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HOW CONCEPTUAL FRAMEWORKS ARE BUILT: A METHODOLOGICAL PROCEDURE

COMO OS FRAMEWORKS CONCEITUAIS SÃO CONSTRUÍDOS: PROCEDIMENTO METODOLÓGICO

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Abstract
This article systematizes the construction of conceptual frameworks and proposes an explicit methodological procedure for their development. A systematic literature review is conducted using a qualitative interpretive approach, followed by thematic coding, integrative synthesis, and analytical reconstruction of recurrent stages. Core operations, disciplinary variations, and deductive, inductive, and abductive logics were identified, resulting in an eight-stage methodological framework organized into three analytical layers. The proposal makes analytical decisions, minimal criteria, and validation mechanisms explicit, enhancing transparency, comparability, rigor, and reproducibility in the development of conceptual frameworks across different research contexts.
Keywords: Conceptual frameworks. Methodological development. Integrative synthesis. Analytical validation. Methodological procedure.

Resumo
Este artigo sistematiza a construção de frameworks conceituais e propõe um procedimento metodológico explícito para seu desenvolvimento. Adota-se uma revisão sistemática da literatura, com abordagem qualitativa interpretativa, seguida de codificação temática, síntese integrativa e reconstrução analítica das etapas recorrentes. Identificaram-se operações centrais, variações disciplinares e lógicas dedutivas, indutivas e abdutivas, resultando em um framework metodológico de oito etapas, distribuídas em três camadas analíticas. A proposta torna explícitas as decisões analíticas, os critérios mínimos e os mecanismos de validação, ampliando a transparência, a comparabilidade, o rigor e a reprodutibilidade na construção de frameworks conceituais em diferentes contextos de pesquisa.
Palavras-chave: Frameworks conceituais. Desenvolvimento metodológico. Síntese integrativa. Validação analítica. Procedimento metodológico.

Introduction

In contemporary scientific research, conceptual frameworks play a structuring role by enabling researchers to represent phenomena in abstract terms and to articulate theory, evidence, and analytical inference (Grames et al., 2022). These frameworks go beyond descriptive schemes, constituting integrative structures that organize categories, mechanisms, and relationships, synthesizing dispersed knowledge and supporting interpretation, explanation, and methodological design. By operating across different levels of abstraction, they sustain internal coherence and guide inquiry in contexts characterized by increasing complexity (Jaakkola, 2020; Partelow, 2023).

In educational research, conceptual frameworks guide the formulation of research problems, the definition of analytical boundaries, and the articulation between theory, method, and empirical evidence (Guzmán et al., 2021; Waldt, 2020). In studies addressing teaching, learning, educational policy, and teacher education, these instruments are widely employed as structuring references (Sale & Carlin, 2025; Soliani et al., 2025). However, despite their widespread use, the processes through which such frameworks are constructed are rarely described systematically, undermining methodological transparency, researcher training, and the reproducibility of investigations (Luft et al., 2022).

At the same time, the use of conceptual models has expanded across different fields, particularly in studies aimed at organizing complex phenomena and guiding analytical processes (Lindgreen et al., 2021). Their growing presence reflects their usefulness across multiple research traditions. In diverse domains, frameworks support the structuring of extensive thematic fields, strengthen theoretical consistency, and enhance the clarity of empirical approaches (Lindgreen et al., 2021; Waldt, 2020).

These frameworks also facilitate dialogue among researchers by providing a shared basis for interpreting problems that cut across disciplinary boundaries (Zhang et al., 2025). Accordingly, understanding how such frameworks are developed is relevant not only for early-career researchers but also for those working in established fields (Luft et al., 2022).

This trend is evident in studies in the health sciences (Tark et al., 2023), the built environment (Ullah, 2021), Amazonian bioeconomy research (Silva et al., 2025), and investigations focused on knowledge integration within interdisciplinary teams (Zhang et al., 2025). Although grounded in distinct traditions, these contributions consistently indicate that the development of conceptual models requires structured processes guided by theoretical, methodological, and interpretive decisions that shape analytical categories and relationships.

Despite this expansion, a significant portion of the literature does not provide detailed accounts of the procedures used in constructing conceptual frameworks (Koivunen et al., 2022). Substantial variation exists in how different fields present stages, methods, and criteria, limiting comparability and reducing transparency (Lindgreen et al., 2021). In many cases, conceptual models are based on author-driven interpretations, loosely systematized syntheses, or methodological choices that remain implicit (McMeekin et al., 2020).

Other studies reinforce this diagnosis. Sale and Carlin (2025) argue that the prescriptive use of frameworks may lead to analytical simplification and compromise methodological clarity. Grames et al. (2022) identify ad hoc approaches in hypothesis synthesis and conceptual model formulation. Schreiber and Cramer (2022) highlight how the absence of formal methodological design principles affects reproducibility. Nagel and Partelow (2022) show that the lack of shared guidelines hampers comparison across studies, while Paul et al. (2024) emphasize the need to strengthen analytical capacities for producing more systematic conceptual contributions.

More explicitly articulated methodological proposals include the SODIP approach (Eyzaguirre & Fernandes, 2024) and collaborative approaches that conceptualize frameworks as instruments for

disciplinary integration (Zhang et al., 2025). Although relevant, these initiatives remain fragmented, often tailored to specific disciplinary contexts, and only partially explicit regarding the analytical decisions that guide framework construction.

This fragmentation reflects deeper structural limitations in the literature. First, existing approaches tend to emphasize isolated stages, such as evidence synthesis, concept identification, or visual representation, without integrating them into a coherent analytical sequence capable of guiding the development process as a whole. Second, even when broader guidance is provided, the underlying analytical choices remain largely implicit, obscuring how evidence is translated into structured conceptual systems.

These limitations extend beyond procedural inconsistency and affect the analytical logic underlying framework construction. When key decisions are not explicitly articulated, it becomes difficult to assess the validity and internal coherence of resulting models, as well as to reproduce or systematically compare them across studies. As a result, framework development often relies on idiosyncratic practices, weakening transparency, limiting comparability, and constraining the cumulative advancement of knowledge. In this context, existing studies describe elements of conceptual framework development, but rarely articulate the underlying analytical logic that connects these elements into a coherent and operational methodological process.

In light of these limitations, a more systematic and explicit approach to conceptual framework development is needed, one that integrates dispersed practices and clarifies the analytical decisions involved. This article addresses this need through a systematic review of the literature on conceptual model and framework development, with particular attention to its implications for educational research and researcher training. The objective is to identify recurring elements, map methodological variations, and systematize strategies that support the transparent and theoretically grounded construction of conceptual models. The review is guided by the following research question: what methods, principles, and stages are described in the literature for the development of conceptual frameworks?

Based on this mapping, the article proposes an integrative methodological framework that consolidates dispersed contributions into a coherent analytical pathway for conceptual framework development. It advances existing approaches by making key analytical decisions explicit and articulating stages that are often addressed separately or remain conceptually broad. More critically, the study reconstructs the underlying analytical logic connecting these practices, transforming dispersed elements into an integrated and traceable procedure for conceptual framework development.

Conceptual models and frameworks as instruments for theoretical systematization

The development of conceptual models has become established as a relevant practice across different fields of science, particularly in contexts that require the organization of knowledge, the integration of dispersed research, and the orientation of research agendas (Lukyanenko et al., 2024; Paul et al., 2024). The construction of these models involves theoretical and methodological choices that reflect both the traditions of each field and the researcher's intentions when representing a given phenomenon (Jabareen, 2009). Conceptual models are used to structure the core elements of a topic, make relationships explicit, and support analytical interpretation (Naeem et al., 2023; Sale & Carlin, 2025).

Despite the expansion of this practice, conceptual divergences persist regarding the distinctions between models, frameworks, and related categories. These divergences are not merely terminological; they reflect competing analytical orientations and underlying assumptions about how phenomena should be represented, interpreted, and systematized. In particular, they express a fundamental tension between approaches that prioritize the structural organization of elements and those that emphasize the representation of mechanisms, processes, and relationships. This distinction has important implications for how theory is mobilized, how evidence is incorporated, and how levels of abstraction are managed in the construction of conceptual structures.

As a result, clarifying these terms is not only a matter of definitional precision but also a necessary step for understanding the analytical and methodological implications involved in conceptual framework development, which are explored in the following sections.

