration procedures and persistent mono-method habits (Ngulube & Ukwoma, 2021). Nigerian communication research likewise demonstrates how disciplinary routines can privilege one evidential form and narrow the range of questions posed, even when the research problem would benefit from complementary approaches (Ojebode et al., 2018). The implication is not that researchers should mix methods by default, but that methodological choice should be made deliberately and justified against the problem under study.

More so, a fourth strand extends pluralism beyond study design to the wider research system. Evidence becomes socially robust only when production, dissemination, interpretation and use are connected. Nigerian research-system analyses show that institutional visibility, networks, funding

structures and channels of diffusion affect whether findings enter policy and practice (Egbetokun et al., 2020; Olofinyehun et al., 2022). Policy-methodology scholarship further stresses the need to connect contextual explanation, stakeholder knowledge and communication with technical analysis (Kilonzo & Ojebode, 2023; Aiyede, 2023). Studies of evidence-informed decision-making in Nigeria reinforce this point by showing that organizational capacity, researcher-policy relationships and the actual plurality of evidence used by decision-makers shape uptake (Uneke et al., 2023; Aremu et al., 2026). In this sense, methodological pluralism is both an analytical practice and an institutional practice: robust evidence depends on how different forms of knowledge are generated, connected and made usable.

7.2 Integration across the research process

This subsection examines how integration occurs across the research process, from problem formulation and sampling to data generation, analysis and interpretation. Furthermore, it shows how purposeful connections between quantitative and qualitative components can strengthen coherence and improve the quality of the final meta-inference.

7.2.1 Problem formulation and research questions

Integration begins before methods are selected. An integration-worthy problem contains dimensions that one evidential approach would leave unresolved. Weak justification states that mixed methods will provide a "complete picture." Strong justification names the missing connection: estimating a pattern and explaining its mechanisms; evaluating outcomes and examining implementation; or measuring exclusion while understanding how it is experienced (Plano Clark, 2019). Accordingly, the research questions should reflect that logic. A quantitative question may ask whether employment insecurity is associated with psychological distress. A qualitative question may ask how workers experience insecurity and respond to it. The overarching mixed question then asks how experiences and coping processes help explain the observed relationship. Together, this structure prevents the strands from becoming unrelated studies and establishes what the meta-inference must accomplish.

7.2.2 Sampling, instrument development and data generation

Similarly, sampling can serve as an integration interface. In an explanatory sequential design, interview participants may be selected from statistically significant subgroups, extreme cases, typical cases or cases that do not fit the dominant pattern. By contrast, in an exploratory sequence, qualitative findings may identify dimensions used to build or adapt a survey. The qualitative sample is not thereby made statistically representative; its role is to investigate theoretically meaningful variation connected to the quantitative component (Creswell & Plano Clark, 2018). Additionally, in African multilingual settings, instrument development deserves particular attention. Literal translation may preserve words while changing the construct. Moreover, cognitive interviewing, community consultation and pilot qualitative work can reveal whether response categories carry the intended meanings. Quantitative comparisons then become more credible because the categories have been interrogated contextually rather than assumed to travel unchanged (Chilisa, 2020).

Moreover, data generation can also be integrated through embedding. An evaluation may embed observation and interviews within an experiment to understand fidelity, participant response and unintended effects. Similarly, a case study may embed a survey to compare perceptions within and across institutions. The purpose of embedding should be specified in advance so that the secondary component has a genuine analytical function rather than a token role (Fetters et al., 2013).

7.2.3 Analysis, joint displays and meta-inference

At the analytical stage, researchers may merge datasets, transform one form of data, compare case-level profiles or construct joint displays. A joint display places related quantitative and qualitative findings within a common structure organized by themes, cases, programme components, time or subgroups. Its importance lies not in visual appearance but in the reasoning it enables: identifying convergence, complementarity, qualification and contradiction (Bazeley, 2024; Fàbregues et al., 2024). Furthermore, integrated analysis should consider the relative quality of the components. A well-supported qualitative explanation should not be dismissed simply because a weak survey produces a different result. Conversely, vivid narratives should not override strong population evidence without a reasoned account of the different inferential levels involved. Accordingly, meta-inference requires

explicit weighting, uncertainty and attention to how evidence quality affects the combined conclusion (Fàbregues et al., 2024).

