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**DIGITAL TRANSFORMATION AND ORGANIZATIONAL PERFORMANCE: FROM
THEORETICAL CONVERGENCE TO ASYMMETRIC TRANSFORMATION IN THE
SCIENTIFIC-TECHNICAL-PROFESSIONAL SUBSECTOR OF THE BRAZILIAN
PUBLISHING MARKET**

São Paulo

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Isabelle Carlos Campos Rezende Cavalcante

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Tese apresentada ao Programa de Pós-Graduação em
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do grau de **Doutor em Administração**.

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São Paulo, 05 de Março de 2026.

I dedicate this work to the memory of my mother, who, in addition to being my greatest supporter, was also an exceptional teacher and manager. Unfortunately, cancer took her life. Her tireless love, wisdom, and presence were the guiding light on my journey. Even though she is no longer physically with us, her spirit and teachings continue to inspire every step I take. This work is a tribute to her enduring legacy, with all my love and longing.

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My academic journey began during my undergraduate studies in Accounting at UNIPÊ, in João Pessoa, PB, between 2003 and 2006. During this period, I participated in teaching assistantships and scientific research projects, discovering my passion for academia, also influenced by the fact that my parents were teachers.

During my undergraduate studies, I was fortunate to have an exceptional professor and advisor, Prof. Dr. Mamadou Dieng. He, together with Prof. Dr. Josedilton Diniz, encouraged me to pursue an academic career and to apply for the master's program in Accounting, whose application process would begin in early 2007.

Pursuing a master's degree in Accounting at that time was very challenging, as graduate programs in the field were scarce, and universities often formed partnerships to sustain the programs. Thanks to their support and my dedication, I was admitted to the Multi-Institutional Master's Program of the Federal Universities (UnB/UFPB/UFRN), which I completed in June 2009.

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ABSTRACT

This thesis analyzes how digital transformation is conceptually structured, theoretically integrated, and empirically materialized in the Scientific-Technical-Professional subsector of the Brazilian publishing market, and what its implications are for organizational performance. Grounded in the “multiple-study dissertation” model, the research integrates three interrelated investigations that, taken together, explain how the phenomenon is structured, manifested, and materialized in specific organizational contexts. Study 1 demonstrates how the thematic structure of the literature on digital transformation and organizational performance reveals patterns of theoretical convergence and their implications for the development of the field. Through a bibliometric design based on bibliographic coupling, supported by principal component analysis and network mapping, four clusters were identified: (1) Strategic and Organizational Dimensions; (2) Organizational Capabilities, Leadership, and Strategies; (3) Business Model Innovation; and (4) Data-Driven Decision-Making and Analytics. The results indicate theoretical convergence around an orientation that treats digitalization as an organizational imperative and performance under optimization logics, establishing the conceptual foundations for the development of the subsequent study. Based on this evidence, Study 2 develops an integrative theoretical framework that elucidates the main dimensions involved in Digital Transformation (DT) processes and their dynamic interrelationships. Drawing on a qualitative meta-synthesis guided by the dimensions Who, Why, Where, How, and What, and supported by coding procedures inspired by grounded theory, the analysis of 45 articles, totaling 206 organizational cases, reveals that digital transformation is configured as an interdependent system in which actors, motivations, contexts, processes, and outcomes interact in a dynamic and recursive manner. Study 3 empirically applies these dimensions to the Brazilian Scientific-Technical-Professional publishing subsector through an abductive qualitative approach and an analytical structure based on the Gioia methodology. The findings show that digital transformation in this context occurs in an asymmetric, hybrid, and predominantly reactive manner, marked by the emergence of platform-based cooptation as the dominant structural strategy. Taken together, the three studies demonstrate that digital transformation constitutes a multilevel, dynamic, and contextualized process in which theoretical structures, interrelated dimensions, and specific institutional conditions shape the creation and capture of organizational value. By articulating bibliometric investigation, integrative theoretical development, and sectoral empirical evidence, the dissertation offers a comprehensive interpretation of how digital transformation is configured and produces organizational outcomes over time.

Keywords: Digital Transformation, Organizational Performance, Institutional Complexity, Ecosystems and Platforms.

RESUMO

Esta tese analisa como a transformação digital se estrutura conceitualmente, se integra teoricamente e se materializa empiricamente no subsetor Científico-Técnico-Profissional do mercado editorial brasileiro, e quais são suas implicações para o desempenho organizacional. Fundamentada no modelo de “tese em múltiplos estudos”, a pesquisa integra três investigações inter-relacionadas que, em conjunto, explicam como o fenômeno se estrutura, se manifesta e se materializa em contextos organizacionais específicos. O Estudo 1 evidenciou de que maneira a estrutura temática da literatura sobre transformação digital e desempenho organizacional revela padrões de convergência teórica e suas implicações para o desenvolvimento do campo. Por meio de um desenho bibliométrico baseado no pareamento bibliográfico, apoiado por análise de componentes principais e mapeamento em rede, foram identificados quatro clusters: (1) Dimensões Estratégicas e Organizacionais; (2) Capacidades Organizacionais, Liderança e Estratégias; (3) Inovação em Modelos de Negócio; e (4) Tomada de Decisão Orientada por Dados e Analytics. Os resultados indicam uma convergência teórica em torno de uma orientação que trata a digitalização como imperativo organizacional e o desempenho sob lógicas de otimização, estabelecendo as bases conceituais para o desenvolvimento do estudo subsequente. Com base nessas evidências, o Estudo 2 desenvolve um framework teórico integrativo que elucida as principais dimensões envolvidas nos processos de Transformação Digital (TD) e suas inter-relações dinâmicas. A partir de uma metassíntese qualitativa orientada pelas dimensões Who, Why, Where, How e What, e apoiada por procedimentos de codificação inspirados na grounded theory, a análise de 45 artigos, totalizando 206 casos organizacionais, revela que a transformação digital configura-se como um sistema interdependente no qual atores, motivações, contextos, processos e resultados, interagem de forma dinâmica e recursiva. O Estudo 3 aplica empiricamente essas dimensões ao subsetor editorial Científico-Técnico-Profissional brasileiro, por meio de uma abordagem qualitativa abductiva e estrutura de análise baseada na metodologia Gioia. Os resultados evidenciam que a transformação digital nesse contexto ocorre de forma assimétrica, híbrida e predominantemente reativa, sendo marcada pela emergência da coopetição baseada em plataformas como estratégia estrutural dominante. Em conjunto, os três estudos demonstram que a transformação digital constitui um processo multinível, dinâmico e contextualizado, no qual estruturas teóricas, dimensões inter-relacionadas e condições institucionais específicas condicionam a criação e a captura de valor organizacional. Ao articular investigação bibliométrica, construção teórica integrativa e evidências empíricas setoriais, a tese oferece uma interpretação abrangente sobre como a transformação digital se configura e produz resultados organizacionais ao longo do tempo.

Palavras-chave: Transformação Digital, Desempenho Organizacional, Complexidade Institucional, Ecossistemas e Plataformas.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABS	<i>Academic Journal Guide</i>
AI	<i>Artificial Intelligence</i>
BMI	<i>Business Model Innovation</i>
CBL	<i>Câmara Brasileira do Livro</i>
CDO	<i>Chief Digital Officer</i>
CEO	<i>Chief Executive Officer</i>
CHO	<i>Chief Happiness Officer</i>
CINO	<i>Chief Innovation Officer</i>
CIO	<i>Chief Information Officer</i>
CTO	<i>Chief Technology Officer</i>
DIH	<i>Digital Innovation Hub</i>
DT	<i>Digital Transformation</i>
EFA	<i>Exploratory Factor Analysis</i>
IPA	<i>International Publishing Association</i>
ISBNs	<i>International Standard Book Numbers</i>
IoT	<i>Internet of Things</i>
ITES	<i>Innovation, Technology, and Entrepreneurship Symposium</i>
KMO	<i>Kaiser-Meyer-Olkin</i>
LIBRE	<i>Liga Brasileira de Editoras</i>
MM	<i>Methodological Matrix</i>
SDG	<i>Sustainable Development Goals</i>
SMEs	<i>Small and Micro Enterprises</i>
SNEL	<i>Sindicato Nacional dos Editores de Livros</i>
SPSS	<i>Statistical Package for the Social Sciences</i>
STP	<i>Scientific, Technical, and Professional</i>
WIPO	<i>World Intellectual Property Organization</i>
W.O.S	<i>Web of Science</i>

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1 INTRODUCTION

Digital transformation (DT) has moved beyond being a specialized topic within the field of information systems to become a central concern in management research, redefining the foundations through which organizations create value, compete, and relate to stakeholders across different sectors and geographies (Bharadwaj et al., 2013; Verhoef et al., 2021; Vial, 2019; Westerman et al., 2014). The convergence of technologies such as Artificial Intelligence, the Internet of Things, Big Data analytics, and cloud computing has significantly expanded the possibilities for organizational innovation, while simultaneously intensifying demands for strategic and structural reconfiguration. In this context, digital transformation is configured not merely as a technological trend but as a structural sociotechnical shift that alters the institutional and organizational conditions of contemporary economic activity (Hinings et al., 2018; Nambisan et al., 2017; Yoo et al., 2012).