Conceptual models and frameworks: from analytical distinctions to epistemological positioning

The use of the terms conceptual model and conceptual framework varies across fields and authors, making it necessary to clarify how these expressions are employed in the literature. In fields such as management and education, conceptual framework commonly refers to an organizing structure composed of categories or dimensions that assist in understanding a phenomenon (Koivunen et al., 2022; Soliani et al., 2025). In areas such as ecology and public health, by contrast, conceptual model is more frequently used to represent mechanisms, processes, or hypotheses concerning interactions among elements, as evidenced by studies focused on the development of applied models in public health (Brady et al., 2020).

This distinction reflects different ways of conceptualizing phenomena (Jabareen, 2009). Frameworks tend to emphasize the structural organization and articulation of elements (Partelow, 2023), whereas conceptual models are typically oriented toward representing relationships, interactions, and underlying processes within a phenomenon (Brady et al., 2020). These differences imply distinct analytical orientations, particularly regarding how theory is mobilized, how evidence is incorporated, and how levels of abstraction are managed in the representation of phenomena.

Despite these differences, a consistent pattern can be identified across studies, indicating that conceptual models and frameworks perform related functions by synthesizing knowledge, organizing concepts, and structuring interpretations of a phenomenon. Heger et al. (2021) describe conceptual models as structured syntheses that articulate hypotheses, explanations, or mechanisms and may include causal relationships. Ullah (2021), in turn, characterizes frameworks as analytical tools designed to visualize and systematize elements of a topic, particularly when developed on the basis of literature reviews. In this sense, frameworks can be understood as boundary objects, capable of integrating different disciplinary perspectives without requiring the full unification of methods or concepts (Zhang et al., 2025).

However, treating these terms as interchangeable may obscure relevant analytical distinctions. Frameworks oriented toward structural organization may facilitate integration across domains, but may also reduce explanatory specificity (Partelow, 2023). Conversely, models focused on mechanisms and causal relations tend to provide greater analytical depth, while potentially limiting their generalizability across contexts (Grames et al., 2022).

MacInnis (2011) adopts a broader conception by using the term to refer to any conceptual contribution that enables the identification, connection, or explication of ideas. Taken together, these perspectives suggest that both terms operate as instruments for structuring and interpreting complex phenomena, although they do so through partially distinct analytical emphases.

Across these perspectives, two complementary tendencies can be identified in the literature. The first seeks to differentiate the terms, viewing conceptual models as representations oriented toward mechanisms, processes, or causal relationships, while conceptual frameworks function as structures that organize analytical categories or dimensions (McKenna, 2025). The second tendency uses the terms in an almost interchangeable manner, treating both as theoretical constructions intended to interpret complex phenomena, regardless of the level of detail or analytical orientation adopted (Luft et al., 2022).

In light of this scenario, it is necessary to specify the terminology adopted in this study. The term conceptual framework is used here for four reasons: (1) it is a more encompassing term, capable of covering both structural schemes and mechanism-oriented models; (2) recent literature frequently

employs the expression conceptual framework to refer to systematized processes of theoretical synthesis (Ullah, 2021; Tark et al., 2023; Eyzaguirre & Fernandes, 2024); (3) the use of the term facilitates the integration of different disciplinary traditions, particularly due to its function as a boundary object (Zhang et al., 2025); and (4) its adoption supports methodological standardization in studies that aim to organize elements of a topic without necessarily proposing detailed causal relationships (Partelow, 2023).

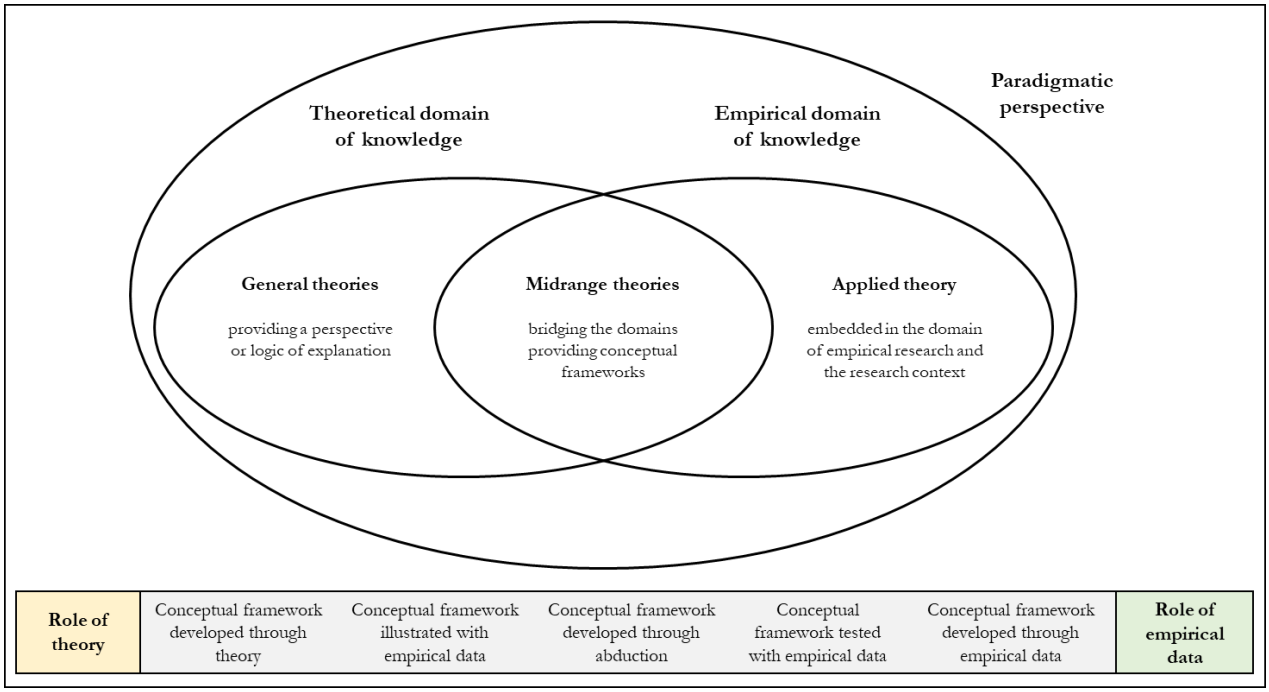
Accordingly, in this study, a conceptual framework is understood as an abstract structure that coherently organizes concepts, categories, dimensions, mechanisms, or hypotheses in order to support processes of interpretation, analysis, and knowledge development. As argued by Lindgreen et al. (2021) and supported by Waldt (2020), conceptual frameworks constitute flexible structures that articulate different levels of abstraction and can be constructed through the interaction of theory, empirical evidence, and the researcher's analytical interpretation.

These distinctions extend beyond definitional and functional differences, reflecting underlying epistemological orientations that shape how conceptual frameworks are constructed. In particular, they involve different ways of articulating theory and empirical evidence, as well as distinct modes of inference through which conceptual structures are developed. While some approaches rely more heavily on deductive reasoning grounded in established theoretical constructs, others emphasize inductive or abductive processes constructed through empirical observations or iterative reinterpretations of data. As a result, conceptual framework development can be analytically understood here as a knowledge construction process situated along a continuum between theory-driven abstraction and data-driven interpretation (Lindgreen et al., 2021; Timmermans & Tavory, 2012).

This relationship between theory and data is synthesized in Figure 1, which positions conceptual frameworks along a continuum of abstraction.

Figure 1

Theory–data continuum in the development of conceptual frameworks



Source: adapted from Lindgreen et al. (2021).

By situating framework development between structures grounded in established theories and interpretations derived from empirical data, the continuum illustrates how conceptual frameworks are constructed through different epistemological orientations, including deductive, inductive, and abductive processes (Timmermans & Tavory, 2012). Within this continuum, middle-range theories represent a point of convergence, providing analytical foundations that support both the interpretation of phenomena and the guidance of empirical investigation (Lindgreen et al., 2021).

This perspective reinforces the hybrid character of conceptual frameworks and highlights that their development is not a purely technical procedure, but a process shaped by different forms of inference. It also underscores the need for methodological approaches capable of explicitly integrating these dimensions, thereby framing the analytical and methodological functions discussed in the following section.

Analytical and methodological implications of conceptual frameworks

These analytical distinctions and epistemological orientations also carry methodological implications for how conceptual frameworks are constructed and used. Conceptual frameworks can thus be understood not only in terms of their functions, but also in terms of the methodological consequences that arise from different ways of structuring and interpreting phenomena. Conceptual frameworks are not neutral analytical devices; they embody specific assumptions about how knowledge is organized, produced, and validated across research contexts (Waldt, 2020).