Additionally, reporting must make the integration traceable. Readers should be able to see why the design was chosen, where components interacted, what was learned from each, how disagreements were handled and what new conclusion emerged. In this regard, recent calls for common reporting standards reflect the continuing problem of studies that use a mixed-methods label but leave integration implicit (Guetterman et al., 2023; Fàbregues & Guetterman, 2025).

More broadly, when viewed as a process rather than a single analytical event, integration operates through a sequence of linked interfaces. At the problem-formulation stage, the researcher identifies an overarching question that genuinely requires more than one evidential form. During concept development, qualitative inquiry, local knowledge or prior theory can be used to refine constructs before standardized measurement. Furthermore, sampling can then connect phases by selecting qualitative cases from quantitative patterns or, in exploratory designs, by using qualitatively generated categories to inform later stratification. These interfaces give the strands a common inferential direction instead of allowing them to develop as parallel studies (Fetters et al., 2013; Plano Clark, 2019).

Similarly, integration also operates during data generation and analysis. For example, one phase may build the instrument used in another, or a secondary component may be embedded within a larger design to examine implementation, experience or unintended effects. At analysis, evidence can be merged, compared, transformed or organized in a joint display so that convergence, complementarity, qualification and contradiction become visible. The key issue is not the display itself but the reasoning it supports: researchers must show how evidence from different components changes the interpretation that would have been reached from either component alone (Bazeley, 2024; Fàbregues et al., 2024).

Finally, the final interfaces are interpretation, communication and use. Accordingly, meta-inferences should state what the combined evidence supports, what remains uncertain and how component quality affects the overall claim. In applied research, co-interpretation with stakeholders can test whether an explanation is contextually plausible and can reveal implementation constraints that are invisible in the primary dataset, provided stakeholder preferences are not allowed to replace evidential standards. Reporting should then make the path of integration auditable by identifying the design, the points of connection, the treatment of divergent findings and the added value produced by the combination (Fàbregues et al., 2024; Kilonzo & Ojebode, 2023; Guetterman et al., 2023; Fàbregues & Guetterman, 2025). Thus, integration is best understood as a chain of inferential decisions extending from the initial research question to the final use of evidence.

7.3 How integration strengthens social-science evidence

This subsection examines the major ways through which the integration of quantitative and qualitative research can strengthen social-science evidence. In particular, it considers how integration improves explanatory depth, contextual understanding, corroboration, theory development and the practical usefulness of research findings.

7.3.1 Breadth, depth and contextual meaning

The most familiar benefit is breadth-depth complementarity. Quantitative evidence can estimate prevalence, compare groups and examine the strength of relationships. Qualitative evidence can clarify how categories are understood, how institutional processes unfold and why similar people experience the same policy differently. Integration connects distribution with meaning rather than treating either as sufficient (Greene, 2007; Kilonzo & Ojebode, 2023). For example, consider research on school dropout. Administrative data may show higher withdrawal among students from low-income households. Similarly, interviews can reveal several pathways within that association: transport costs, unstable housing, family care obligations, stigma or the inability to meet informal school expenses. The integrated conclusion is not merely that poverty predicts dropout. It identifies multiple processes, shows where interventions might operate and warns against treating a statistical category as a single experience.

7.3.2 Pattern-mechanism linkage and causal explanation

Integration strengthens explanatory claims when patterned differences are connected to plausible mechanisms. Statistical modelling can test whether outcomes vary with exposure and whether alternative measured explanations reduce the relationship. Likewise, qualitative process evidence can investigate how actors respond, what institutional rules operate and why effects appear under some conditions but

not others. Critical realist and evidential-pluralist accounts provide a philosophical basis for this division of evidential labour (Mukumbang, 2023; Shan & Williamson, 2021). However, the connection must be warranted. Interviews from a handful of convenient cases cannot automatically explain a national association. Researchers can strengthen the link by sampling cases from the quantitative analysis, examining negative cases, comparing settings where outcomes differ and stating whether mechanisms are hypothesized, demonstrated or merely plausible. This restraint prevents plural evidence from becoming an excuse for causal overclaiming (Runhardt, 2022).