Consequently, DT is not limited to the adoption of digital technologies but involves profound processes of organizational transformation encompassing culture, leadership, governance structures, business models, and forms of interorganizational coordination (Fitzgerald et al., 2013; Hess et al., 2016; Vial, 2019). This multidimensional character has stimulated the rapid growth of research on the relationship between DT and organizational performance. Early studies established fundamental conceptual definitions and analytical boundaries of the phenomenon (Vial, 2019), while subsequent contributions examined value-creation mechanisms under different theoretical lenses, including dynamic capabilities, digital innovation, analytics, and business model renewal (Nambisan et al., 2019; Schallmo et al., 2017; Verhoef et al., 2021). Despite this progress, recent reviews indicate that the field remains difficult to integrate, displaying heterogeneity in terms of constructs, measurement choices, levels of analysis, and sectoral contexts (Reis et al., 2018; Verhoef et al., 2021).

This heterogeneity has been predominantly interpreted as theoretical fragmentation. However, the question remains open as to whether the observed diversity effectively reflects distinct strands of the literature or conceals a deeper convergence around shared assumptions. Reviews based on narrative or integrative methods, although relevant for conceptual synthesis, have not been able to reveal the relational structure of the field and the mechanisms that sustain

its intellectual evolution. This gap is significant, as the diagnosis of how a scientific field is organized conditions the theoretical strategies adopted for its development.

An additional limitation concerns the understanding of digital transformation as a dynamic process. Although the literature recognizes relevant dimensions of DT — such as technology, strategy, culture, governance, and performance — these dimensions are often treated as independent analytical categories rather than as interdependent elements of a coevolving system (Verhoef et al., 2021; Vial, 2019). As a result, the effects of digital transformation tend to be analyzed as final outcomes rather than as forces that reconfigure subsequent cycles of organizational change. Such an approach restricts the understanding of DT as an iterative, feedback-driven process in which intermediate outcomes influence motivations, actor arrangements, and strategic decisions over time (Mendes et al., 2022; Warner & Wäger, 2023).

These limitations become particularly evident when DT is examined in institutionally complex contexts. Dominant frameworks often assume progressive transformation trajectories in which organizations evolve along digital maturity curves that move from digitalization to full transformation (Matt et al., 2015; Westerman et al., 2014). However, in knowledge-intensive and highly regulated sectors, organizations operate under multiple competing institutional logics — academic, governmental, market, and technological — that shape their strategic responses to digital disruption (Greenwood et al., 2011; Thornton et al., 2012). Under these conditions, digital transformation assumes an institutionally mediated character, in which technological changes are negotiated in light of legitimacy demands and historically sedimented organizational structures (Hinings et al., 2018; Scott, 2014). The mechanisms that produce asymmetric transformation trajectories, in which technological advances coexist with incomplete organizational reconfigurations, remain under-theorized.

The Brazilian publishing industry constitutes an empirically relevant and theoretically revealing context for investigating these dynamics. It is a sector characterized by the centrality of symbolic and epistemically legitimized assets, the persistent coexistence of analog and digital formats, and strong institutional mediation of market relations. The Scientific-Technical-Professional (STP) subsector, in particular, represents an extreme case of asymmetric digital transformation, in which regulatory changes — such as the elimination of mandatory physical library requirements — have produced simultaneous discontinuities across the organizational field, while also catalyzing collective platform-based responses. Methodologically, the sector is

treated in this research as a revelatory case, as it enables an expanded observation of how multiple institutional logics shape digital transformation trajectories and their implications for organizational performance.

In the Brazilian context, these dynamics are intensified by an environment marked by high digital connectivity and the persistence of preferences for physical formats, creating a hybrid scenario that challenges linear assumptions of technological substitution. With approximately 820 active publishers and 25 million book consumers, the national publishing market presents structural conditions that allow digital transformation to be examined as an institutionally conditioned and ecosystemically structured process (Nielsen BookData & CBL, 2023).

Against this backdrop, this dissertation investigates how the relationship between digital transformation and organizational performance can be structurally conceptualized, theoretically integrated, and empirically analyzed within a sectoral context marked by institutional complexity. The research is structured in the format of a dissertation by studies, composed of three sequential and interdependent investigations articulated through a cumulative logic: the analysis of the thematic structure of the academic field of DT (Study 1), the theoretical integration of its central dimensions (Study 2), and the empirical investigation of its manifestations in a specific organizational context (Study 3). This architecture ensures that each study builds upon the findings and gaps identified in the previous one, producing an integrated contribution that connects field diagnosis, theoretical construction, and empirical analysis of digital transformation.

1.1 RESEARCH PROBLEM

Despite the increasing consolidation of Digital Transformation (DT) as an organizational imperative, the advancement of the field has been marked by a fundamental tension between theoretical convergence and empirical heterogeneity. While academic discourse tends to treat digital transformation as a progressive process functionally oriented toward performance, its practical manifestation reveals asymmetric trajectories conditioned by institutional contexts, ecosystem configurations, and specific organizational dynamics. This dissociation between the conceptual stabilization of the phenomenon and the variability of its empirical materializations

suggests that the central problem of DT lies not only in its adoption or intensity, but in how its mechanisms are understood, integrated, and operationalized.

In this sense, the literature still presents structural limitations in the integrated understanding of the phenomenon. First, the manner in which the scientific field is thematically organized and whether theoretical convergence exists in explanations of the relationship between DT and organizational performance remains insufficiently understood. Second, there is a lack of integrative theoretical models capable of capturing the multidimensional, dynamic, and relational nature of digital transformation processes over time. Finally, empirical investigations examining how these dimensions are operationalized in institutionally complex sectors — where digital transformation manifests asymmetrically and is conditioned by multiple institutional logics and ecosystem arrangements — remain scarce.

The absence of this integrated understanding constitutes not only a theoretical gap but also a practical challenge. Organizations operating in knowledge-intensive sectors face strategic decisions under high uncertainty regarding the actual effects of digital transformation on performance, which may result in misaligned investments, inflated expectations, or incomplete transformation trajectories. Thus, understanding DT as a phenomenon simultaneously structured at the conceptual level and contingent at the empirical level becomes fundamental both for the advancement of the field and for the strategic guidance of organizations.

Against this backdrop, three interrelated gaps motivate this dissertation. Each corresponds to a distinct study and, together, they form a cumulative structure of knowledge: because the structure of the field is not fully understood, integrated frameworks remain incomplete; and because this integration is insufficient, empirical investigation in complex contexts advances without adequate theoretical grounding.

The first gap concerns the fact that the internal structure of research on DT and performance remains empirically unexamined. The predominant diagnosis in the literature is that the field suffers from thematic and theoretical fragmentation, with studies dispersed across constructs, methods, and organizational contexts (Reis et al., 2018; Verhoef et al., 2021). However, this diagnosis is predominantly based on narrative and integrative reviews that describe diversity without empirically testing whether the apparent heterogeneity of the field reflects genuinely distinct theoretical orientations or variations within a shared set of assumptions. Without a structural mapping of the field's internal organization, it remains undetermined

whether its main limitation is fragmentation or, paradoxically, excessive convergence around certain analytical premises. This gap underpins Study 1.

The second gap stems from the absence of a systemic theorization of the central dimensions of DT and their dynamic interrelationships. Although previous studies have identified relevant elements — such as actors, motivations, contextual factors, governance mechanisms, and outcomes — these dimensions are often examined in isolation, without considering how they mutually constrain or enable each other along transformation trajectories (Nambisan et al., 2019; Vial, 2019). Particularly neglected is the temporal dynamics of the phenomenon, in which intermediate outcomes reconfigure subsequent motivations, actor arrangements, and strategic choices, producing feedback cycles that sustain or redirect transformation processes (Laorach & Tuamsuk, 2023; Mendes et al., 2022). The development of an integrative framework capable of explicating these interdependencies constitutes the basis of Study 2.

The third gap relates to the limited understanding of the mechanisms through which institutional complexity shapes asymmetric transformation trajectories. The literature has devoted insufficient attention to how multiple competing institutional logics constrain and enable strategic responses to digital disruption, particularly in knowledge-intensive and highly regulated sectors (Greenwood et al., 2011; Thornton et al., 2012). In these contexts, digital transformation tends to assume an asymmetric character, in which technological adoption does not necessarily translate into proportional gains in strategic value or organizational performance (Peukert & Reimers, 2022). Moreover, although the literature on co-opetition has advanced in analyzing competitive interdependencies (Bengtsson & Kock, 2000; Gnyawali & Ryan Charleton, 2018), the role of shared platform-based digital infrastructures as a collective response to technological disruption remains underexplored. This gap guides Study 3.