Conceptual frameworks perform distinct functions depending on the field of application and the type of investigation conducted. Conceptual contributions may range from the identification of new concepts to the integration of ideas into broader analytical structures, which in turn support hypothesis formulation and guide the development of empirical studies (Lindgreen et al., 2021). In this sense, frameworks operate not only as organizing devices but also as analytical instruments that shape how phenomena are interpreted and investigated.

A central function relates to their organizing role, as frameworks assist in structuring complex topics and identifying gaps in knowledge. By making relationships among components explicit, they facilitate the articulation of theoretical perspectives and support the development of cumulative knowledge (Luft et al., 2022), particularly in approaches grounded in systematic literature reviews (SLRs), where frameworks function as instruments for synthesizing dispersed evidence (Eyzaguirre & Fernandes, 2024).

In interdisciplinary contexts, frameworks assume an integrative function. Collaboratively developed structures can operate as boundary objects, bringing together distinct fields and facilitating communication among researchers who mobilize diverse theoretical perspectives (Zhang et al., 2025). While this integrative capacity enables the incorporation of multiple interpretations, it also requires continuous negotiation of meanings to maintain internal coherence across disciplinary boundaries.

Another relevant function concerns the capacity of frameworks to support investigations grounded in the structured synthesis of evidence. Approaches such as those proposed by Johanning et al. (2024) organize concepts, identify recurring patterns, and combine findings from different studies, allowing frameworks to function as analytical representations that evolve alongside the development of a field and inform future research agendas.

These functions are associated with distinct methodological pathways aligned with the analytical and epistemological orientations previously discussed. In particular, the distinction between structurally oriented frameworks and mechanism-oriented models underpins different approaches to conceptual development. This is evident in the diversity of strategies used, ranging from analytically driven procedures based on structured literature reviews to collaborative and iterative processes embedded in interdisciplinary research practices (McMeekin et al., 2020; Schreiber & Cramer, 2022).

This diversity translates into different methodological emphases. Review-based approaches prioritize reproducibility, systematicity, and conceptual clarity (Ullah, 2021), often resulting in more stable and structured analytical representations. By contrast, collaborative and iterative approaches emphasize interpretive flexibility, continuous refinement, and the integration of multiple forms of knowledge (Zhang et al., 2025).

These differences have important methodological implications. Approaches grounded in SLRs emphasize transparency, rigor, and replicability, often producing more standardized and comparable frameworks (Page et al., 2021), while potentially reducing sensitivity to contextual variation inherent in complex phenomena. Conversely, collaborative and iterative approaches allow for greater adaptability and interpretive depth, particularly in interdisciplinary settings, but may limit comparability and standardization across studies (Luft et al., 2022).

Examples of these orientations can be observed in approaches such as hypothesis mapping and relational structuring (Grames et al., 2022), as well as in integrative frameworks like SODIP, which combine systematic reviews with data visualization and multi-source analysis (Eyzaguirre & Fernandes, 2024). In parallel, iterative and collaborative practices emphasize the refinement of concepts and categories through ongoing interaction among researchers, highlighting the socially constructed character of framework development (Zhang et al., 2025).

The diversity of approaches does not converge into a unified methodological pathway; instead, it reflects a set of partially articulated strategies shaped by distinct epistemological orientations and analytical priorities. Nevertheless, recurring elements can be identified, including the delimitation of the phenomenon, systematic mapping of the literature, extraction of concepts and relationships, structured representation, and analytical validation within the scientific community.

Methodology

A qualitative interpretive approach was adopted, given the nature of the research problem, which involves examining how different fields conceptualize, define, and structure conceptual frameworks (Ahmed, 2024). This type of inquiry requires the analysis of meanings, theoretical assumptions, and methodological choices articulated in the literature, elements that cannot be adequately captured through quantitative procedures.

This approach enabled the identification of patterns, convergences, and variations in conceptual framework development, as well as the interpretation of nuances in the stages, justifications, and analytical logics reported across studies. Accordingly, the investigation focused on the interpretive analysis of methodological contributions, seeking to understand both the internal logic of each approach and the points of convergence that support the formulation of an integrative methodological pathway.

Systematic Literature Review (SLR) design and procedures

The SLR was conducted in accordance with the guidelines proposed by Paul et al. (2024), following the stages of defining the research question, developing the search strategy, screening studies, extracting information, and synthesizing the selected material. Given the objective of examining methods for conceptual framework development, the review was conducted through an interpretive lens, consistent with the approach described by Luft et al. (2022), allowing for the identification of methodological patterns across different fields.

Searches were carried out in the Scopus, Web of Science, SciELO and PubMed databases, using structured search strings in English with Boolean operators, such as: ("conceptual framework development" OR "conceptual framework design" OR "developing conceptual frameworks" OR "framework building process" OR "conceptual model construction" OR "conceptual modelling" OR

"theoretical model development") AND (develop* OR construct* OR design* OR build*), with appropriate adaptations to each database.

Only studies published in English and Portuguese were considered, reflecting the predominance of English in international methodological research while allowing the inclusion of relevant Portuguese-language contributions. No disciplinary restrictions were applied, as the aim was to identify transversal methodological patterns. The temporal scope covered the period from 2005 to 2025, corresponding to the consolidation of systematic approaches to conceptual development and the increasing use of structured techniques for theoretical synthesis (Luft et al., 2022; Paul et al., 2024). This time frame ensured both methodological relevance and sufficient diversity of approaches.

The inclusion criteria comprised peer-reviewed articles that explicitly describe processes for developing conceptual frameworks, including their foundations, stages, methods, or strategies. Excluded were studies that employed frameworks without detailing their construction processes, as well as works focused exclusively on mathematical, physical, or computational models, documents with insufficient methodological information, and non-peer-reviewed materials such as book chapters, editorials, conference proceedings, and grey literature.

The screening process followed PRISMA 2020 guidelines (Page et al., 2021). Initially, filters related to year, language, and document type were applied, followed by duplicate removal and verification of full-text availability. Titles and abstracts were independently screened by two researchers based on the inclusion and exclusion criteria, and the same two researchers subsequently assessed potentially eligible studies in full. Cases of uncertain eligibility at either stage were discussed with a third researcher until consensus was reached. This process ensured the selection of studies with sufficient methodological detail to support the analysis of conceptual framework development.

Interpretive analysis and conceptual framework development

The qualitative analysis followed an interpretive logic structured around three complementary analytical movements, inspired by the practical thematic analysis approach proposed by Saunders et al. (2023). The first movement involved extracting information from the selected studies, focusing on definitions of conceptual frameworks, their intended purposes, strategies of theoretical synthesis, stages of development, validation procedures, and forms of representation.

This was followed by interpretive thematic coding conducted collaboratively by three researchers, who iteratively discussed category definitions and assignments until consensus was reached. The extracted information was organized into analytically derived categories encompassing phenomenon delimitation, literature synthesis, concept identification and relational structuring, model development, representation, and validation procedures. This stage enabled the identification of recurrent methodological patterns as well as variations across studies.

The third movement consisted of an integrative synthesis, in which the identified categories were articulated to highlight convergences, regularities, and divergences among the approaches analyzed. This synthesis consolidated the findings of the review and provided the analytical foundation for the development of the proposed methodological framework.

Building on this interpretive synthesis, the construction of the conceptual framework followed a structured sequence of four analytical stages. First, the elements identified in the literature were grouped according to their function within the modeling process, encompassing components related to phenomenon definition, evidence synthesis, conceptual structuring, representation, and validation.

Second, a comparative analysis across studies enabled the identification of eight recurrent stages in conceptual framework development, which constitute the structural backbone of the proposed methodological pathway. Third, these stages were analytically integrated by incorporating different modes

of inference (deductive, inductive, and abductive), allowing the framework to accommodate diverse analytical logics and reflect the variety of methodological traditions identified in the literature.

Finally, the framework was translated into a graphical representation based on the consolidated synthesis. This visualization makes explicit the relationships among stages, the dynamics between levels of abstraction, and the overall analytical flow, thereby fulfilling an analytical function beyond mere illustration. Beyond identifying patterns in the literature, the process reconstructs a sequence of analytical operations that can be explicitly followed by researchers. Accordingly, the framework is specified as a structured methodological procedure, in which each stage is defined by its analytical function and role within the overall process.