7.3.3 Corroboration, error detection and evidential resilience

When relatively independent methods support a compatible conclusion, confidence may increase because method-specific weaknesses are less likely to explain the entire result. For instance, survey estimates of low institutional trust may be corroborated by interviews describing corruption, inconsistent service and unresponsive officials. Integration can also reveal error: qualitative work may expose ambiguous survey items, while quantitative analysis may show that a compelling qualitative theme occurs only in a narrow subgroup (Denzin, 2012). Nevertheless, convergence is not proof. Methods may share the same biased sampling frame, conceptual assumption or institutional source. Moreover, researchers should ask how independent the evidential routes really are. Corroboration is strongest when the components have different vulnerabilities and when possible common causes of error are examined.

7.3.4 Qualification, heterogeneity and boundary conditions

One component may qualify rather than confirm another. For instance, an intervention may improve average employment outcomes while interviews reveal that participants with disabilities or those in rural areas cannot access key services. The qualitative evidence does not necessarily invalidate the average effect; it changes the scope of the claim. The more defensible conclusion identifies who benefited, who did not and which conditions shaped the difference (Plano Clark, 2019). More so, this function is particularly important in large and diverse societies such as Nigeria. National averages can conceal variation across geopolitical zones, rural and urban settings, language groups, genders and institutional capacities. Purposeful integration can identify heterogeneity that a single aggregate estimate would hide, while quantitative comparison can test whether case-based differences extend beyond the original sites.

7.3.5 Productive disagreement

Divergence is often treated as an embarrassment, yet it can be one of the most informative outcomes of plural inquiry. Survey respondents may report satisfaction while interviews describe frustration because “satisfaction” reflects gratitude for receiving any service rather than approval of its quality. Similarly, a programme may appear effective statistically while participants attribute change to another intervention. Contradiction can reveal measurement problems, different time frames, subgroup variation or mistaken theoretical assumptions (Bazeley, 2024). Accordingly, productive disagreement requires an audit trail. Researchers should state which findings diverge, assess the quality of each strand, examine whether they address the same construct and consider additional analysis. The objective is not to force reconciliation but to determine what the disagreement teaches about the phenomenon and the limits of the study.

7.3.6 Theory generation, refinement and transfer

Plural evidence can contribute to theory in both directions. Qualitative inquiry may generate concepts and causal pathways that are later measured or compared. Conversely, quantitative analysis may reveal unexpected patterns, non-linearity or subgroup differences that require new qualitative explanation. Iteration between the components can refine constructs, specify mechanisms and identify boundary conditions (Mukumbang, 2023). Furthermore, African-centred pluralism adds a further contribution: it can test whether imported theories adequately represent local institutions and meanings. At the same time, local concepts should not be accepted uncritically, but neither should they be forced into external models without examination. Integration allows researchers to compare theoretical expectations with lived accounts, historical documents and distributional evidence, creating theory that is locally grounded and potentially transferable through explicit comparison rather than assumed universality (Arowosegbe, 2016; Chilisa, 2017).

7.3.7 Contextualized actionability and research-policy connection

Policy actors need more than evidence that an intervention has an average effect. They need information about feasibility, implementation, acceptability, cost, institutional fit and unintended consequences. Similarly, quantitative evidence can estimate outcomes and variation; qualitative evidence can explain administrative bottlenecks, stakeholder reasoning and the conditions required for implementation. Integration therefore moves the practical question from "Does it work?" to "What works, through which processes, for whom, under what conditions and with what consequences?" (Aiyede, 2023; Kilonzo & Ojebode, 2023). Similarly, in Nigeria, the value of this approach depends on institutional relationships. Research that remains within academic journals may be rigorous but have limited policy influence. Moreover, findings are more likely to be used when researchers understand decision timelines, communicate uncertainty clearly and build relationships without surrendering independence. Capacity-building and formal research-policy partnerships can support this process, but evidence will still compete with political priorities, resources and experience (Uneke et al., 2023; Aremu et al., 2026).

