Knowledge Audit in HEIs: A Framework for its Strategic Management

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Abstract: In the knowledge era, Higher Education Institutions (HEIs) are recognized as knowledge-intensive organizations whose sustainability and capacity for transformation depend largely on how they manage not only academic and scientific knowledge but also the organizational knowledge that emerges from their internal practices. However, most HEIs focus their efforts on knowledge derived from teaching and research functions, leaving aside the strategic management of the knowledge produced, stored, and applied in administrative, operational, and relational domains. This disconnection limits the potential of organizational knowledge as a source of differentiation, innovation, and dynamic capabilities. This article proposes a systemic approach to knowledge audits in HEIs, aimed at closing the gap between academic and organizational knowledge. The study follows a qualitative and propositional methodology structured in three phases: a critical literature review, an empirical analysis of eight cases from knowledge-intensive organizations, and the design of a strategic management framework for systemic knowledge audits. The framework includes seven interconnected components: (1) characterization of knowledge in relation to institutional strategy; (2) multi-level inventory of core, tactical, operational, and relational knowledge; (3) diagnosis of risks such as leakage, obsolescence, and knowledge gaps; (4) development of knowledge and risk maps; (5) governance structures for knowledge management; (6) design of intervention routes; and (7) monitoring, evaluation, and continuous improvement. The model advances knowledge audit practices by integrating strategic alignment, risk management, and organizational learning into a unified framework. Unlike traditional audits focused solely on inventories or compliance, it adopts a systemic and sociomaterial perspective (Schatzki, 2016); (Tsoukas, 2000), recognizing knowledge as an emergent, distributed, and context-dependent phenomenon shaped by practices, technologies, and structures. It provides actionable tools to identify, protect, and mobilize critical knowledge, supporting institutional planning, self-assessment, and innovation. Findings from the case analysis revealed governance weaknesses, fragmented flows, and poor linkage between KM and strategy. In response, the framework offers both conceptual depth and practical application, positioning knowledge audits as reflective organizational interventions (Czarniawska, 2003) and reinforcing the role of knowledge as a lever for sustainability, resilience, and strategic transformation in HEIs.

Keywords: Knowledge audit, Higher education institutions (HEIs), Knowledge management, Strategic alignment, Sociomaterial perspective, Knowledge governance

1. Introduction

Since the late 20th century, knowledge has been established as a fundamental resource for economic and social development, giving rise to what is now known as the knowledge era (Drucker, 1993). By their very nature, universities are recognized as knowledge-intensive organizations due to their core activities in teaching, research, and outreach (García-Vega and Vicente-Chirivella, 2020; Ortega y Gasset, 2001). However, this emphasis on academic and scientific knowledge has created a gap in organizational knowledge, which emerges from administrative, strategic, and operational practices.

This dissociation has hindered the ability of Higher Education Institutions (HEIs) to manage organizational knowledge as a strategic asset, essential for differentiation, sustainability, and the development of dynamic capabilities (Davenport and Prusak, 1998; Nonaka and Takeuchi, 1994; Teece, 2007). From a contemporary perspective, knowledge should be understood as an emergent and socio-material phenomenon, shaped by interaction networks among people, technologies, and structures (Diez-Gaviria, 2023; Orlikowski, 2007; Schatzki, 2016), where heterarchical relationships and shared practices generate organizational meaning (Cilliers, 2005; Tsoukas, 2000).

Given this scenario, a reflective and dialogic organizational intervention is necessary (Czarniawska, 2003) to redefine organizational knowledge and enhance its management. A knowledge audit with a systemic approach is proposed as a key tool in this process, enabling the identification, diagnosis, and mapping of knowledge in HEIs while fostering institutional learning and strategic adaptation (Nonaka, Toyama and Hirata, 2018; Probst, Raub and Romhardt, 2001). Accordingly, this article presents a systemic knowledge audit methodology, structured in five chapters, which address the initial problematization, the proposed methodology, and the conclusions.

2. Background

The concept of organizational knowledge has evolved significantly in recent decades, shifting from traditional approaches centered on codification and information storage to perspectives that recognize it as an emergent, dynamic, and contextual phenomenon. This section presents the main theoretical foundations that support this study.