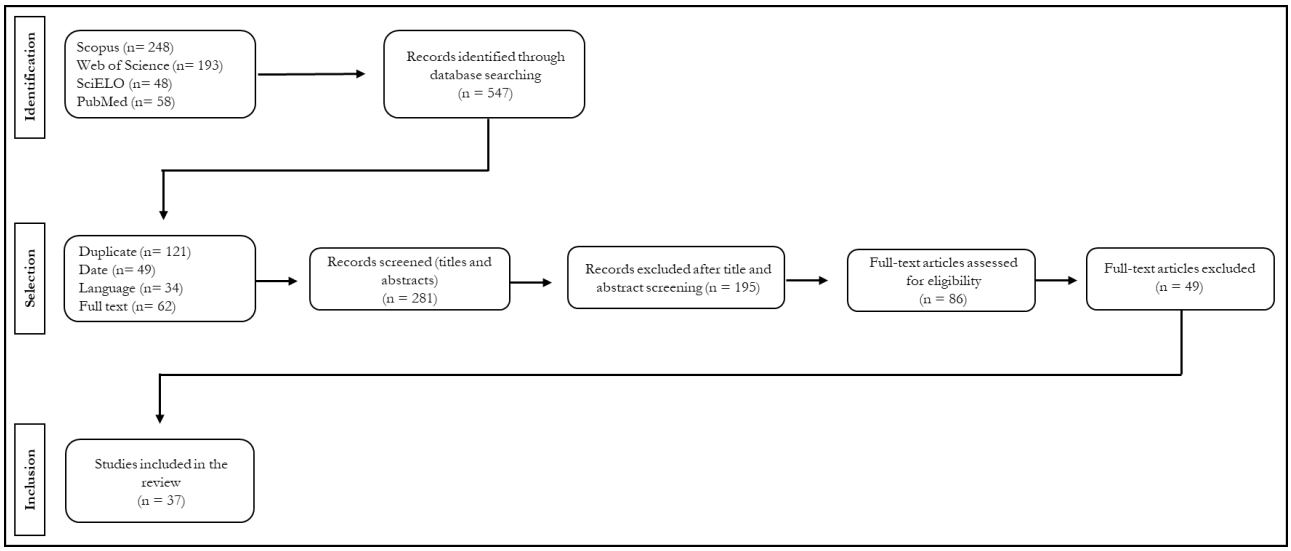
Understanding the process of conceptual framework development

The analysis of the selected studies indicates that conceptual framework development lacks a consistently articulated analytical structure across approaches, resulting in differences in sequencing, explicitness, and underlying analytical logic. This variability reflects not only the diversity of methodological practices across fields, but also distinct ways of structuring and interpreting conceptual development.

The application of the SLR resulted in the identification of 547 records across the Scopus, Web of Science, SciELO and PubMed databases. After the removal of duplicates and preliminary exclusions, 281 documents were subjected to title and abstract screening, leading to the exclusion of 195 studies. The remaining 86 articles were assessed in full, resulting in a final sample of 37 studies. The complete flow of identification, screening, eligibility, and inclusion is presented in Figure 2.

Figure 2

Stages of article selection for the SLR



Source: prepared by the authors (2026).

The selected studies span fields such as health, ecology, environmental sciences, education, management, and interdisciplinary research, indicating that conceptual frameworks function as cross-disciplinary instruments. However, their application is shaped by distinct analytical logics that influence how concepts are selected, organized, and interpreted.

Across the sample, three analytical orientations can be identified: the development of new frameworks derived from evidence integration; the revision or adaptation of existing structures; and the construction of conceptual syntheses to organize categories, relationships, or mechanisms. These orientations reflect

different uses of conceptual frameworks, which may structure information, represent processes, integrate perspectives, or guide subsequent research. Accordingly, the methods employed vary, including systematic reviews, collaborative approaches, hypothesis network analyses, qualitative studies, and hybrid strategies combining empirical and theoretical elements.

A temporal pattern can also be observed. Earlier studies tend to emphasize the identification and description of categories and components, often with limited articulation of the analytical procedures underlying framework construction. More recent studies, by contrast, increasingly formalize these processes by explicitly detailing search strategies, synthesis procedures, modes of inference, and validation mechanisms. This shift reflects a movement toward greater transparency and traceability, as well as the consolidation of conceptual framework development as a methodological practice, influenced by the expansion of systematic review protocols (McMeekin et al., 2020; Paul et al., 2024) and the growing emphasis on rigor and reproducibility (Ahmed, 2024; Luft et al., 2022).

Despite this diversity, the analysis reveals recurring stages in conceptual framework development. While organized differently across fields and approaches, these stages consistently involve delimiting the phenomenon, gathering evidence, identifying core concepts, structuring relationships, and representing the conceptual arrangement. This recurrence indicates not only an underlying analytical structure, but a latent methodological logic governing framework development across studies. Making this logic explicit enables the transformation of dispersed practices into a structured and reproducible analytical procedure.

Table 1 synthesizes these elements, providing a consolidated view of how different studies operationalize key stages of conceptual framework development. The synthesis draws on a broad set of contributions, while the subsequent analysis focuses on the most representative studies to examine their characteristics and modes of operationalization in greater depth.

Table 1

Recurring elements in the development of conceptual frameworks

Analytical stage	Description in the literature	Authors
Delimitation of the phenomenon	Definition of analytical scope, guiding questions, and boundaries that structure the representation of the phenomenon.	Leshem & Trafford (2007); MacInnis (2011); Ullah (2021); Lindgreen et al. (2021); Zhang et al. (2025)
Systematic gathering of evidence	Identification, selection, and integration of bibliographic and empirical sources to support conceptual development.	McMeekin et al. (2020); Ullah (2021); Grames et al. (2022); Tark et al. (2023); Eyzaguirre & Fernandes (2024)
Extraction of concepts and relationships	Identification and analytical articulation of categories, mechanisms, dimensions, and recurring patterns derived from the evidence.	MacInnis (2011); Brady et al. (2020); Grames et al. (2022); Luft et al. (2022); Sale & Carlin (2025)
Conceptual structuring	Organization and integration of elements into coherent analytical arrangements, such as taxonomies, layered models, or network structures.	MacInnis (2011); Brady et al. (2020); Grames et al. (2022); Lukyanenko et al. (2024); Zhang et al. (2025)
Graphical representation	Development of visual structures (e.g., diagrams, networks, flows) that make explicit the relationships and organization of the conceptual system.	Brady et al. (2020); Ullah (2021); Grames et al. (2022); Rasolofoarison & Russell (2024); Lukyanenko et al. (2024)
Analytical verification and validation	Assessment and refinement of the framework through comparison with the literature, expert evaluation, and iterative analytical review.	Leshem & Trafford (2007); Brady et al. (2020); McMeekin et al. (2020); Tark et al. (2023); Sale & Carlin (2025)

Source: prepared by the authors (2026).

Based on this synthesis, it becomes possible to examine more precisely how these stages are described and operationalized across different methodological traditions. The analysis below details these convergences, highlighting both common patterns and variations in their implementation.

The delimitation of the phenomenon constitutes a foundational stage in conceptual framework development. In studies grounded in structured reviews, this process typically involves the formulation of guiding questions, the definition of inclusion criteria, and the establishment of analytical boundaries that orient evidence selection and synthesis (Palmatier et al., 2018; Lindgreen et al., 2021). In contrast, qualitative and collaborative approaches tend to construct delimitation iteratively, as themes, categories, and dimensions are progressively refined throughout the analytical process (Jabareen, 2009; Waldt, 2020). Despite these differences, both approaches emphasize the need to define the scope of the phenomenon as a condition for coherent conceptual structuring.

The systematic gathering of evidence constitutes another recurrent stage. Even in the absence of formal review protocols, the analyzed studies describe procedures for identifying, organizing, and integrating information from multiple sources. This stage is explicitly structured in approaches based on systematic reviews (Paul et al., 2024) and appears as a foundational step in methods such as hypothesis network construction (Grames et al., 2022) and SODIP (Eyzaguirre & Fernandes, 2024), where different types of data, bibliographic, documentary, and empirical, are combined to support conceptual development. These variations indicate that, while the degree of formalization differs, the consolidation of dispersed evidence is a necessary condition for framework construction.

The extraction of concepts and relationships is also consistently identified across studies. In some cases, this stage focuses on identifying variables, mechanisms, or processes that define the phenomenon; in others, it involves organizing categories and dimensions that structure different interpretations found in the literature (Morioka & Carvalho, 2016; Naeem et al., 2023). Regardless of the analytical orientation, the studies converge in emphasizing the need to define core elements and to make explicit the relationships among them. These relationships are represented through different formats, including taxonomies, matrices, narrative syntheses, hypothesis networks, and collaborative conceptual arrangements (Andrienko et al., 2011; Jaakkola, 2020).