7.3.8 Epistemic inclusion and ethical credibility

Integration can widen whose knowledge is represented. For instance, administrative datasets and standardized indicators may make inequality visible at scale, while qualitative and participatory approaches reveal experiences that institutional categories omit. When participants contribute to interpretation, they can challenge deficit explanations and identify outcomes that matter locally (Chilisa & Mertens, 2021; Mertens, 2024). However, inclusion is not automatically achieved by adding quotations. Researchers must consider who was able to participate, who translated meanings, whose interpretation shaped the final account and whether community knowledge can be safely published. Ethical credibility is part of evidential robustness because extractive or culturally insensitive procedures can distort what participants disclose and weaken trust in the findings (Chilisa et al., 2017).

7.3.9 Cumulative pluralism

Finally, not every contribution must occur within one project. A cumulative programme can combine a rigorous survey, ethnography, comparative case studies and evaluation across separate studies. This may be preferable when one team lacks the resources to conduct all components well. Moreover, cumulative pluralism still requires conceptual coordination: later studies should address unresolved questions, compare compatible constructs and state how new evidence changes previous conclusions (Timans et al., 2019; Fàbregues et al., 2024).

7.4 Integrated Evidence Robustness Framework

The framework proposed here explains robust integration as a five-stage pathway. It is not a rigid design template; it identifies the inferential work that any plural inquiry must complete.

Stage 1 - Problem complexity. The inquiry begins with a problem that contains analytically important dimensions that one approach would leave unresolved. Complexity must be specified rather than asserted. The researcher identifies whether the missing connection concerns pattern and process, outcome and implementation, scale and meaning, or another relationship.

Stage 2 - Methodological differentiation. Each component is assigned a distinct evidential role and is designed according to standards appropriate to that role. Integration needs difference before connection. If both components reproduce the same assumptions and collect shallow versions of the same information, their combination adds little.

Stage 3 - Purposeful integration. The design establishes one or more interfaces at which components influence one another. These interfaces may involve questions, sampling, instrument development, data generation, analysis, interpretation or communication. More interfaces are not automatically better; each must serve the central inference.

Stage 4 - Integrative reasoning. Researchers compare evidence, evaluate quality, investigate convergence and divergence, and consider the level at which each claim operates. Joint displays, case matrices and iterative team discussion can support this reasoning, but no procedure replaces judgement.

Stage 5 - Warranted meta-inference. The final conclusion states what has been learned through integration, what remains uncertain, where the claim applies and how evidence quality limits confidence. Robustness is demonstrated through transparent reasoning rather than through the label mixed methods.

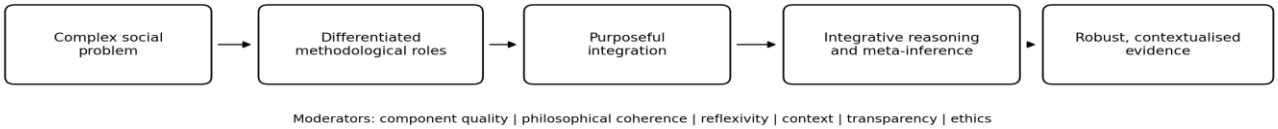

Figure 1. Integrated Evidence Robustness Framework

Moreover, the pathway is moderated by philosophical coherence, component quality, reflexivity, contextual sensitivity, ethical responsibility, team competence and reporting transparency. In turn, it produces five desired outcomes: credibility, comprehensiveness, explanatory adequacy, contextual validity and actionability. Failure at one essential stage constrains the final conclusion. Excellent qualitative analysis cannot repair invalid measurement when the meta-inference depends on the quantitative estimate, and a strong survey cannot repair superficial interpretation when the causal explanation depends on interviews (Harrison et al., 2020; Fàbregues et al., 2024).