2.1 Knowledge Audit (KA)

The success of knowledge management (KM) initiatives largely depends on the organization's ability to systematically assess its intellectual assets, knowledge flows, and contextual factors that facilitate or hinder their use. Hylton (2002) warns that inadequate diagnostics are a major cause of failure in KM strategies, as they obstruct the identification of existing knowledge, its circulation, and critical gaps. Similarly, Liebowitz *et al.*, (2000) highlight that a well-designed audit enables organizations to recognize both available and missing knowledge, determine who needs it, and identify how it can be strategically utilized.

Structured models, such as Iazzolino and Pietrantonio´s (2017) integration of the Balanced Scorecard with intellectual capital and Perez-Soltero *et al.* (2007) process-oriented approach, provide frameworks for evaluating both the "stock" and "flow" of knowledge while aligning it with institutional objectives.

2.2 Knowledge Risks

These risks arise from events or conditions that negatively impact the creation, retention, transfer, and application of knowledge, limiting an organization's ability to innovate, adapt, and generate value (Liebowitz *et al.*, 2000). Factors such as staff turnover, technological obsolescence, process fragmentation, and the absence of mechanisms for documenting and sharing learning increase an organization the vulnerability to knowledge loss or deterioration (Burnett, Illingworth and Webster, 2004).

In this context, KA also serves a preventive function. It helps identify blockages, redundancies, and critical gaps in knowledge flows, enabling targeted interventions to ensure continuity and optimal utilization. According to Burnett, Illingworth and Webster (2004), these processes not only expose risks but also support the development of strategies to mitigate their impact, thereby strengthening organizational resilience.

2.3 Critical Knowledge

Critical knowledge refers to the set of knowledge whose loss, deterioration, or inaccessibility would significantly compromise an organization's performance and sustainability. This type of knowledge is directly linked to strategic processes, key competencies, environmental relations, and specialized functions (Perez-Soltero *et al.*, 2007).

A systemic approach is required to assess not only the content but also its location, usage dynamics, and dependence on the organizational context. Identifying critical knowledge enables institutions to prioritize actions for its conservation, transfer, and renewal, ensuring that the most valuable assets remain accessible at the right time and place to maximize their impact.

3. Methodology

A qualitative approach was adopted, structured into three interrelated phases: literature review, comparative empirical analysis, and methodological design. The first phase was a review of 46 articles indexed in Scopus on organizational KA in HEIs. In the second phase, documented case studies from knowledge-intensive organizations were analyzed. Finally, a systemic audit methodological proposal adapted to HEIs was developed.

4. Results

The progression through the three phases enabled the consolidation of a robust theoretical framework and the identification of application patterns, recurring challenges, and best practices that informed the final design. The main findings are presented below, organized according to each phase:

4.1 Phase 1. Conceptual Foundations and Theoretical Background

This phase consisted of a structured literature review conducted in the Scopus database, guided by the PRISMA technique (Moher *et al.*, 2009) to ensure methodological transparency. The search equation combined the terms: (knowledge auditing OR knowledge mapping OR knowledge diagnosis) AND (HEI) AND (knowledge

management), applied to titles, abstracts, and keywords. The time frame was set from 1995 to 2025 to capture both foundational and current contributions. Inclusion criteria considered peer-reviewed journal articles, theoretical analyses, and applied studies explicitly addressing knowledge audits in organizational or educational settings. Exclusion criteria ruled out conference abstracts without full text, theses, and unrelated topics.

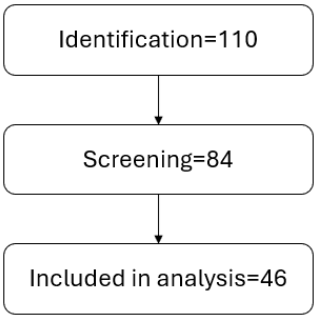

Figure 1: PRISMA flow diagram for the literature review process

The selection process followed three PRISMA stages—identification, screening, and eligibility—resulting in 46 articles for full review (see Figure 1). This corpus allowed for the identification of four dominant perspectives on knowledge audits—strategic alignment, KM optimization, continuous improvement, and knowledge availability—and five methodological approaches, from operational audits to systemic models aligned with institutional strategy. These findings laid the groundwork for the framework developed in this study.