Conceptual structuring involves the organization of these elements into coherent analytical arrangements. This process may take the form of layered models, network structures, or integrative schemas that articulate categories, dimensions, and relationships. Although the degree of formalization varies, the underlying objective remains consistent: to produce a structured representation capable of supporting interpretation and analysis. This stage marks the transition from fragmented elements to an organized conceptual system.

Graphical representation plays a central role in making the structure of the framework explicit. The analyzed studies employ a wide range of visual formats, including block diagrams, networks, flows, circular models, and hybrid configurations, each reflecting different analytical emphases and levels of abstraction (Rasolofoarison & Russell, 2024). These representations extend beyond a purely communicative function, operating as analytical devices that support the articulation and stabilization of conceptual relationships.

Finally, some form of internal verification or validation is present across the studies, although its degree of formalization varies. Validation procedures include comparison with existing frameworks, expert evaluation, and iterative refinement through collaborative processes. Despite these variations, the underlying objective is consistent: to assess the internal coherence of the framework and its alignment with the evidence and the defined scope of the phenomenon.

Methodological divergences and disciplinary variations

The heterogeneity of the analyzed studies reveals substantial variation in the development of conceptual frameworks. These differences are associated with methodological choices shaped by disciplinary traditions, the nature of the research problem, and distinct ways of articulating theory and empirical evidence. The most recurrent variations concern the analytical logic adopted, the level of abstraction emphasized, the degree of procedural formalization, the use of empirical evidence, and the forms of visual representation.

Table 2 synthesizes these dimensions as an interpretive analytical structure derived from the reviewed studies. The table does not provide an author-by-author mapping; instead, it reflects an interpretive classification of recurring variations across methodological approaches and constitutes one of the analytical outputs of this research.

Table 2

Dimensions of variation in the development of conceptual frameworks

Dimension of variation	Observed analytical characteristics	Examples of fields
Analytical logic	Deductive, inductive, or abductive orientations	Structured reviews (deductive); qualitative studies (inductive); hypothesis networks (abductive).
Level of abstraction	Focus on mechanisms, processes, categories, or boundary objects	Ecology (processes); health (categories); management (analytical dimensions); interdisciplinarity (boundary objects).
Methodological formalization	Detailed procedural approaches or flexible narrative descriptions	Ecology and socio-environmental studies (formalized); education and management (flexible).
Use of empirical evidence	Theoretical, empirical, or hybrid frameworks	Empirical research (interviews, observations); literature-based studies; hybrid approaches.
Form of visual representation	Networks, layers, flows, blocks, or circular models	All fields, with variation depending on analytical purpose and level of abstraction.

Source: prepared by the authors (2026).

The first dimension concerns the analytical logic that structures framework development. In studies grounded in structured reviews, a deductive orientation tends to prevail, with concepts and relationships organized based on existing theoretical knowledge (Jaakkola, 2020). In qualitative or collaborative contexts, an inductive logic is more prominent, with categories and connections derived from data analysis or from interactions among researchers (Timmermans & Tavory, 2012). In addition, some approaches exhibit abductive characteristics, particularly in contexts where theory and evidence are iteratively combined, as observed in hypothesis networks (Belzen et al., 2021) and interdisciplinary framework development processes (Zhang et al., 2025).

A second dimension relates to the level of abstraction emphasized. Some frameworks focus on mechanisms and processes, a pattern frequently observed in ecological and environmental research (Harwell et al., 2019). Others privilege the organization of categories and variables, as in health-related and applied studies (Jull et al., 2019). There are also frameworks that operate as boundary objects,

enabling the integration of perspectives from different disciplines without requiring full conceptual alignment (Nilsen, 2015; Zhang et al., 2025).

Variation is also evident in the degree of methodological formalization. In fields such as ecology and socio-environmental research, procedures for search, extraction, and analysis are often described in detail, with clearly defined stages (Nagel & Partelow, 2022). In contrast, studies in education and management tend to adopt more flexible approaches, emphasizing conceptual articulation and narrative description, with less emphasis on procedural standardization.

The use of empirical evidence constitutes another axis of differentiation. Some frameworks are entirely theoretical, derived from literature-based synthesis (MacInnis, 2011; Jaakkola, 2020), whereas others are grounded in empirical data from interviews, observations, or document analysis (Naeem et al., 2023). Hybrid approaches are also observed, combining theoretical and empirical sources and adjusting the degree of empirical grounding to the characteristics of the phenomenon under investigation (Zhang et al., 2025).

Finally, variation in visual representation reflects differences in structural orientation and analytical intent. Although graphical representation is present across fields, it assumes different forms, including networks, layered structures, flows, and circular models. These formats do not merely communicate results; they actively contribute to organizing conceptual relationships and structuring the framework itself (Rasolofoarison & Russell, 2024).

Despite these variations, the analysis indicates a consistent convergence across studies: conceptual frameworks systematically organize elements to support the interpretation of complex phenomena. This pattern appears across distinct methodological traditions (Ullah, 2021; Grames et al., 2022; Tark et al., 2023; Zhang et al., 2025), suggesting that variation lies primarily in their construction, while their underlying purpose remains consistent.

At the same time, the identified divergences indicate that framework development involves situated methodological choices, ranging from scope definition and evidence selection to modes of representation and validation (Eyzaguirre & Fernandes, 2024). These choices reflect not only disciplinary conventions but also different epistemological orientations regarding the relationship between theory and evidence.

A growing emphasis on transparency in the description of analytical procedures is particularly evident in studies based on structured reviews and systematized approaches to theoretical synthesis (McMeekin et al., 2020; Paul et al., 2024). This trend points to a movement toward greater methodological explicitness in conceptual development.

Conceptual framework development does not converge into a single methodological pathway; it results from the articulation of distinct analytical strategies, context-sensitive methodological decisions, and varied modes of interaction between theory and empirical evidence. This integrated reading provides the analytical foundation for the methodological framework proposed in this study.

Analytical structure and foundations of the proposed framework

The formulation of the methodological framework is grounded in the systematic identification of recurrent analytical patterns across the reviewed studies. Despite the heterogeneity of approaches, the analysis reveals a consistent set of core operations underlying conceptual framework development, including phenomenon delimitation, evidence gathering, extraction of concepts and relationships, conceptual structuring, graphical representation, and validation procedures (Brady et al., 2020; Paul et al., 2024). These operations appear as interconnected components of a broader analytical process, providing the structural basis for the framework proposed in this study.

At the same time, the analysis indicates that these operations are mobilized through distinct analytical logics. Frameworks derived from structured literature reviews tend to follow deductive trajectories, in which concepts and relationships are organized based on prior theoretical knowledge (Ullah, 2021; Eyzaguirre & Fernandes, 2024). In contrast, qualitative and collaborative approaches rely more heavily on inductive and iterative processes, where categories and relationships are progressively constructed through engagement with empirical material or collective interpretation (Sale & Carlin, 2025). Abductive configurations are also observed, particularly in approaches such as hypothesis networks (Grames et al., 2022), in which theory and evidence are iteratively combined through cycles of refinement. These variations indicate that conceptual framework development is structured through the articulation of different modes of inference, without reliance on a single procedural logic.

In parallel, conceptual frameworks perform multiple analytical functions depending on the context of application. They may organize categories in applied domains such as health and education (Tark et al., 2023), represent mechanisms and dynamic processes in ecological and socio-environmental research (Grames et al., 2022), support theory-building through the integration of dispersed evidence (Eyzaguirre & Fernandes, 2024), or enable interdisciplinary articulation through boundary structures that accommodate distinct conceptual perspectives (Zhang et al., 2025). They also contribute to identifying research gaps, guiding research agendas (McMeekin et al., 2020), and supporting the interpretation and communication of complex systems (Lukyanenko et al., 2024). This functional plurality requires a methodological structure capable of accommodating different analytical purposes without constraining them to a single mode of construction.

These regularities and variations provide the analytical basis for structuring a unified framework that integrates heterogeneous methodological traditions. The recurrence of core operations establishes a stable analytical backbone, while the diversity of inferential logics and functions requires a flexible structure capable of integrating deductive, inductive, and abductive trajectories within a single process.