These three gaps form a cumulative chain. Because the thematic structure of the field has not been empirically investigated, the dominant diagnosis of fragmentation may obscure the effects of theoretical convergence. Because the dimensions of DT have not been integrated into a dynamic model, researchers and managers lack a systemic understanding of the phenomenon. And because the mechanisms of asymmetric transformation in institutionally complex contexts remain under-theorized, empirical investigation advances without adequate conceptual foundations to explain nonlinear transformation trajectories.

1.1.1 Research question

It is in this context that the research question of this thesis is: **how is digital transformation conceptually structured, theoretically integrated, and empirically materialized in the Scientific-Technical-Professional subsector of the Brazilian publishing market, and what are its implications for organizational performance?**

1.2 OBJECTIVES

1.2.1 General

The general objective of this thesis is to analyze how digital transformation is conceptually structured, theoretically integrated, and empirically materialized in the Scientific-Technical-Professional subsector of the Brazilian publishing market, and what its implications are for organizational performance.

1.2.2 Especifics

The specific objectives, corresponding to each study, are:

- To demonstrate how the thematic structure of the literature on digital transformation and organizational performance reveals patterns of theoretical convergence and their implications for the development of the field (Study 1).
- To develop an integrative theoretical framework that highlights the main dimensions involved in Digital Transformation (DT) processes and their dynamic interrelationships over time (Study 2).
- To investigate how publishers in the Scientific-Technical-Professional subsector enact the dimensions of digital transformation to reconfigure strategies, processes, and relationships

in the Brazilian market, with particular attention to the role of institutional complexity, asymmetric transformation, and platform-based competition (Study 3).

1.3 JUSTIFICATION FOR THE STUDY OF THE TOPIC

This thesis contributes to the advancement of the Digital Transformation (DT) field at three interdependent levels — theoretical, empirical, and practical — by addressing structural gaps that limit the integrated understanding of the phenomenon and by demonstrating how such limitations produce partial interpretations of its organizational effects. Unlike approaches that treat DT as a linear process oriented toward optimization, this research shows that the phenomenon is simultaneously structured by theoretical convergences at the level of the literature and conditioned by institutional asymmetries in its empirical materialization.

Theoretical contributions: The first contribution lies in the reconfiguration of the diagnostic regarding the organization of the field of DT and organizational performance. Previous reviews described thematic diversity but did not empirically test the relational structure among studies. By combining bibliographic coupling, principal component analysis, and network mapping, Study 1 demonstrates how the field is organized around self-reinforcing dynamics that delimit its theoretical gaps and condition knowledge production. This evidence shifts the dominant debate on fragmentation by showing that part of the observed diversity occurs within a convergent set of assumptions, redefining the foundations upon which future theoretical agendas may be constructed. The second contribution consists in the systemic integration of DT dimensions. Based on a meta-synthesis of 206 organizational cases, Study 2 conceptualizes digital transformation as a dynamic system guided by feedback mechanisms, in which intermediate outcomes reconfigure subsequent motivations, actor arrangements, and strategic choices. This formulation shifts the prevailing understanding of DT from a sequence of technological initiatives to an iterative process of continuous organizational reconfiguration, integrating dynamic capabilities, the resource-based view, and institutional theory into a coherent explanatory model. The third contribution expands DT theory by demonstrating how institutional complexity produces asymmetric transformation trajectories. Study 3 shows that, in knowledge-intensive sectors, technological adoption does not automatically translate into proportional performance gains, as organizations must reconcile demands arising from multiple competing

institutional logics. By articulating DT with institutional complexity theory and coopetition theory, the dissertation introduces a relational and multilevel perspective that challenges the predominantly efficiency-oriented orientation present in the literature.

Empirical contributions: The thesis also contributes empirically by investigating digital transformation in a sector still underexplored in the literature: the Scientific-Technical-Professional (STP) publishing industry. This context is not only empirically accessible but also theoretically revealing, as it combines characteristics that challenge dominant DT assumptions, such as the persistent coexistence of analog and digital formats, the centrality of symbolic and epistemically legitimized assets, and strong institutional mediation of market dynamics. In Brazil, these characteristics are intensified by an environment marked by high digital connectivity, abrupt regulatory changes, and platform-mediated reconfiguration of value chains. By analyzing 15 key actors in the publishing ecosystem and triangulating evidence from interviews and documentary sources, Study 3 demonstrates how DT manifests in nonlinear trajectories in which technological innovation, institutional legitimacy, and ecosystem coordination interact contingently. Thus, the national context contributes not only as an empirical field but also as an analytical lens for understanding digital transformations in institutionally complex sectors.

Practical contributions: At the practical level, the dissertation offers relevant implications for managers, policymakers, and sectoral organizations. The structural diagnosis of the field (Study 1) redefines the limits of available knowledge, enabling strategic decisions grounded in a more precise understanding of the assumptions guiding the dominant literature. The integrative framework (Study 2) provides an analytical instrument for aligning organizational capabilities, governance mechanisms, and strategic objectives throughout transformation trajectories. The empirical findings (Study 3), in turn, show how platform-based cooperation strategies, hybrid format management, and institutional positioning can sustain competitiveness in environments characterized by high regulatory and technological complexity. For policymakers, the results indicate the need for regulatory approaches that reconcile digital innovation with the preservation of cultural and informational diversity, highlighting the role of shared infrastructures in coordinating collective responses to technological disruption.

Programmatic relevance: The thesis is linked to the Graduate Program in Business Administration (PPGA) at Universidade Nove de Julho (UNINOVE), within the research line on Strategy and Digital Transformation. The multi-study architecture responds to the program's

emphasis on methodological rigor and theoretical contribution, integrating bibliometric analysis, qualitative meta-synthesis, and empirical qualitative research in a cumulative design that produces both academic knowledge and insights applicable to managerial and policy practice.

1.3.1 Relevance to the achievement of the Sustainable Development Goals (2030 Agenda)

The Sustainable Development Goals (SDGs) were established by the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development. They constitute a global pact encompassing 17 goals and 169 interconnected targets, representing a universal call to action to eradicate poverty, protect the planet, and ensure that all people enjoy peace, prosperity, and dignity by 2030 (UN, 2023). In this context, this thesis aligns with this global commitment by investigating the role of digital transformation (DT) as a driver of sustainable and competitive development in the Brazilian publishing subsector, particularly in the Scientific-Technical-Professional (STP) segment. By fostering innovation and the dissemination of knowledge, DT in the publishing sector can directly contribute to the achievement of several SDGs. The main goals with which this research is connected are:

- **SDG 4 (Quality Education):** the thesis investigates how digital transformation in the publishing sector can expand access to educational content, particularly through digital platforms that make academic and professional materials available to broader populations.
- **SDG 8 (Decent Work and Economic Growth):** the research explores how digitalization influences operational efficiency and creates new economic opportunities within the publishing industry, contributing to sustainable economic growth.
- **SDG 9 (Industry, Innovation, and Infrastructure):** by examining how publishers implement new technologies and reconfigure their value chains, the thesis contributes to understanding innovation pathways in knowledge-intensive industries.
- **SDG 12 (Responsible Consumption and Production):** the investigation of hybrid print-digital models addresses how the publishing industry can adopt more sustainable production and distribution practices through digital transformation.

1.4 STRUCTURE OF THE THESIS

This thesis is composed of three interdependent studies articulated through a cumulative logic: Study 1 reveals the structure of the field; Study 2 theorizes the dimensions that the field has examined in isolation; and Study 3 empirically investigates how these dimensions unfold within an institutionally complex context. The following figure synthesizes the research architecture, and the Methodological Matrix (Table 1) details the distinction and justification for the interdependence among the studies.

Study 1 conducted a structuring bibliometric review of 346 empirical articles published up to December 2024 in the Web of Science and Scopus databases, using bibliographic coupling, principal component analysis (PCA), and network analysis. From this corpus, 63 articles with salient factor loadings constituted the analytical core. The analysis identified four thematic components and proposed an interpretive framework that highlights both the mutually reinforcing structure of the current literature and three theoretical gaps that this structure leaves underexplored. The central finding — that the field exhibits theoretical convergence rather than fragmentation — reframes the debate on digital transformation and performance and delineates the boundaries within which subsequent studies operate.

Link Study 1 → Study 2: The theoretical convergence identified in Study 1 indicates that the dominant orientation of the field treats the dimensions of digital transformation (strategy, capabilities, business models, analytics) as components of an optimization logic but does not theorize their dynamic interrelationships or feedback mechanisms. Study 2 addresses precisely this gap by synthesizing qualitative evidence to construct the integrative framework that the field has not yet developed.

Study 2 conducted a qualitative meta-synthesis of 45 articles encompassing 206 organizational cases, published between 2019 and 2024, extracted from the Web of Science and Scopus and selected based on rigorous criteria, including the ABS 2024 ranking. The analysis employed a five-dimensional analytical framework (Who, Why, Where, How, What), combined with grounded theory techniques for open, axial, and selective coding. The findings revealed five dynamically interactive dimensions and a feedback-oriented cycle in which outcomes reconfigure motivations and subsequent transformation trajectories.