4.1.1 Knowledge audit: A construct with multiple perspectives

KA has been analyzed from multiple perspectives, each emphasizing its significance for organizational management, continuous improvement, and the strategic utilization of knowledge. These perspectives are outlined below.

- Strategic perspective

From a strategic approach, KA is regarded as process-oriented to evaluate and manage critical knowledge assets that contribute to achieving organizational objectives. This approach highlights the identification of essential knowledge resources to support effective decision-making (Kumar, Singhal and Kansal, 2022). It is also described as a method for identifying strengths and weaknesses to facilitate the strategic use of knowledge (Pirnau *et al.*, 2022). Additionally, it involves assessing existing assets and their relevance to strategic goals (Wu Y. and Senoo D., 2010). Thus, the strategic perspective focuses on the evaluation, availability, and application of critical knowledge assets in alignment with organizational strategy.

- KM perspective

This perspective ensures that knowledge is systematically managed and aligned with institutional strategic objectives (Shahmoradi, Karami and Nejad, 2016). It is described as a process that allows identifying weaknesses and strengths in KM (Dante and Ponjuán, 2021; Ponjuán, 2018), as well as its efficiency and adequacy for strategic development (Carreño and Escobar, 2019; Pirnau et al., 2022;). Accordingly, this perspective underscores the structured identification, organization, and implementation of knowledge processes.

- Continuous improvement perspective

KA is also understood as a mechanism for fostering continuous improvements. This perspective emphasizes the need for ongoing diagnostics (Adesina, 2024) to identify critical areas (Shek, Lee and Cheung, 2009) and implement corrective actions (Dahlan, Abdullah and Wahiddin, 2016). It highlights the importance of periodic evaluations and structure enhancements that contribute to the continuous development of organizational capacity.

- Organizational perspective and knowledge availability

This approach is characterized by the identification, classification, storage, and accessibility of knowledge (Gu *et al.*, 2011; Natividad, Bennet and Vatananan-Thesenvitz, 2023; Puerta-Ramírez and Giraldo-García, 2024), ensuring that it is available for appropriate use in decision-making (Marr, Schiuma and Neely, 2004; Skok and

Goldstein, 2007). This emphasizes the importance of having effective systems in place to structure knowledge and ensure access to it.

The review of these perspectives shows that KA is a complex process that must be understood and applied comprehensively. Each perspective provides essential elements that allow understanding the state of organizational knowledge, identifying its limitations, and proposing improvement paths to ensure its availability and adequacy for the fulfillment of strategic objectives. Thus, the adoption of a model that considers these integrated views, besides being pertinent, is necessary, especially in knowledge-intensive organizations.

4.1.2 Methodological models of KA: from operational to strategic

The methodologies used in KA can be classified into five main approaches each emphasizing different aspects of MK. These approaches are described below.

- Operational aspects

Methodologies belonging to this group are mainly focused on identifying activities, procedures, and techniques used to collect, organize, and functionally use knowledge (Kim *et al.*, 2014; Marr, Schiuma and Neely, 2004; Shek, Lee and Cheung, 2009). The main purpose is to optimize internal processes and ensure that knowledge is managed efficiently from a technical and operational point of view (Nieto and Bolaños, 2010). This approach is useful in the implementation of organizational knowledge systems and in the evaluation of established procedures.

- Knowledge inventory

The purpose of this type of audit is to ensure that relevant knowledge is clearly identified and adequately stored so that it can be accessed by those who need it (Natividad, Bennet and Vatananan-Thesenvitz, 2023; Unamuno, 2009). These methodologies usually focus on activities such as collecting information, structuring knowledge databases, and reporting on existing assets (Ara and Kumar Das, 2021; Gu *et al.*, 2011) . Although this approach is useful to ensure the availability of knowledge, it is limited to the operational aspect of its management, without necessarily relating it to organizational strategy.