On this basis, the framework is organized into eight articulated stages distributed across three analytical layers: preparation, construction, and consolidation. The stages comprise: (1) definition of the phenomenon and analytical scope, resulting in explicit research boundaries, guiding questions, and inclusion criteria; (2) evidence gathering, producing a structured corpus of relevant sources; (3) extraction of concepts and relationships, leading to the identification of core categories, mechanisms, and patterns; (4) development of an initial conceptual arrangement, generating a provisional analytical configuration; (5) theoretical–empirical integration and refinement, through which relationships are reassessed and inconsistencies addressed; (6) consolidation of the final structure, resulting in a stabilized conceptual configuration; (7) graphical representation, translating the structure into an explicit visual model; and (8) verification and validation, involving systematic assessment of coherence and alignment with the evidence.

To guide the application of these stages, minimal criteria are defined to support analytical decisions across the process. While the sequence provides a structured pathway, its application requires reference points to assess analytical sufficiency at each step. Phenomenon delimitation is considered adequate when it results in clearly defined boundaries, guiding questions, and inclusion criteria that orient evidence selection. Evidence gathering reaches sufficiency when the corpus captures the conceptual diversity necessary to represent the phenomenon without including redundant or marginal contributions. Concept extraction is considered robust when core categories and relationships recur across sources and can be coherently articulated. The consistency of the conceptual structure is assessed through the coherence and stability of relationships among elements, as well as their alignment with the defined scope.

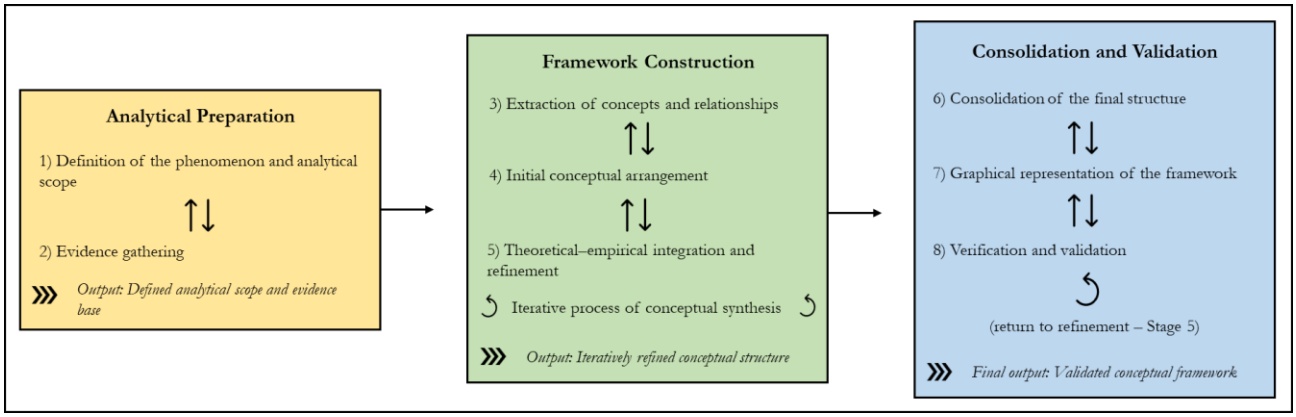
Validation is not understood as empirical testing, but as an analytical procedure aimed at assessing the robustness of the conceptual structure. It involves examining internal consistency among elements, theoretical coherence in relation to the literature, explanatory capacity in representing the phenomenon, and alignment between the proposed relationships and the underlying evidence. As such, it constitutes a

critical stage in which the framework is systematically confronted with both its theoretical foundations and the empirical material that informed its construction. It does not aim to confirm correctness; instead, it ensures that the framework represents a logically coherent, theoretically grounded, and analytically defensible account of the phenomenon.

This organization does not represent a strictly linear sequence, but a structured progression in which outputs generated at each stage inform and constrain subsequent analytical operations. Figure 3 synthesizes this progression as a layered analytical process.

Figure 3

Analytical layers and inferential dynamics in conceptual framework development



Source: prepared by the authors (2026).

The first layer, Analytical Preparation, establishes the epistemic and analytical conditions that delimit the scope of the framework. It involves defining the phenomenon, formulating guiding questions, and specifying analytical boundaries that determine what is included, excluded, and problematized. This stage does not merely precede the analysis; it actively shapes the interpretive possibilities of the framework. It is followed by evidence gathering, in which relevant sources are identified, selected, and organized. Together, these operations define the analytical corpus and condition the range of conceptual configurations that can be developed.

The second layer, Framework Construction, concentrates the core analytical transformations. Concepts and relationships are extracted from the evidence, allowing the identification of categories, mechanisms, and patterns relevant to the phenomenon. These elements are organized into an initial conceptual arrangement that functions as a provisional structure. This structure is then subjected to theoretical–empirical integration and refinement, in which relationships are reassessed, categories are repositioned, and inconsistencies are addressed through iterative comparison between theoretical propositions and empirical evidence. This phase introduces a recursive dynamic into the process, enabling the progressive stabilization of the conceptual structure.

The third layer, Consolidation and Validation, focuses on the formalization and analytical evaluation of the framework. It begins with the consolidation of the final structure, in which the conceptual arrangement is stabilized following successive refinements. This is followed by graphical representation, through which the structure is translated into a visual form that makes explicit the relationships among its components and supports analytical reasoning. The process concludes with verification and validation procedures, which involve critical examination of the framework through comparison with the literature,

expert assessment, or iterative analytical review. These procedures assess the internal coherence of the framework, its theoretical consistency, its explanatory capacity, and its adequacy to the phenomenon under investigation, based on systematic comparison with the underlying evidence.

The inclusion of graphical representation and validation as distinct stages is supported by the literature. Visual representations participate directly in the structuring of conceptual frameworks by making relationships explicit and supporting analytical reasoning, extending their role beyond communication (Ullah, 2021; Grames et al., 2022; Rasolofoarison & Russell, 2024). Similarly, validation procedures are integral to the analytical process, encompassing strategies such as comparison with existing models, expert appraisal, and collaborative refinement, which contribute to assessing the robustness and consistency of the framework (Eyzaguirre & Fernandes, 2024; Zhang et al., 2025).

To illustrate the operational logic of the framework, consider a hypothetical study aimed at developing a conceptual framework for digital transformation in small and medium-sized enterprises (SMEs). In the preparation layer, the phenomenon is delimited through the definition of scope, the formulation of guiding questions, and a structured review of the literature on technological capabilities, organizational change, and strategic alignment.

In the construction layer, the evidence supports the identification of core concepts, including digital infrastructure, managerial capabilities, process integration, and innovation orientation, which are analytically structured into an initial conceptual arrangement. This structure is then refined through iterative comparison between theoretical propositions and empirical evidence, incorporating deductive, inductive, and abductive reasoning.

In the consolidation layer, the resulting structure is stabilized as a coherent framework, visually represented, and subjected to validation procedures, including comparison with existing models and expert assessment. This example illustrates how the proposed stages support the transformation of dispersed evidence into a structured and analytically grounded conceptual system applicable to organizational research.

The proposed framework contributes to the literature by integrating analytical operations often treated in isolation into a coherent methodological pathway. By explicitly articulating different modes of inference within a unified structure, it systematizes existing practices and enables more transparent, comparable, and theoretically grounded approaches to conceptual framework development across research contexts. Unlike prior approaches that remain fragmented or conceptually broad, this framework operationalizes conceptual development by explicitly defining how analytical decisions are structured, how outputs are generated at each stage, and how these outputs constrain subsequent steps in the process.

Discussion on analytical implications for conceptual framework development

The analysis of the SLR results indicates that conceptual framework development is structured by recurring analytical operations while remaining shaped by methodological choices that vary across fields, phenomena, and epistemological traditions. The proposed framework systematizes these patterns by organizing elements identified in studies on conceptual modeling into a coherent analytical structure, offering a transversal synthesis capable of accommodating such diversity.

The coexistence of deductive, inductive, and abductive trajectories identified in the review reinforces the view that conceptual development depends on how theory and evidence are articulated throughout the analytical process. This is consistent with approaches that emphasize theory-driven conceptualization (Jaakkola, 2020; McMeekin et al., 2020), while also accommodating forms of conceptual development in which categories and relationships emerge through engagement with evidence (Waldt, 2020) or are developed and refined through successive cycles combining theoretical propositions and empirical

material, as in hypothesis network approaches (Grames et al., 2022; Lindgreen et al., 2021). From this perspective, inferential logic is not merely a procedural choice; it shapes how conceptual relationships are derived and justified. The implication for the proposed framework is that a common methodological structure must accommodate different relationships between prior theory, evidence, and conceptual construction without prescribing a single inferential trajectory.