Link Studies 1 and 2 → Study 3: The integrative framework provides the theoretical lens; however, Study 1 identified underexplored theoretical gaps — including the politics of digital transformation, theories of failure, and distributive consequences — and Study 2 demonstrated that contextual factors actively mediate transformation trajectories. These findings motivate empirical investigation in a sector where institutional complexity, conflicting logics, and asymmetric transformation are defining characteristics. Study 3 tests and extends the Who–Why–Where–How–What framework precisely within a context exhibiting these features.

Study 3 conducted an abductive qualitative study (Timmermans & Tavory, 2012), with a data structure guided by the Gioia methodology (Gioia et al., 2013). Fifteen semi-structured interviews were conducted with CEOs, platform leaders, sector specialists, and institutional representatives, triangulated with documentary sources (CBL/SNEL reports, Nielsen BookData, PublishNews). The analysis progressed through first-order coding, second-order themes, and aggregate dimensions, iterating between empirical surprises and the Who–Why–Where–How–What framework developed in Study 2.

METHODOLOGICAL MATRIX FOR THE THESIS							
OVERARCHING RESEARCH QUESTION							
How is digital transformation conceptually structured, theoretically integrated, and empirically materialized in the Scientific-Technical-Professional subsector of the Brazilian publishing market, and what are its implications for organizational performance?							
GENERAL OBJECTIVE							
To analyze how digital transformation is conceptually structured, theoretically integrated, and empirically materialized in the Scientific-Technical-Professional subsector of the Brazilian publishing market, and what its implications are for organizational performance.							
THESIS PARADIGM							
Researcher's Paradigmatic Positioning in the Thesis: Positivism / Interpretivist							
JUSTIFICATION FOR DISTINCTION			JUSTIFICATION FOR STRUCTURAL INTERDEPENDENCE AND SCIENTIFIC, TECHNICAL, TECHNOLOGICAL, AND/OR SOCIAL CONVERGENCE				PUBLICATION STATUS
Title of Each Study	Research Question	General Objective	Sequential or Simultaneous Studies	Single or Mixed Method in the Research Stages	Data Collection Procedures	Data Analysis Procedures	
Theoretical Convergence in the Literature on Digital Transformation and Organizational Performance: Evidence from Bibliographic Coupling	<i>How does the thematic structure of the empirical literature on digital transformation and organizational performance reveal patterns of theoretical convergence, and what are their implications for the development of the field?</i>	To demonstrate how the thematic structure of the literature on digital transformation and organizational performance reveals patterns of theoretical convergence and their implications for the development of the field.	Study 1 provided support for Study 2	Structuring Bibliometric Review (Quantitative)	346 empirical articles from Web of Science and Scopus (through Dec. 2024); 63 with salient loadings in core set	Bibliographic coupling, Principal Component Analysis (PCA), network analysis (UCINET), interpretive framework development	Approved at the SITE 2024 (ANPAD), SINGEP 2024 and EnANPAD 2025 conferences. Complete. Under revision for journal submission.
An Integrative Framework of Digital Transformation Dimensions: A Meta-synthesis Revealing Dynamic Interrelationships	<i>What are the main dimensions that compose the digital transformation process and how do these dimensions interrelate dynamically over time?</i>	To develop an integrative theoretical framework that highlights the main dimensions involved in Digital Transformation (DT) processes and their	Study 2 provided support for Study 3	Qualitative Meta-Synthesis	45 articles (2018-2024) from WoS and Scopus, encompassing 206 organizational cases. ABS 2024 journal ranking criteria.	Who-Why-Where-How-What analytical framework; grounded theory techniques (open, axial, selective coding).	Study 2 approved at SINGEP 2025 and submitted to the Academy of Management 2026 and 3Es 2026 conference. Complete. Under revision for journal submission

		dynamic interrelationships over time.					
Asymmetric digital transformation in the scientific-technical-professional subsector: platform-based cooperation and strategic reconfiguration in the Brazilian publishing market	<i>How do publishers in the Scientific-Technical-Professional subsector enact, in practice, the dimensions of digital transformation (Who, Why, Where, How, and What) to reconfigure strategies, processes, and relationships in the Brazilian market?</i>	To investigate how publishers in the Scientific-Technical-Professional subsector enact the dimensions of digital transformation to reconfigure strategies, processes, and relationships in the Brazilian market, with particular attention to the role of institutional complexity, asymmetric transformation, and platform-based cooperation.	Study 3 tests and extends the Who–Why–Where–How–What framework developed in Study 2	Qualitative Abductive Research; Gioia Methodology	15 semi-structured interviews (CEOs, platform leaders, specialists, institutional representatives). Documentary sources: CBL/SNEL reports, Nielsen BookData, PublishNews.	First-order coding, second-order themes, aggregate dimensions; abductive iteration between data and Who-Why-Where-How-What framework.	Complete. Under revision for journal submission

Table 1

Methodological matrix for the thesis (MM)

Note. Adapted from Costa, P. R., Ramos, H. R., & Pedron, C. D. (2019). Proposal of an Alternative Structure for a Doctoral Thesis Based on Multiple Studies. Ibero-American Journal of Strategy, 18(2), 155–170. <https://doi.org/10.5585/riae.v18i2.15156>

2 STUDY 1: THEORETICAL CONVERGENCE IN THE LITERATURE ON DIGITAL TRANSFORMATION AND ORGANIZATIONAL PERFORMANCE: EVIDENCE FROM BIBLIOGRAPHIC COUPLING

Abstract:

Objective of the Study: To demonstrate how the thematic structure of the literature on digital transformation and organizational performance reveals patterns of theoretical convergence and their implications for the development of the field.

Methodology and Approach. A structuring bibliometric review combines bibliographic coupling, principal component analysis (PCA), and network analysis. The corpus consists of 346 empirical articles indexed in the Web of Science and Scopus databases, published up to December 2024. From this set, 63 articles with salient factor loadings constitute the analytical core of the investigation.

Originality and Relevance. While previous reviews identify fragmentation as the main limitation of research on digital transformation (DT), this study suggests the presence of patterns of theoretical convergence that delimit the possibilities for the field's development. The proposed framework represents both the relational structure among thematic clusters and the analytical domains that remain relatively underexplored. Based on this interpretation, the study proposes a theory-driven research agenda organized around four analytical lenses that expand the interpretive scope beyond predominantly optimization-oriented approaches.

Findings. The analysis identified four thematic components: (1) Strategic and Organizational Dimensions; (2) Organizational Capabilities, Leadership, and Strategies; (3) Business Model Innovation; and (4) Data-Driven Decision-Making and Analytics. Despite thematic diversity, the components exhibit analytical interdependencies that indicate a shared orientation, in which digitalization is frequently treated as a relevant organizational response in competitive contexts and performance is predominantly framed under logics of efficiency and optimization. The clusters operate in a relationally complementary manner, with explanations for adverse outcomes often associated with implementation limitations. The analysis also reveals three relatively underexplored theoretical gaps: the politics of digital transformation, the structural conditions associated with adverse outcomes (theory of failure), and the distributive consequences of transformation.

Theoretical/Methodological Contributions: Theoretically, the study contributes by making the field's paradigmatic closure visible, showing how different strands converge around a common imperative. Methodologically, it advances the use of bibliometrics by applying clustering techniques and factor analysis to uncover structures that remain invisible to conventional reviews.

Additionally, it proposes an alternative theoretical roadmap grounded in four lenses: dynamic capabilities, business model innovation, institutional/contingency theories, and critical theory.

Keywords: Digital Transformation; Organizational Performance; Bibliographic Coupling; Bibliometric Review; Paradigmatic Convergence; Business Model Innovation.

2.1 INTRODUCTION

Digital transformation (DT) has become an organizational imperative, reshaping how firms create value, compete, and relate to stakeholders. The integration of digital technologies has moved beyond the isolated adoption of technologies toward broader organizational reconfiguration that affects business models, operational structures, and strategic orientation (Schallmo et al., 2017; Vial, 2019). Competitive pressures, rising customer expectations, and crisis-driven adaptations have accelerated this phenomenon, making it increasingly important to understand how DT initiatives translate into measurable organizational outcomes and sustainable competitive advantage (Bharadwaj et al., 2013; Nambisan et al., 2019; Westerman et al., 2014; Vial, 2019).

Research on DT and organizational performance has expanded significantly in recent decades, incorporating diverse theoretical lenses and empirical approaches. Early contributions established fundamental definitions and conceptual boundaries for the phenomenon (Vial, 2019), while subsequent studies examined the mechanisms linking digital transformation and performance, including dynamic capabilities, digital innovation, data-driven strategies, and business model renewal (Nambisan et al., 2019; Schallmo et al., 2017). Despite this progress, relevant reviews note that the field remains difficult to integrate, exhibiting fragmentation in terms of constructs, measurement choices, levels of analysis, and sectoral contexts (Reis et al., 2018; Verhoef et al., 2021).