7.4.1 Theoretical propositions

P1. Methodological diversity affects evidential robustness primarily through integration quality rather than through the number of methods used. Accordingly, this proposition treats integration as the mediating mechanism between plurality and added value. It predicts that studies with fewer but well-connected components will often produce stronger meta-inferences than studies with many disconnected datasets (Fetters & Freshwater, 2015; Bazeley, 2024).

P2. Integration adds greater explanatory value when the components retain distinct but complementary evidential roles. Similarly, difference supplies the reason for integration. Components that examine pattern and process, or distribution and meaning, have greater potential to generate new understanding than components that duplicate one another weakly (Greene et al., 1989; Shan & Williamson, 2021).

P3. Multiple integration points improve a study only when each point is justified by the research problem and intended inference. Furthermore, this proposition rejects the assumption that maximal mixing is a universal quality standard. Unnecessary interfaces increase burden and may blur methodological responsibilities, while strategically placed interfaces improve coherence (Plano Clark, 2019; Fàbregues et al., 2024).

P4. Divergent findings strengthen theory when disagreement is investigated rather than concealed or reconciled prematurely. In addition, the proposition predicts that transparent analysis of contradiction will identify new constructs, mechanisms or boundary conditions more often than forced consensus (Bazeley, 2024).

P5. Contextual validity and actionability improve when stakeholder knowledge is integrated with explicit attention to representation and power. Moreover, stakeholder participation can expose implementation conditions and locally relevant outcomes, but only when researchers examine whose voices are absent and how institutional authority shapes interpretation (Chilisa & Mertens, 2021; Mertens, 2024).

P6. The credibility of a meta-inference cannot exceed the quality of the essential component or interface on which it depends. Finally, this proposition directs quality assessment beyond design labels. A meta-inference should be evaluated by tracing its evidential dependencies and identifying the weakest indispensable link (Harrison et al., 2020).

Taken together, these propositions can be examined through methodological reviews, comparative analyses of published studies, research-team case studies and empirical investigations of how integrated findings influence policy decisions. African and Nigerian journals provide valuable settings for such work because methodological diversity, contextual translation and evidence-use constraints are especially visible.

7.5 Conditions, challenges and quality safeguards

This subsection examines the major conditions and challenges that influence the quality of methodological integration in social-science research. It also highlights key safeguards needed to ensure that quantitative and qualitative components are rigorously conducted, appropriately integrated and transparently reported.

7.5.1 Component quality and methodological tokenism

The first condition is the quality of each component. Quantitative work requires defensible measurement, sampling, model specification, management of missing data and communication of uncertainty. Similarly, qualitative work requires depth, reflexivity, analytic transparency, contextual sensitivity and a visible relationship between interpretations and material. Integration cannot compensate for a component that is essential to the conclusion but fundamentally weak (Harrison et al., 2020). Furthermore, tokenism occurs when a few interviews are used to decorate a statistical report or when a small descriptive questionnaire is added to a qualitative study to create the appearance of breadth. The test is whether the secondary component changes sampling, analysis, interpretation or the final claim. If it can be removed without affecting the conclusion, its integrative role is doubtful (Fàbregues et al., 2024).

7.5.2 Forced convergence and inferential slippage

Researchers may feel pressure to produce one coherent story. This can lead to selective reporting or the treatment of one strand as authoritative whenever results disagree. A quality safeguard is to plan in advance how convergence, complementarity and divergence will be assessed, while remaining open to unanticipated relationships (Bazeley, 2024). Similarly, inferential slippage occurs when claims move beyond the evidence without acknowledgement. Case-based findings should not be generalized statistically merely because they accompany a survey, and population-level associations should not be described as mechanisms merely because interviews provide a plausible narrative. Meta-inferences should state the level and scope of each claim (Runhardt, 2022).

7.5.3 Unequal methodological status and team dynamics

One component often dominates because of funding priorities, disciplinary prestige or team expertise. Priority can be legitimate, but the secondary strand must still have a clear purpose and sufficient resources. Teams should agree on concepts, quality standards and decision rules while preserving constructive methodological disagreement. Collaborative practices are particularly important when statisticians, qualitative researchers, policy actors and community partners use different vocabularies (Harrison et al., 2020).