This diversity of inferential trajectories also intersects with disciplinary variation and with the uneven articulation of the analytical logic underlying conceptual framework development. Disciplinary traditions tend to privilege distinct forms of representation: studies in ecology emphasize mechanisms and systemic processes (Heger et al., 2021), whereas research in health and education frequently focuses on categories and dimensions that organize descriptive or applied phenomena (Jull et al., 2019). In interdisciplinary contexts, frameworks operate as boundary structures capable of integrating heterogeneous theoretical repertoires without requiring full conceptual alignment (Zhang et al., 2025). By accommodating these variations, the proposed framework offers a structured pathway that supports conceptual organization across different analytical scales without imposing a predefined level of abstraction.

The analysis also highlights the role of visualization as an integral component of conceptual development. Visual representations do not simply communicate results; they actively support the identification and articulation of relationships among concepts. Diagrams, networks, and graphical schemes enable the recognition of patterns that are difficult to capture through purely textual synthesis (Cowhitt et al., 2023), while also enhancing the transparency and communicability of the analytical process (Van Biljon & Osei-Bryson, 2020). The explicit inclusion of graphical representation as a stage in the framework formalizes this function and aligns the proposal with practices observed across different fields.

A similar pattern is observed in relation to verification. Validation is not a discrete step, but a continuous process of analytical assessment. Grames et al. (2022) employ systematic comparison among hypotheses, Zhang et al. (2025) emphasize iterative review and expert dialogue, and Eyzaguirre and Fernandes (2024) propose validation through the articulation of bibliographic and empirical evidence. By structuring verification as a dedicated stage, the framework consolidates these practices and makes explicit a dimension that is often implicit in conceptual development processes.

The findings further indicate that conceptual frameworks perform multiple analytical functions, including organizing categories, synthesizing hypotheses, describing mechanisms, and structuring research processes. These functions are distributed unevenly across the literature, reflecting different forms of conceptual contribution (MacInnis, 2011) and distinct uses of frameworks as instruments for organizing knowledge and guiding research agendas (Paul et al., 2024). The proposed framework accommodates this plurality by providing a methodological structure that supports different analytical purposes without privileging a single mode of application.

This repositions conceptual framework development as a process that involves the coordination of stable analytical operations and variable methodological choices. The recurrence of core operations provides a consistent structural basis, while the diversity of inferential logics and disciplinary practices requires a flexible configuration capable of integrating different analytical trajectories. In this sense, the proposed framework contributes by making explicit the analytical decisions involved in conceptual construction and by organizing them into a coherent and transparent methodological pathway.

The scope of this synthesis is shaped by the review design. Restricting the search to four databases, peer-reviewed articles published between 2005 and 2025, and studies in English and Portuguese may have left relevant methodological approaches outside the corpus. Although coding and synthesis were conducted collaboratively and categories were established by consensus, the reconstruction of recurrent operations remains interpretive. The eight-stage framework therefore reflects the regularities identified in the reviewed literature rather than a universal sequence for conceptual framework development. The

illustrative case of SME digital transformation demonstrates the operational logic of the proposed framework but does not constitute an empirical validation of the method.

Increasing methodological transparency therefore depends not only on formalization, but also on the explicit articulation of analytical decisions. By systematizing procedures that are often presented in a fragmented manner, the framework offers a structured basis for reducing methodological ambiguity in conceptual framework development. Its structure supports the consistent articulation of theory and evidence, enhances the transparency of analytical processes, and provides a basis for greater comparability across studies, without constraining the diversity of approaches observed in the literature.

Final considerations

This study examined, through a SLR, how the scientific literature describes the strategies, principles, and stages involved in conceptual framework development. The analysis identified recurring analytical operations across different disciplinary and methodological contexts, including phenomenon delimitation, evidence gathering, extraction of concepts and relationships, conceptual structuring, graphical representation, and verification and validation. At the same time, these operations were found to be mobilized through different deductive, inductive, and abductive trajectories, indicating that conceptual framework development combines a recurrent analytical structure with context-sensitive methodological choices.

Based on these findings, the study reconstructed the identified operations into a methodological framework composed of eight stages distributed across three analytical layers: Analytical Preparation, Framework Construction, and Consolidation and Validation. The framework integrates these stages by articulating their analytical functions, expected outputs, dependencies, iterative relationships, and criteria for analytical sufficiency. These stages provide common analytical reference points while allowing their operationalization to vary according to the phenomenon, disciplinary context, sources of evidence, and inferential logic adopted. Its main contribution therefore lies in making explicit the methodological decisions through which dispersed evidence is progressively transformed into a coherent conceptual structure.

Future research should empirically apply the proposed procedure in different research contexts to examine its analytical robustness, practical usability, and need for refinement. Comparative applications may also clarify which stages recur across domains and which require adaptation to particular methodological or epistemological settings. Such investigations would provide the empirical assessment that the illustrative application developed in this study was not intended to offer.

Overall, the study advances conceptual framework development by moving from dispersed methodological practices toward an explicit analytical procedure. By specifying how evidence is delimited, synthesized, transformed into conceptual relationships, represented, and assessed, the proposed framework provides a traceable basis for both developing and critically evaluating conceptual frameworks. Its contribution lies not in prescribing a single way to construct conceptual frameworks, but in specifying the outputs, dependencies, and sufficiency criteria that make each analytical decision explicit and verifiable.

References

Ahmed, S. K. (2024). The pillars of trustworthiness in qualitative research. *Journal of Medicine, Surgery, and Public Health*, 2(100051), 100051. https://doi.org/10.1016/j.glmedi.2024.100051

Andrienko, G., Andrienko, N., Bak, P., Keim, D., Kisilevich, S., & Wrobel, S. (2011). A conceptual framework and taxonomy of techniques for analyzing movement. *Journal of Visual Languages and Computing*, 22(3), 213–232. https://doi.org/10.1016/j.jvlc.2011.02.003

Belzen, A. U., Engelschalt, P., & Krüger, D. (2021). Modeling as scientific reasoning—the role of abductive reasoning for modeling competence. *Education Sciences*, 11(9), 495. https://doi.org/10.3390/educsci11090495

Brady, S. S., Brubaker, L., Fok, C. S., Gahagan, S., Lewis, C. E., Lewis, J., Lowder, J. L., Nodora, J., Stapleton, A., Palmer, M. H., & Prevention of Lower Urinary Tract Symptoms (PLUS) Research Consortium. (2020). Development of conceptual models to guide public health research, practice, and policy: Synthesizing traditional and contemporary paradigms. *Health Promotion Practice*, 21(4), 510–524. https://doi.org/10.1177/1524839919890869

Cowhitt, T., Greany, T., & Downey, C. (2023). Storytelling with networks: Realizing the explanatory potential of network diagrams through the integration of qualitative data. *International Journal of Qualitative Methods*, 22. https://doi.org/10.1177/16094069231189369

Eyzaguirre, I. A. L., & Fernandes, M. E. B. (2024). Combining methods to conduct a systematic review and propose a conceptual and theoretical framework in socio-environmental research. *MethodsX*, 12(102484), 102484. https://doi.org/10.1016/j.mex.2023.102484

Grames, E. M., Schwartz, D., & Elphick, C. S. (2022). A systematic method for hypothesis synthesis and conceptual model development. *Methods in Ecology and Evolution*, 13(9), 2078–2087. https://doi.org/10.1111/2041-210x.13940

Guzmán, C. A. F., Aguirre, A. A., Astle, B., Barros, E., Bayles, B., Chimbari, M., El-Abbadi, N., Evert, J., Hackett, F., Howard, C., Jennings, J., Krzyzek, A., LeClair, J., Maric, F., Martin, O., Osano, O., Patz, J., Potter, T., Redvers, N., … Zylstra, M. (2021). A framework to guide planetary health education. *The Lancet. Planetary Health*, 5(5), e253–e255. https://doi.org/10.1016/S2542-5196(21)00110-8

Harwell, M. A., Gentile, J. H., McKinney, L. D., Tunnell, J. W., Jr, Dennison, W. C., Kelsey, R. H., Stanzel, K. M., Stunz, G. W., Withers, K., & Tunnell, J. (2019). Conceptual framework for assessing ecosystem health. *Integrated Environmental Assessment and Management*, 15(4), 544–564. https://doi.org/10.1002/ieam.4152