This fragmentation is also reflected in divergent empirical findings: while some studies report positive relationships between DT and performance (Fischer et al., 2020; Luu, 2023), others emphasize implementation challenges, cultural misalignment, and performance deterioration or trade-offs associated with transformation (Ahmed et al., 2024; Lang et al., 2023). As a result, organizations face a research landscape that offers abundant insights but limited

convergence regarding the dominant mechanisms and the conditions under which digital transformation contributes to performance.

Despite the growth of academic production on DT, there is still a lack of systematic understanding of how research on DT and performance is organized in terms of conceptual approaches, how these approaches relate to one another, and which structural patterns guide the development of the field. Existing reviews provide relevant syntheses in related domains, such as strategy, innovation, and information systems, but tend to rely on narrative or integrative methods that do not empirically examine the internal structure of the field (Reis et al., 2018; Verhoef et al., 2021). Recent studies highlight the coexistence of efficiency-oriented perspectives alongside approaches emphasizing contingency, complexity, and institutional constraints (Merín-Rodríguez et al., 2024; Mladenova, 2024), yet these tensions remain insufficiently organized within an empirically grounded analytical structure. Consequently, it remains unclear whether the diversity of studies on DT and performance reflects genuinely alternative theoretical perspectives or variations within a shared set of conceptual assumptions (Mekonnen & Watat, 2020; Susanti et al., 2023; Verhoef et al., 2021; Vial, 2019). This ambiguity limits the theoretical advancement of the field and reduces its capacity to provide more robust guidance for organizations seeking to develop digital transformation strategies suited to different organizational and institutional contexts.

In light of this gap, the research question guiding this study is: how does the thematic structure of the empirical literature on digital transformation and organizational performance reveal patterns of theoretical convergence, and what are their implications for the development of the field? Accordingly, the objective of this study is to demonstrate how the thematic structure of the literature on digital transformation and organizational performance reveals patterns of theoretical convergence and their implications for the development of the field.

To address this question, we adopt a bibliometric design based on bibliographic coupling, supported by principal component analysis and network mapping techniques. The analysis encompasses empirical articles indexed in the Web of Science and Scopus that investigate the relationship between DT and organizational performance, published up to December 2024. This approach enables the identification of conceptually coherent clusters, the examination of their interconnections, and the reduction of interpretive subjectivity by relying on quantitative procedures of similarity and clustering (Zupic & Čater, 2015).

This study contributes to the digital transformation literature by shifting the debate from the predominant diagnosis of fragmentation to the analysis of the theoretical implications of the field's structure. First, it offers an empirically grounded representation of the thematic organization of research on DT and performance, highlighting patterns of conceptual convergence across different analytical strands. Second, based on a critical interpretation of the bibliometric findings, it argues that, despite apparent diversity, research on DT and performance tends to be organized around shared assumptions. These assumptions treat digitalization as an organizational imperative and frame performance predominantly under optimization-oriented logics. By making this convergence pattern visible, the study contributes to reflection on the structural limits of the field. It underscores the need for alternative frameworks capable of explaining phenomena such as technological non-adoption, organizational resistance, and value creation systems that transcend market competitiveness.

2.2 PREVIOUS REVIEWS ON DIGITAL TRANSFORMATION

The literature on Digital Transformation (DT) and its impact on organizations has attracted considerable scholarly attention, resulting in multiple review studies that differ substantially in analytical focus, empirical grounding, and methodological approach. To position this study within the existing landscape, we examine key reviews that address DT from different perspectives and identify their limitations for the empirical mapping of the field. Table 2 presents a comparative analysis of seven relevant reviews, organized by type of approach, highlighting gaps that motivate the bibliometric design adopted in this work.

Existing reviews can be grouped into four broad approaches, each with distinct strengths and limitations. Integrative reviews and practitioner-oriented syntheses seek to consolidate findings within specific domains, such as digital strategy and maturity (Reis et al., 2018) or DT business models and implementation roadmaps (Schallmo et al., 2017). However, they face scope constraints that limit their analytical reach. These reviews provide useful overviews of specific DT dimensions but do not directly examine the relationship between DT and performance, nor the relational structure among the studies that investigate it.

Conceptual and prescriptive approaches offer theoretical frameworks and definitional clarity but do not test whether their distinctions correspond to how empirical research is actually

organized. Vial (2019) establishes foundational definitions based on a broad corpus but does not structure it quantitatively; Verhoef et al. (2021) propose a multidisciplinary framework encompassing strategy, operations, marketing, and information systems, yet remain at a normative level without structural empirical grounding.

Prescriptive frameworks tend to attribute contradictory findings to implementation problems rather than considering whether tensions within the field's conceptual apparatus itself may generate conflicting orientations. Mekonnen and Watat (2020) identify areas of DT impact on business models, processes, and capabilities but do not examine whether these categories reflect distinct or overlapping intellectual commitments. Finally, thematic and empirically oriented contributions identify relevant tensions, such as those between efficiency-oriented perspectives and contingency-based approaches (Mladenova, 2024), or the mediating role of business model innovation in SMEs (Merín-Rodríguez et al., 2024), but rely on selective interpretations or designs centered on a single mechanism rather than on a systematic analysis of how the broader field is organized around shared theoretical commitments.

Despite their individual contributions, these approaches share two interrelated limitations. First, none employ methods capable of revealing how studies in the DT–performance domain relate to one another through shared reference bases. The current understanding of the field's structure depends on the reviewer's interpretive judgment rather than on empirical evidence of clustering, convergence, or divergence among studies. This means that existing reviews are unable to determine whether the field's apparent thematic diversity reflects genuinely distinct theoretical orientations or variations within a widely shared set of assumptions.

Second, because existing reviews synthesize conclusions rather than map the relational organization of research, they cannot systematically distinguish between genuine knowledge gaps and areas in which the absence of research may reflect the field's own analytical boundaries. Without understanding how studies cluster around specific theoretical commitments, it becomes difficult to identify where new empirical investigations are needed and where the research questions themselves must be reformulated.

These limitations underpin the bibliometric design adopted in this study. By employing bibliographic coupling and exploratory factor analysis, we identify empirical patterns of how research on DT and performance is organized around shared reference bases, allowing thematic convergences and divergences to emerge from the data rather than from interpretive

classifications. This approach addresses relational and structural questions that narrative, integrative, and meta-analytic reviews are not methodologically equipped to confront.

Table 2

Previous reviews on digital transformation

Review	Review Type	Analytical Focus	Corpus / Method	Key Limitations for Field Mapping
Schallmo et al. (2017)	Integrative review	DT business models, enablers, and implementation roadmaps.	Narrative synthesis of DT practitioner and academic literature.	Practitioner-oriented; does not examine empirical DT–performance relationships or map how research clusters thematically.
Reis et al. (2018)	Integrative review	Digital strategy, maturity models, and organizational readiness.	Selective review; no systematic search protocol reported.	Focused on strategy and maturity dimensions; does not address performance outcomes or the relational structure among studies.
Vial (2019)	Conceptual narrative review	Definitions, building blocks, and theoretical foundations of DT.	192 articles; narrative synthesis without quantitative structuring.	Provides definitional clarity but does not empirically examine how studies relate through shared references or cluster around theoretical commitments.
Mekonnen & Watat (2020)	Systematic literature review	DT impacts on business models, processes, and capabilities.	57 articles from Scopus; thematic content analysis.	Identifies DT impact areas but does not map inter-study relationships or examine whether thematic categories reflect distinct or overlapping theoretical foundations.
Verhoef et al. (2021)	Multidisciplinary conceptual framework	DT phases, organizational capabilities, and strategic implications across marketing, strategy, operations, and IS.	Conceptual synthesis; no systematic corpus or empirical structuring.	Broad multidisciplinary scope but normative and prescriptive; does not test whether proposed distinctions correspond to empirical research organization.
Mladenova (2024)	Thematic narrative review	Tensions between efficiency-oriented and contingency-based perspectives in SME digitalization.	Selective review; interpretive synthesis.	Identifies important theoretical tensions but relies on the reviewer’s classification rather than empirical evidence of how studies cluster.
Merín-Rodríguez et al. (2024)	Empirical study with integrative framing	DT, BMI, and firm performance in innovative SMEs.	Survey-based; integrative literature framing.	Examines a specific mediating mechanism (BMI) but does not map the broader field or examine

Review	Review Type	Analytical Focus	Corpus / Method	Key Limitations for Field Mapping
				relationships among research streams.
<i>This study</i>	Structuring bibliometric review	Thematic structure of DT–performance research; convergence and divergence patterns across the research front.	63 empirical articles from WoS and Scopus; bibliographic coupling, EFA, and network analysis.	-

Note: Developed based on the database of theoretical articles on Digital Transformation identified through the search strings of this study and not included in the bibliometric study sample (2025).