7.5.4 African and Nigerian institutional constraints

Plural designs can be costly in settings with limited funding, unreliable infrastructure, heavy teaching loads and restricted access to software or databases. Consequently, these constraints may encourage small convenience samples, rushed qualitative analysis or overambitious designs. The appropriate response is not to lower standards but to design realistically: use staged research programmes, collaboration, open-source tools and carefully bounded questions (Egbetokun et al., 2020; Uneke et al., 2023). In addition, publication systems create another constraint. Local research may be absent from major indexes, while journals with strict word limits may encourage authors to compress the qualitative strand or omit integration details. Moreover, editors can improve quality by allowing supplementary integration materials, requiring explicit design reporting and recruiting reviewers competent across methodological traditions (Olofinyehun et al., 2022; Fàbregues & Guetterman, 2025).

7.5.5 Language, translation and cultural validity

Language is not merely a data-collection issue. Translation can change constructs, emotional intensity and social meaning. Furthermore, researchers should document who translated, how discrepancies were resolved and whether analysis occurred in the original language or only after translation. Where possible, bilingual analysts and participant validation can help, although member checking should not be treated as an automatic guarantee of truth (Chilisa, 2020).

7.5.6 Transparent reporting

A strong report identifies the mixed-methods purpose, philosophical position where relevant, design, priority, sequence, integration points, component quality procedures, divergent findings and meta-inferences. Tables and joint displays should show how conclusions were derived rather than merely repeat results. Transparent reporting allows reviewers to judge whether integration produced genuine added value (Guetterman et al., 2023).

Table 2

Common integration failures and practical safeguards

Failure	Consequence	Safeguard
Methods added without an integration-worthy question	Parallel reports with no analytic added value.	State the unresolved connection and formulate an overarching mixed question.
Token qualitative or quantitative component	Decorative evidence and misleading claims of comprehensiveness.	Assign each component a necessary evidential role and adequate resources.
Forced convergence	Contradictory evidence is concealed or distorted.	Predefine comparison procedures and analyse divergence explicitly.
Inferential slippage	Case findings are overgeneralised or associations are mistaken for mechanisms.	State level, scope, uncertainty and evidential dependence of every meta-inference.
Weak cultural translation	Measures and interpretations lose local meaning.	Use cognitive testing, bilingual analysis, reflexive documentation and community consultation.
Unequal methodological authority, limited resources or incomplete reporting	One strand dominates, analysis becomes superficial, or readers cannot evaluate the integration logic.	Agree on standards, resource the design realistically, document integration fully, and report uncertainty.

Source: Synthesized from Harrison et al. (2020), Ngulube and Ukwoma (2021), Fàbregues et al. (2024), and Toraman Turk et al. (2024).

8. Conclusion

The enduring question is not whether quantitative or qualitative research is superior. It is what kind of evidence a particular social-science claim requires. Quantitative methods can reveal distributions, relationships and changes; similarly, qualitative methods can reveal meanings, mechanisms, institutional processes and contexts. Their integration can produce stronger evidence, but only when the components are rigorous, differentiated and connected through transparent reasoning. Accordingly, this paper has described that approach as disciplined pluralism. It rejects methodological monism without replacing it with unrestricted eclecticism. Furthermore, it treats integration as the mechanism that turns diversity into added value and meta-inference as the point at which that value becomes visible. More so, for African and Nigerian social science, methodological pluralism has an additional importance. Moreover, it can connect standardized comparison with local meaning, strengthen culturally credible concepts, support indigenous and community knowledge, and produce evidence that is more useful to institutions and citizens. Yet these benefits depend on research capacity, language-sensitive practice, publication systems and relationships between knowledge producers and users. Ultimately, robust evidence does not arise because a study contains a survey and interviews. Rather, it arises when each method answers a necessary part of the problem, when disagreements are examined honestly and when the final claim is no stronger than the evidence that supports it. That is the practical and intellectual promise of methodological pluralism.