Heger, T., Aguilar-Trigueros, C. A., Bartram, I., Braga, R. R., Dietl, G. P., Enders, M., Gibson, D. J., Gómez-Aparicio, L., Gras, P., Jax, K., Lokatis, S., Lortie, C. J., Mupepele, A.-C., Schindler, S., Starrfelt, J., Synodinos, A. D., & Jeschke, J. M. (2021). The hierarchy-of-hypotheses approach: A synthesis method for enhancing theory development in ecology and evolution. *Bioscience*, 71(4), 337–349. https://doi.org/10.1093/biosci/biaa130

Jabareen, Y. (2009). Building a conceptual framework: Philosophy, definitions, and procedure. *International Journal of Qualitative Methods*, 8(4), 49–62. https://doi.org/10.1177/160940690900800406

Jaakkola, E. (2020). Designing conceptual articles: four approaches. *AMS Review*, 10(1–2), 18–26. https://doi.org/10.1007/s13162-020-00161-0

Johanning, S., Bruggemans, P., Edelenbosch, O., & Bruckner, T. (2024). Integrative review-based conceptual modeling: An agent-based modeling Synthesis of dynamic energy tariff research and models. *Energies*, 17(22), 5715. https://doi.org/10.3390/en17225715

Jull, J. E., Davidson, L., Dungan, R., Nguyen, T., Woodward, K. P., & Graham, I. D. (2019). A review and synthesis of frameworks for engagement in health research to identify concepts of knowledge user engagement. *BMC Medical Research Methodology*, 19(1), 211. https://doi.org/10.1186/s12874-019-0838-1

Koivunen, K., Schaap, L. A., Hoogendijk, E. O., Schoonmade, L. J., Huisman, M., & van Schoor, N. M. (2022). Exploring the conceptual framework and measurement model of intrinsic capacity defined by the World Health Organization: A scoping review. *Ageing Research Reviews*, 80(101685), 101685. https://doi.org/10.1016/j.arr.2022.101685

Leshem, S., & Trafford, V. (2007). Overlooking the conceptual framework. *Innovations in Education and Teaching International*, 44(1), 93–105. https://doi.org/10.1080/14703290601081407

Lindgreen, A., Di Benedetto, C. A., Brodie, R. J., & Jaakkola, E. (2021). How to develop great conceptual frameworks for business-to-business marketing. *Industrial Marketing Management*, 94, A2–A10. https://doi.org/10.1016/j.indmarman.2020.04.005

Lukyanenko, R., Samuel, B. M., Parsons, J., Storey, V. C., Pastor, O., & Jabbari, A. (2024). Universal conceptual modeling: principles, benefits, and an agenda for conceptual modeling research. *Software and Systems Modeling*, 23, 1077–1100. https://doi.org/10.1007/s10270-024-01207-8

Luft, J. A., Jeong, S., Idsardi, R., & Gardner, G. (2022). Literature reviews, theoretical frameworks, and conceptual frameworks: An introduction for new biology education researchers. *CBE Life Sciences Education*, 21(3), rm33. https://doi.org/10.1187/cbe.21-05-0134

MacInnis, D. J. (2011). A framework for conceptual contributions in marketing. *Journal of Marketing*, 75(4), 136–154. https://doi.org/10.1509/jmkg.75.4.136

McKenna, H. P. (2025). A review of data models and frameworks in urban environments in the context of AI. *Urban Science*, 9(7), 239. https://doi.org/10.3390/urbansci9070239

McMeekin, N., Wu, O., Germeni, E., & Briggs, A. (2020). How methodological frameworks are being developed: evidence from a scoping review. *BMC Medical Research Methodology*, 20(1), 173. https://doi.org/10.1186/s12874-020-01061-4

Morioka, S. N., & Carvalho, M. M. (2016). A systematic literature review towards a conceptual framework for integrating sustainability performance into business. *Journal of Cleaner Production*, 136, 134–146. https://doi.org/10.1016/j.jclepro.2016.01.104

Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2023). A step-by-step process of thematic analysis to develop a conceptual model in qualitative research. *International Journal of Qualitative Methods*, 22. https://doi.org/10.1177/16094069231205789

Nagel, B., & Partelow, S. (2022). A methodological guide for applying the social-ecological system (SES) framework: a review of quantitative approaches. *Ecology and Society: A Journal of Integrative Science for Resilience and Sustainability*, 27(4). https://doi.org/10.5751/es-13493-270439

Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. *Implementation Science: IS*, 10(1), 53. https://doi.org/10.1186/s13012-015-0242-0

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372, n71. https://doi.org/10.1136/bmj.n71

Palmatier, R. W., Houston, M. B., & Hulland, J. (2018). Review articles: purpose, process, and structure. *Journal of the Academy of Marketing Science*, 46(1), 1–5. https://doi.org/10.1007/s11747-017-0563-4

Partelow, S. (2023). What is a framework? Understanding their purpose, value, development and use. *Journal of Environmental Studies and Sciences*, 13(3), 510–519. https://doi.org/10.1007/s13412-023-00833-w

Paul, J., Khatri, P., & Kaur Duggal, H. (2024). Frameworks for developing impactful systematic literature reviews and theory building: What, Why and How? *Journal of Decision Systems*, 33(4), 537–550. https://doi.org/10.1080/12460125.2023.2197700

Rasolofoarison, D., & Russell, C. A. (2024). Get the picture? Using visuals to represent theory. *Journal of the Academy of Marketing Science*, 52(2), 599–603. https://doi.org/10.1007/s11747-023-00980-0

Sale, J. E. M., & Carlin, L. (2025). The reliance on conceptual frameworks in qualitative research - a way forward. *BMC Medical Research Methodology*, 25(1), 36. https://doi.org/10.1186/s12874-025-02461-0

Saunders, C. H., Sierpe, A., von Plessen, C., Kennedy, A. M., Leviton, L. C., Bernstein, S. L., Goldwag, J., King, J. R., Marx, C. M., Pogue, J. A., Saunders, R. K., Van Citters, A., Yen, R. W., Elwyn, G., & Leyenaar, J. K. (2023). Practical thematic analysis: a guide for multidisciplinary health services

research teams engaging in qualitative analysis. *BMJ*, 381, e074256. https://doi.org/10.1136/bmj-2022-074256

Schreiber, F., & Cramer, C. (2022). Towards a conceptual systematic review: proposing a methodological framework. *Educational Review*, 1–22. https://doi.org/10.1080/00131911.2022.2116561

Silva, J. C. K., Soliani, R. D., Ferreira-Júnior, G. C., Lovrić, N., & Lobão, M. S. P. (2025). Can a digital platform framework advance the bioeconomy and the sustainability in the Amazon?: literature review. *Gestão & Produção*, 32. https://doi.org/10.1590/1806-9649-2025v32e14724

Soliani, R. D., Oliveira, D. A. de, Pontes, J. da C. N., & Drumond, T. D. R. (2025). Professional training in Industry 4.0: a competency-based educational model. *Gestão & Produção*, 32(e2225). https://doi.org/10.1590/1806-9649-2025v32e2225

Tark, A., Estrada, L. V., Stone, P. W., Baernholdt, M., & Buck, H. G. (2023). Systematic review of conceptual and theoretical frameworks used in palliative care and end-of-life care research studies. *Palliative Medicine*, 37(1), 10–25. https://doi.org/10.1177/02692163221122268

Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, 30(3), 167–186. https://doi.org/10.1177/0735275112457914

Ullah, F. (2021). A beginner's guide to developing review-based conceptual frameworks in the built environment. *Architecture*, 1(1), 5–24. https://doi.org/10.3390/architecture1010003

Van Biljon, J., & Osei-Bryson, K.-M. (2020). The communicative power of knowledge visualizations in mobilizing information and communication technology research. *Information Technology for Development*, 26(4), 637–652. https://doi.org/10.1080/02681102.2020.1821954

Waldt, G. (2020). Constructing conceptual frameworks in social science research. *The Journal for Transdisciplinary Research in Southern Africa*, 16(1). https://doi.org/10.4102/td.v16i1.758

Zhang, J., Salomon, H., Huber, M. N., Bugmann, H., Dölker, J. E., König, L., Krähenbühl, J., Lieberherr, E., Logar, I., McArdell, B., Molnar, P., Quatrini, S., Schick, V., Schlunegger, F., Schmidt, C., Zabel, A., & Hoffmann, S. (2025). Developing a conceptual framework for interdisciplinary communication, collaboration, and integration: A structured approach. *Ambio*, 54(12), 2118–2134. https://doi.org/10.1007/s13280-025-02210-z