2.3 METHOD

To examine how research on digital transformation (DT) and organizational performance is thematically organized, this study adopts a structuring bibliometric approach (Snyder, 2019). Specifically, we combine bibliographic coupling with principal component analysis (PCA) and network mapping to identify latent thematic dimensions at the research frontier on DT and performance. Following established procedures in bibliometric mapping, the analysis compiles a broad corpus of empirical publications (Diodato, 1994) and maps patterns of scientific communication within a defined thematic area (Börner et al., 2003; Boyack et al., 2005), in line with previous structuring reviews in the management field (Scazziota et al., 2020).

Bibliographic coupling was chosen instead of co-citation analysis because coupling is more sensitive to emerging and recent themes and is therefore more appropriate for mapping the current research frontier in a consolidating field (Vogel & Güttel, 2012). While co-citation analysis reveals the intellectual foundations upon which a field is built, bibliographic coupling captures how contemporary studies are related through shared references, making it more suitable for identifying ongoing thematic developments in DT research. To enhance interpretability, bibliographic coupling is complemented by PCA, which extracts latent components from the coupling structure, and by network analysis, which visualizes interconnections and examines the structural properties of the resulting thematic landscape (Habib & Afzal, 2019; Leydesdorff, 2002).

2.3.1 Data collection and sampling strategy

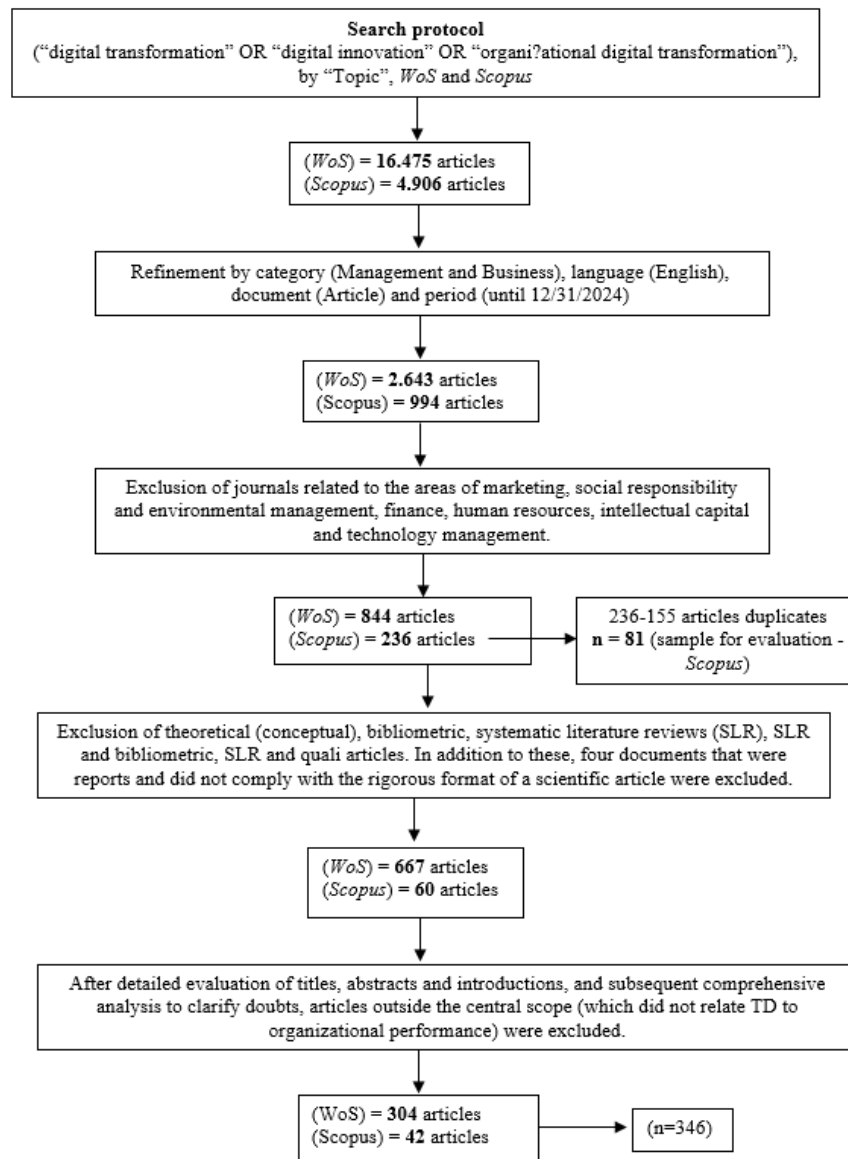
The Web of Science (WoS) and Scopus databases were used, selected for their broad coverage of peer-reviewed journals and their frequent use in bibliometric research in the fields of management and social sciences (Scazziota et al., 2020; Zupic & Čater, 2015). The search strategy combined Boolean operators with the terms “digital transformation” OR “digital innovation” OR “organizational digital transformation,” adapting the spelling of “organizational/organisational” to capture common English variations. The term “performance” was deliberately excluded from the search string to avoid excessively restricting retrieval, as performance outcomes are operationalized using heterogeneous terminology in the literature, including financial performance, innovation performance, competitive advantage, operational efficiency, and firm growth, among others.

Pilot searches confirmed that including “performance” in the query excluded a substantial proportion of relevant studies that address performance outcomes without using the term in their titles, abstracts, or keywords. The relationship between DT and performance was therefore ensured during the manual screening process (see below). Searches were limited to English-language journal articles published up to December 31, 2024, with no restriction on the starting date, reflecting the relatively recent consolidation of DT research. To maintain alignment with the study’s objective and disciplinary scope, results were filtered to the business/management subject area.

Subsequently, rigorous inclusion criteria were applied to ensure relevance and analytical comparability (Vogel & Güttel, 2012). Records outside the core scope of digital transformation research in business and management were excluded. Titles, abstracts, and introductions were systematically reviewed, and full texts were consulted when necessary to classify studies by research type (qualitative, quantitative, or mixed). Theoretical articles, systematic literature reviews, and bibliometric studies were excluded, as they do not provide direct empirical evidence on organizational outcomes. Only empirical articles that explicitly examined the relationship between digital transformation and organizational performance were retained. Screening was conducted independently by two authors. The complete sampling process is illustrated in Figure 1.

Figure 1

Final Sampling Flowchart



Note. Developed by the author based on data collected from Web of Science (WoS) and Scopus (2025).

2.3.2 Data processing and analysis procedures

To analyze the interconnections among the selected articles, Bibexcel was used to perform bibliographic coupling, a technique that identifies how documents are related through shared references and maps thematic streams within a field (Vogel & Güttel, 2012). The number of shared references between two articles serves as an indicator of thematic proximity: the greater

the number of references in common, the higher the likelihood that the studies draw on overlapping knowledge bases and address related research questions. After exporting records and cited references from WoS and Scopus, the datasets were integrated in Bibexcel. This process reconciled differences in reference formatting across the databases, such as variations in author name spelling, abbreviated versus full journal titles, and the presence of DOIs. This was achieved through automated matching combined with manual verification of ambiguous cases. The procedures described by Serra et al. (2018) were followed to calculate coupling. The result was an article-by-article bibliographic coupling matrix ($N = 346$), in which each cell represents the coupling strength between a pair of articles based on shared references.

To reduce complexity and achieve greater analytical clarity, a network pruning procedure was applied to reduce the sample size. UCINET (Borgatti et al., 2002) was used to examine and visualize the resulting thematic structure as a network. In the network representation, nodes correspond to articles and edges represent bibliographic coupling ties (i.e., connections through shared references) between them. To focus on substantively relevant connections and reduce noise, the network was filtered to include only links between articles that shared at least 10 coupled references with at least one other article. This technique is employed to make the analysis more precise, as weaker ties (few connections between documents in bibliographic coupling) would not establish meaningful conceptual relationships in the analysis (Liu et al., 2018; Vogel & Güttel, 2012; Wasserman & Faust, 1994). The final sample consisted of 85 articles (25% of the sample), establishing 15,772 coupling ties (20% of the total).

Next, principal component analysis (PCA) was applied to identify clusters of studies with similar thematic foundations. Following Lin and Cheng (2010), the bibliographic coupling matrix was transformed into a Pearson correlation matrix and analyzed in SPSS using PCA with varimax rotation. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.667, classified as “mediocre” according to Kaiser’s (1974) typology, but above the minimum acceptable threshold of 0.50. In bibliometric applications involving specialized corpora, moderate KMO values are not uncommon, as the coupling matrix reflects a structured knowledge domain rather than a psychometric instrument (Hair et al., 2019). Bartlett’s Test of Sphericity was significant ($\chi^2(1953) = 4836.263$, $p < 0.001$), confirming that the correlation matrix was appropriate for factor extraction.