- Risk diagnosis

This type of audit seeks to mitigate possible negative impacts by identifying gaps, weaknesses, or failures in organizational knowledge. The purpose of this approach is to ensure that the organization has mechanisms in place to identify critical areas of knowledge that require immediate attention (Acevedo-Correa *et al.*, 2020), to prevent these from becoming potential threats to the organization (Adesina, 2024; Durst and Leyer, 2014). Methodologies based on risk diagnosis include systematic processes to detect problems and formulate corrective action plans (Cannavacciuolo *et al.*, 2017L; Dante and Ponjuán, 2021; Jalalimanesh, Yaghoubi and Homayounvala, 2012).

- Strategy as an end

Methodologies belonging to this approach usually involve a systematic process that includes the identification of knowledge resources and processes (Shahmoradi, Karami and Nejad, 2016), the evaluation of internal and external factors that influence organizational knowledge (Gavrilova, Kudryavtsev and Alkanova, 2023), the assessment of current practices and the identification of areas for improvement (Carreño and Escobar, 2019) that can impact the strategic performance of the organization (Dante and Ponjuán, 2021; Kuznetsova, Gavrilova and Alkanova, 2024). This type of audit focuses on how available knowledge contributes to the achievement of specific strategic objectives (Dahlan, Abdullah and Wahiddin, 2016; Piri *et al.*, 2020; Shek, Lee and Cheung, 2009). The value of this approach lies in its ability to provide a diagnosis that translates into useful inputs for organizational strategy (Angel Sosa, 2024), ensuring that knowledge is managed and applied in a manner consistent with strategic objectives.

- KA with a systemic approach: from and for the strategy

The methodologies that belong to this group state that organizational knowledge must be understood, managed, and evaluated based on the strategic objectives, ensuring that its management is consistent with the direction (Puerta-Ramírez and Giraldo-García, 2024). From this perspective, KA becomes a continuous cycle (Backhaus *et al.*, 2006) that starts with the strategic definition, identifies and organizes critical knowledge assets, and then provides relevant information to feedback on the strategy and ensure its sustainability (Pirnau

et al., 2022; Skok and Goldstein, 2007). The importance of this approach lies in its ability to provide a comprehensive methodological model, particularly relevant for HEIs, where knowledge is the fundamental resource for their operation and sustainability over time.

The systemic approach is essential for the effectiveness of KA, especially in HEIs, since it allows for aligning organizational knowledge with institutional strategy. By taking the strategy as a starting point, the knowledge that is truly valuable for meeting organizational objectives is identified, and by considering it also as a point of arrival, the audit results strengthen and provide feedback on the strategy. This approach recognizes that knowledge should not only be an input, but a structural component of the strategy, which is even more relevant in HEIs, where knowledge is the main asset. Integrating both elements allows decisions to be made based on clear diagnoses, ensuring the sustainability, innovation, and relevance of these institutions in complex and competitive environments.

4.2 Phase 2: Case Analysis and Empirical Contrasts

The second phase consisted of an empirical validation of the systemic audit components identified in the literature review, through the analysis of eight cases from knowledge-intensive Colombian organizations. A convenience sampling strategy was used, selecting institutions with declared KM practices aligned with organizational strategy, previously involved in research or consultancy on KM.

The cases, from sectors such as higher education, vocational training, and public administration, provided evidence through documents and interviews of active KM integration with strategic planning, self-evaluation, or quality management. Data collection included institutional documents and semi-structured interviews with key actors. The goal was not generalization, but contrast and contextual validation of categories from Phase 1.

A comparative matrix (Table 1) synthesized key variables analyzed.

Table1 : Summary of empirical analysis

Code	Auditing practices	Risks	Governance
A	Inventory and criticality matrix	Staff attrition, obsolescence	Informal knowledge leader
B	Surveys and interviews	Gaps and flow barriers	No defined structure
C	Interviews with key experts	Leakage, low circulation	Ad-hoc Committee
D	Documentary diagnosis	Regulatory obsolescence	Informal coordination
E	Narrative audit with a practical approach	Leakage, critical dependence	Functional area with indirect responsibility
F	Critical knowledge matrix	Barriers by functional silos	Formal role in KM
G	Interviews and triangulation	Leakage and low transmission	Cross-cutting team
H	Review of critical processes	Digital obsolescence	KM strategy defined

The analysis confirmed that the organizations studied are knowledge-intensive (Diez-Gaviria, 2023), although their approaches to KM and its strategic integration vary significantly. Practices such as inventories, interviews, and diagnostic assessments were common; however, few institutions had robust systems for updating, protecting, or mobilizing critical knowledge. Frequently observed risks included knowledge leakage, regulatory or technological obsolescence, and internal knowledge flow barriers, often addressed through tools like criticality matrices or process mapping.