9. Implications and Recommendations

This section presents the major implications of methodological pluralism for research practice, training, institutions and evidence-informed policymaking. It also provides practical recommendations for strengthening the effective integration of quantitative and qualitative approaches in social-science research.

9.1 Implications for theory and research practice

For theory, pluralism supports movement between regularities, meanings, mechanisms and contexts. It can reveal where a theory travels, where it requires adaptation and where its categories fail to represent local experience. Moreover, African social science can make a distinctive contribution by

using integration to develop concepts from African realities while retaining comparative and critical scrutiny (Arowosegbe, 2016; Chilisa, 2017). Similarly, for research practice, the key implication is that integration should be planned as inferential work. Researchers should not begin with the desire to use mixed methods and then search for a reason. They should begin with a problem, identify the evidential tasks it contains and select the least complicated design capable of completing those tasks.

9.2 Implications for postgraduate training

Universities should move beyond separate introductory courses in quantitative and qualitative methods. Postgraduate training should include research philosophy, mixed questions, integration designs, joint displays, meta-inference, translation, collaborative analysis and the handling of contradictory findings. Additionally, students need depth in at least one tradition and enough literacy in others to collaborate responsibly rather than superficial competence in many techniques (Kilonzo & Ojebode, 2023). Moreover, African examples should be central rather than appended. Students should examine Nigerian and continental cases in which methodological choices interact with language, institutions, policy use and indigenous knowledge. This will make training more relevant and reduce the impression that methodological innovation is imported only after it has been established elsewhere.

9.3 Implications for institutions, journals and funders

Research institutions should support interdisciplinary teams, shared methodological facilities, data-management assistance and sustained researcher-policy engagement. However, short workshops are useful, but institutional structures, incentives, funding and leadership determine whether new skills can be applied (Uneke et al., 2023). Furthermore, journals should require authors who claim mixed methods to identify integration explicitly. Similarly, review forms can ask whether the components are individually rigorous, whether the integration procedure is visible, whether divergence is addressed and whether the meta-inference depends on both strands. Editors should avoid assigning plural manuscripts to reviewers competent in only one component. In addition, funders should resource integration rather than simply request it. Accordingly, budgets must include qualitative transcription and analysis, field translation, community engagement, statistical expertise, integration meetings and dissemination. Requiring ambitious mixed methods without supporting these activities encourages tokenism.

9.4 Implications for Nigerian evidence-informed policymaking

Nigerian ministries and legislatures use multiple evidence types, but patterns of engagement vary (Aremu et al., 2026). Furthermore, policy institutions should strengthen the ability to appraise different forms of evidence rather than rely on a single hierarchy. Research summaries should distinguish population estimates, case-based explanations, stakeholder judgements and administrative experience while showing how they relate. Moreover, universities, professional associations and public agencies should create regular spaces in which researchers and policy actors formulate questions together without compromising scholarly independence. Additionally, earlier engagement can improve relevance, data access and interpretation, while transparent governance can reduce the risk that collaboration becomes political endorsement (Aiyede, 2023; Egbetokun et al., 2020).

9.5 Practical recommendations

The paper recommends the followings concrete measures that can strengthen integration, methodological quality, contextual relevance and the effective use of research evidence:

1. Begin every plural study with a written integration rationale that states what one approach would leave unresolved.
2. Formulate an overarching mixed question and assign a distinct evidential role to each component.
3. Include context and cultural validity in instrument development, especially in multilingual African settings.
4. Select integration points strategically rather than maximizing their number.
5. Use joint displays or comparable analytic devices to make relationships among findings visible.
6. Treat divergence as evidence and document how it was investigated.
7. Evaluate component quality and integration quality separately before judging the meta-inference.

8. Expand postgraduate and professional training in integrated design and cross-method collaboration.
9. Strengthen African and Nigerian research dissemination systems, including discoverability of locally published work.
10. Build durable researcher-policy and researcher-community relationships while protecting ethical independence.

10. Declaration

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