Component retention was based on a combination of the eigenvalue-greater-than-one criterion, inspection of the scree plot, and substantive interpretability. The four-component solution explains 57.83% of the total variance: Component 1 accounts for 19.85%, Component 2 for 16.44%, Component 3 for 16.23%, and Component 4 for 5.31%. Although Component 4 is the smallest cluster, with $n = 3$ articles and a modest variance explanation, it was retained as a separate component to capture a substantively distinct mechanism — specifically, analytics capability and data-driven decision-making — which is qualitatively different from the strategic, capability-based, and business model logics of the other three components. Its merging with another cluster would obscure this specificity at the mechanism level.

Communalities were evaluated based on a minimum threshold of 0.50, and only factor loadings equal to or greater than 0.40 were considered for allocation into clusters (Hair et al., 2019). Each article was assigned to the component in which it exhibited its highest loading, grouping thematically related studies into coherent subfields.

Of the 85 articles in the corpus, 63 exhibited salient loadings and constitute the core set analyzed in Section 2.4. The remaining articles did not meet the loading threshold in any component. A review of these excluded articles indicates that they cover heterogeneous topics, including sector-specific DT applications, studies at the national digital economy level, and methodologically distinct contributions, without converging into an identifiable thematic cluster. Their exclusion is acknowledged as a limitation (see Section 2.6.4), although their dispersion is consistent with the convergence pattern observed among the retained studies.

Subsequently, standard measures of network density, cohesion, and centrality were calculated, and visualization was used to assess the relative prominence of studies and the interconnections among the four factors. Finally, the components were named through detailed content analysis, supported by a spreadsheet synthesizing the main information for each article (authors, title, abstract, journal, year, objectives, definitions of DT and performance, research type, methodology, theoretical foundation, results, contributions, and future research agenda). The combination of bibliographic coupling, PCA, and network analysis enabled the identification and interpretation of structured clusters of empirical studies that underpin the thematic map presented in the following section.

2.4 RESULTS

2.4.1 Bibliographic coupling

From the full corpus of 346 empirical articles, 63 exhibited salient loadings (≥ 0.40) on at least one component and constitute the core set represented in Table 3. These articles were assigned to the component on which they exhibited their highest loading, resulting in four thematic clusters that capture distinct yet interrelated approaches to digital transformation (DT) and organizational performance. Component 1 contains 27 articles, Component 2 contains 17, Component 3 contains 16, and Component 4 contains 3. Table 3 presents the complete rotated component matrix for the 63 core articles.

Table 3

Factor loadings of the articles from the exploratory factor analysis

	Rotated Component Matrix ^a			
	Component 1	Component 2	Component 3	Component 4
Deist_2023	0,731	0,162	0,258	-0,073
Liu_2024	0,729	0,272	0,296	0,037
Trischler_2022	0,713	0,375	0,248	-0,065
Ates_2022	0,688	0,217	0,335	0,236
Peter_2020	0,681	0,207	0,117	-0,002
Piepponen_2022	0,661	0,319	0,407	-0,1
Reuschl_2022	0,645	0,3	0,111	0,122
Vuchkovski_2023	0,638	0,416	0,235	0,296
Khurana_2022	0,631	0,18	0,326	0,349
Firk_2022	0,62	0,214	0,241	-0,187
Kraft_2022	0,601	0,28	0,104	0,06
Lei_Tang_2024	0,598	0,204	0,017	0,084
Schildt_2024	0,595	0,204	0,27	0,022
Jafari_Sadeghi_2023	0,594	0,593	0,015	0,205
Mattos_2024	0,592	0,367	0,468	-0,114
Firk_2021	0,587	0,162	0,153	-0,231
Tsou_2023	0,581	0,579	0,069	-0,061
Ghosh_2022	0,577	0,175	0,445	0,331
Chirumalla_2021	0,562	-0,001	0,522	0,298
Chen_Tian_2022	0,546	0,364	-0,025	0,07
Schuster_2023	0,543	0,354	0,301	0,392
Tortora_2021	0,533	0,38	0,167	0,464
Matarazzo_2021	0,53	0,08	0,379	0,46
Scuotto_2021	0,528	0,333	0,017	0,404
Fernandez_Vidal_2022	0,505	0,473	0,084	0,15
Lei_Tang_2023	0,438	0,327	-0,046	0,084
Weber_Cilliers_2024	0,400	-0,138	0,07	0,297
Fang_2023	0,388	0,78	-0,059	-0,021
Nasiri_2020	0,228	0,703	0,129	-0,162

AlNuaimi_2022	0,152	0,701	0,007	0,097
Luu_2023	0,274	0,693	0,088	0,208
Luu_2024	0,237	0,681	0,008	0,227
Malodia_2023	0,164	0,681	-0,058	0,294
Chatterjee_2022	0,088	0,68	-0,099	0,2
Marino_Romero_2023	0,478	0,667	0,12	0,034
Kargas_2023	0,367	0,666	-0,024	0,06
AL_Khatib_2024	-0,299	0,64	-0,06	0,31
Ramadan_2023	0,154	0,637	0,319	0,024
Zahoor_2023	0,426	0,602	-0,091	0,139
Li_2024	0,423	0,599	0,212	0,074
Chatterjee_2022_A	0,125	0,592	-0,045	-0,079
Zhang_2023	0,442	0,582	0,055	0,097
Nguyen_Tran_2023	0,15	0,482	-0,018	-0,079
Valdez_Juarez_2023	0,122	0,477	0,16	0,128
Haftor_Costa_2023	-0,041	0,066	0,886	-0,007
Sund_2021	0,103	0,046	0,871	0,1
Karami_2022	0,097	0,047	0,86	0,035
Latilla_2020	0,215	-0,044	0,829	0,007
Thomson_2023	0,138	0,016	0,816	-0,047
Cozzolino_2018	-0,061	-0,038	0,794	-0,058
Burstrom_2021	0,204	-0,052	0,781	0,151
Correani_2020	0,348	0,099	0,716	0,002
Sjodin_2021	0,035	-0,09	0,686	0,144
Remane_2022	0,428	0,201	0,677	-0,193
AlMulhim_2021	0,172	0,365	0,61	-0,168
Gehde_2022	0,546	0,183	0,609	-0,171
Warner_Wager_2019	0,385	-0,004	0,586	0,054
Coreynen_2024	0,084	-0,117	0,538	0,341
Heubeck_2023	0,442	0,446	0,475	0,003
Geurts_2023	0,315	-0,05	0,402	0,018
Chen_Luo_2022	0,331	0,113	0,257	0,688
Garmaki_2023	-0,098	0,259	-0,093	0,594
Korherr_2022	-0,089	0,318	-0,066	0,547

Note. Extraction method: principal component analysis generated in SPSS (2024). The complete information on these studies is provided in Appendix A.

The four components are briefly characterized below. Detailed descriptions are presented in Section 2.4.2.

Component 1 (n = 27; 19.85% of the variance) consolidates strategic and organizational approaches to the implementation of digital transformation (DT) and its performance outcomes. The studies emphasize coordination, governance, strategic renewal, and organizational arrangements that enable DT to be scaled (e.g., Firk et al., 2021; Firk et al., 2022; Schildt et al., 2024; Scuotto et al., 2021; Trischler et al., 2022). This component was labeled “Strategic and Organizational Dimensions of Digital Transformation.” The studies span the period from 2020 to 2024.

Component 2 (n = 17; 16.44% of the variance) emphasizes capabilities, leadership orientations, and strategic choices that enable DT and condition performance outcomes, particularly in SMEs and turbulent contexts (e.g., AlNuaimi et al., 2022; Luu, 2023, 2024; Malodia et al., 2023; Nasiri et al., 2020; Ramadan et al., 2023; Zahoor et al., 2023). This component was labeled “Organizational Capabilities, Leadership, and Strategies for Digital Transformation.” The studies span the period from 2020 to 2024.

Component 3 (n = 16; 16.23% of the variance) conceptualizes DT as business model innovation (BMI) and the reconfiguration of value creation logics. The studies examine how DT enables new value propositions, ecosystem roles, and value capture architectures through experimentation, learning, and scalability (e.g., Coreynen et al., 2024; Cozzolino et al., 2018; Remané et al., 2022; Sjödin et al., 2021; Thomson et al., 2023; Warner & Wäger, 2019). This component was labeled “Digital Transformation and Business Model Innovation.” The studies span the period from 2018 to 2024.

Component 4 (n = 3; 5.31% of the variance) isolates a mechanism-level stream focused on analytics capability and data-driven decision-making as mediators between DT and performance (Chen & Luo, 2022; Garmaki et al., 2023; Korherr et al., 2022). This component was labeled “Data-Driven Decision-Making and Analytics Capabilities in Digital Transformation.” The studies span the period from 2022 to 2023.

To visualize the interconnections among the four clusters, a bibliographic coupling network was constructed in UCINET using the 63 core articles, as presented in Figure 2. Each node represents an article, and each edge represents a bibliographic coupling tie, indicating that two articles share overlapping reference bases. Each component was identified by a geometric shape in the network (Figure 2). The resulting visualization reveals a densely connected field in which the four components remain distinguishable yet strongly interrelated. Visually prominent nodes, such as Trischler et al. (2022) and Warner and Wäger (2019), indicate publications that are strongly connected to multiple studies across different clusters, functioning as anchors of central debates in the field.