In terms of governance, informality prevailed, with only a few organizations having formal KM roles or defined strategies. These findings underscore the importance of conceiving KA as reflective and systemic organizational interventions (Czarniawska, 2003), oriented toward re-signifying knowledge, enhancing dynamic capabilities, and guiding strategic transformation.

4.3 Phase 3: Design of a Systemic Audit Proposal for HEIs

As a result of the theoretical review and empirical analysis in knowledge-intensive organizations, a strategic management framework for KA is proposed that seeks to articulate organizational knowledge with institutional strategy, especially in complex contexts such as the university. Based on a systemic and collectivist perspective of knowledge (Schatzki, 2016; Tsoukas, 2000), the model recognizes knowledge as an emergent, relational, and dynamic construction (Cilliers, 2005; Diez-Gaviria, 2023), and proposes the audit as a reflexive intervention capable of generating organizational transformation (Czarniawska, 2003). This framework has six

interconnected components that guide diagnosis, planning, and strategic action around knowledge. This framework has six interconnected components that guide diagnosis, planning, and strategic action around knowledge. This model goes beyond operational inventories or descriptive audits by integrating strategic alignment, risk mapping, and governance into a cohesive system. It is particularly designed to address the complexity of HEIs, enabling both diagnosis and decision-making aligned with institutional development, as illustrated in Figure 2.

4.3.1 Characterization of organizational knowledge

This first component seeks to identify and describe the relevant knowledge of the organization concerning its institutional strategy. To this end, it is based on an integrated reading that considers both the knowledge derived from the substantive pillars -teaching, research, and social projection the knowledge that emerges from the mission and support areas. The distributed, tacit, explicit, and situated nature of knowledge is recognized, as well as its dynamic nature in terms of the relationships between people, technologies, structures, and norms.

4.3.2 Knowledge inventory

The inventory classifies and records organizational knowledge in four categories: core knowledge (essential to the institutional mission), tactical knowledge (key to intermediate decision-making), operational knowledge (related to process execution), and relational knowledge (derived from interaction with stakeholders). These categories can be organized into two levels: one linked to macro-processes or strategic domains, and the other related to sub-processes, functions, or individual competencies. In addition, the inventory contemplates the identification of sources of knowledge, both dynamic (human) and static (documentary or technological), concerning organizational processes.

4.3.3 Diagnosis of knowledge

The diagnosis identifies four risks that may affect the sustainability, availability, or quality of organizational knowledge; the risk of obsolescence refers to the loss of validity due to regulatory, technological, or contextual changes; the risk of leakage is associated with staff turnover or loss of institutional memory; flow barriers represent difficulties in accessing, using or mobilizing knowledge; while gaps refer to the difference between required and available knowledge. This diagnosis allows for establishing criticality levels according to the probability of occurrence and potential impact and constitutes a key input for decision-making.

4.3.4 Knowledge maps and risk maps

Based on inventory and diagnosis, knowledge maps are generated that visualize the distribution, concentration, and relationships between the different types of knowledge in the different areas or departments of the HEIs. Likewise, risk maps are built to locate critical nodes, vulnerable areas, and knowledge gaps. These maps favor strategic reflection and the planning of improvement actions.

4.3.5 Knowledge governance and intervention path

The proposed framework highlights the importance of establishing solid knowledge governance, based on defined roles and responsibilities, inter-area coordination mechanisms, and institutional policies that regulate access, protection, and valuation of knowledge, promoting distributed and collaborative leadership following heterarchical networks (Diez-Gaviria, 2023). Based on the characterization, inventory, and diagnosis of knowledge, an intervention route is designed that prioritizes gaps and opportunities, contemplates short-, medium-, and long-term actions focused on culture, processes, people, and technology, and integrates knowledge with development, self-evaluation, or accreditation plans. This route seeks to mobilize knowledge to generate value, strengthen organizational learning, and develop dynamic capabilities (Teece, 2007).

4.3.6 Monitoring, evaluation, and continuous improvement

Finally, the framework incorporates a monitoring and evaluation system that makes it possible to: a) establish maturity and KM indicators; d) follow up on the implementation of the intervention path; and c) promote continuous improvement cycles based on evidence. This component ensures the sustainability of the model and its alignment with the institutional strategy, allowing for adjustments in response to changes in the environment or new priorities.

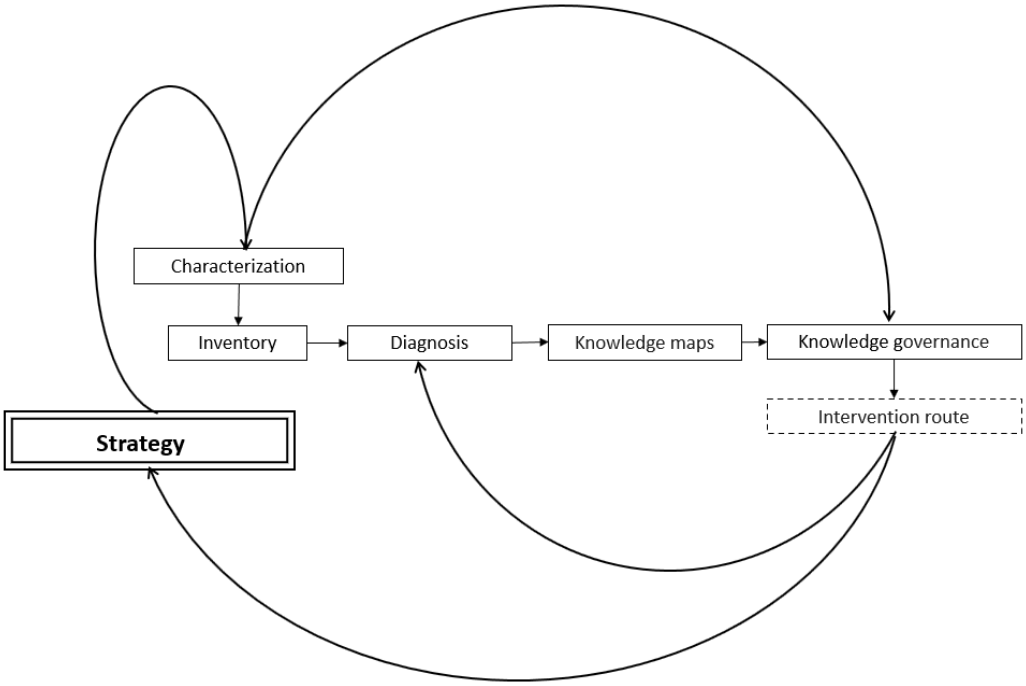

Figure 2: Knowledge Audit for HEIs

5. Discussions and Conclusions

This paper presented a systemic knowledge audit methodology for HEIs, grounded in a literature review and eight applied cases. While HEIs are knowledge-intensive institutions, the study revealed weak strategic assessment of organizational knowledge beyond academic domains.

The proposed model addresses this gap by enabling the identification, inventory, and management of critical knowledge from a relational and systemic perspective, positioning the audit as a reflective intervention (Czarniawska, 2003) that supports institutional learning.

It advances current KA practices by integrating strategic alignment, risk analysis, and governance into a unified framework. Unlike traditional audits focused on inventories, it accounts for the emergent and distributed nature of knowledge in HEIs. Its components—such as multi-level inventories, knowledge and risk maps, and intervention paths—support planning, self-assessment, and transformation processes.

Future research may extend this framework by developing specific tools, maturity indicators, and applications in diverse organizational contexts to reinforce its validation and scalability.

Ethics declaration: This research did not involve human participants, personal data collection, or procedures requiring ethical approval by an institutional review board. Therefore, ethical clearance was not required.

AI declaration: The authors used ChatGPT (OpenAI, GPT-4) solely for language editing and formatting support. All content was critically reviewed to ensure academic integrity.

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