Table 4 presents density and cohesion indicators for each component. Density indicates the proportion of coupling ties realized within each component relative to the total possible ties, reaching its maximum value when all articles within a component share references with all others, signaling conceptual uniformity (Scazziota et al., 2020). Cohesion relates the internal

connectivity of the component to its external connectivity, indicating the degree to which a cluster is internally consolidated or externally integrated (Wasserman & Faust, 1994).

Table 4

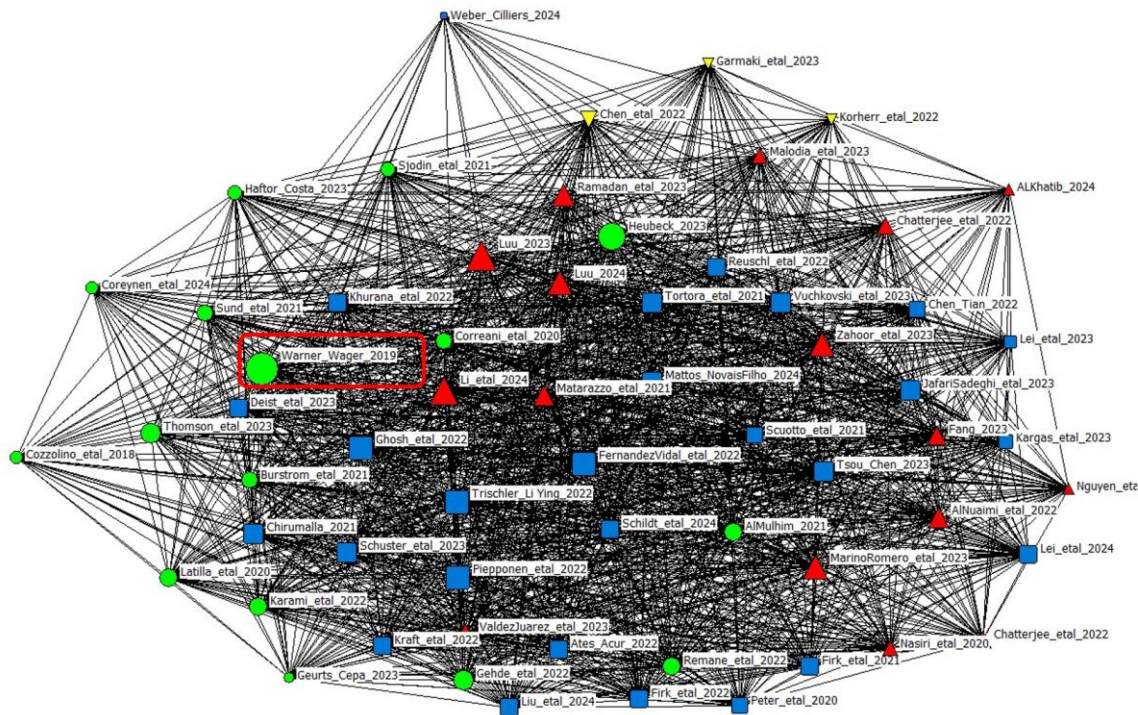
Density, Cohesion, Centrality, Variances, KMO and Bartlett's Test

Component	# of Documents	Density	Cohesion	Centrality	Variância Explicada	Variância Acumulada	KMO and Bartlett's Test
1	■ 27	0.95	1.09	Piepponen et al. (2022)	35.74%	35.74%	0.667 and $\chi^2$4836.263/19 53
2	▲ 17	0.96	1.16	Luu (2023)	12.83%	48.57%	
3	● 16	0.95	1.17	Warner & Wager (2019)*	4.89%	53.46%	
4	▼ 3	1.00	1.36	Chen et al. (2022)	4.37%	57.83%	
Total	63	-	-	-	-	-	-

Note. Developed based on the Pearson correlation matrix (2025).

Figure 2

Bibliographic coupling network diagram for 2019–2024



Note. Component 1 – blue square; Component 2 – up triangle red; Component 3 – green circle; Component 4 – down triangle yellow.

2.4.2 Description of the factors

2.4.2.1 *Component 1: strategic and organizational dimensions of digital transformation and their impacts on performance*

Component 1 is the largest cluster in the rotated solution. It consolidates what may be characterized as the dominant perspective in the literature on digital transformation (DT) and performance. Digital transformation is primarily understood as a process of strategic and organizational renewal. In this context, performance outcomes depend less on technological adoption per se and more on how firms mobilize organizational arrangements (strategy, structures, coordination, and human capabilities) to convert digital initiatives into results.

A first shared axis concerns strategic renewal and top management attention. Several studies within this component treat digital initiatives as relevant to performance only when translated into broad organizational priorities and governance routines. In this sense, DT is framed as a problem of strategic reorientation: firms must sustain managerial focus, connect dispersed initiatives, and institutionalize mechanisms that prioritize digital renewal. Importantly, this line of argument also highlights internal organizational barriers to strategic renewal. For instance, organizational secrecy may restrict knowledge flows across units and reduce top management's ability to recognize and scale digital innovation opportunities, particularly those requiring complex cross-functional coordination, thereby weakening renewal trajectories (Schildt et al., 2024). This reinforces the idea that the effects of DT on performance are mediated by internal transparency, attention allocation, and integrative coordination.

A second central theme concerns organizational design and orchestration mechanisms that enable the scaling of digital innovation. Rather than treating digital transformation as a set of isolated projects, this component frames it as a portfolio of initiatives whose performance impact depends on coordination beyond organizational boundaries. Studies in this cluster highlight the role of structural arrangements that sustain exploration and scalability, including how firms organize innovation units and manage their evolution over time (Trischler et al., 2022). In this interpretation, performance improvements emerge when DT is embedded in organizational routines that coordinate tensions between exploration and exploitation and avoid fragmented digitalization, in which initiatives remain localized and fail to translate into firm-level outcomes.

Third, the component emphasizes DT as a challenge of capabilities and resource configuration, in which performance gains are associated with how firms align complementary resources, both technological and non-technological. A recurring idea is that the performance effects of digitalization often depend on complementarities — that is, on combinations of digital technologies and organizational investments that jointly generate impact, rather than isolated technologies producing automatic effects (Firk et al., 2021; Firk et al., 2022). This logic is consistent with the broader strategic management argument that the returns from digitalization are contingent upon how technologies are combined with organizational structures, processes, and managerial choices.

Fourth, the component places explicit emphasis on microfoundations and human capital as sources of performance outcomes. Rather than defining capabilities solely at the firm level, this stream highlights the individual competencies and skills that enable organizations — particularly SMEs — to translate digital tools into growth and innovation performance. From a microfoundational perspective, internal digital capabilities at the employee level are positioned as relevant for SME growth and innovation in the digital era (Scuotto et al., 2021). This reinforces a consistent message throughout the component: digital technologies create potential, but performance materializes through people’s skills, managerial attention, and the organizational capacity to mobilize these competencies at scale.

Fifth, the component incorporates investment choices and resource allocation trade-offs as practical mechanisms in performance-oriented DT research. Digital transformation requires not only strategic intent but also the capacity to finance and structure integration work. In omnichannel contexts, for example, DT outcomes depend on investment capacity and on how firms make trade-offs between financial and human resources to enable scalable and agile integration across channels and supply chain operations (Weber & Cilliers, 2024). This shifts the focus beyond strategic intent, emphasizing the operational reality that performance gains depend on consistent resource allocation decisions over time.

Finally, Component 1 consistently treats the relationship between DT and performance as conditional rather than automatic. Performance improvements are typically associated with alignment, capability development, coordination, and investment discipline, whereas implementation frictions may generate tensions, such as cost escalation, coordination overload, or internal contradictions that reduce returns (Chen & Tian, 2022; Schuster et al., 2023; Vuchkovski

et al., 2023). The literature within this component tends to frame negative outcomes not as evidence against DT, but as indications that strategic and organizational conditions were insufficiently developed or poorly coordinated.

Taken together, studies within Component 1 position DT as a strategic and organizational pathway to performance, with outcomes shaped by managerial attention, transparency and knowledge sharing, organizational arrangements for scaling innovation, complementarities between investments, and microfoundational digital capabilities (Firk et al., 2021; Scuotto et al., 2021; Schildt et al., 2024; Trischler et al., 2022).

2.4.2.2 Component 2: organizational capabilities, leadership, and strategies for digital transformation

Component 2 represents a highly cohesive research stream that conceptualizes digital transformation (DT) as a process driven by organizational capabilities, leadership orientations, and strategic choices, particularly in SMEs and in emerging economy contexts. Whereas Component 1 addresses the strategic and structural preconditions for DT, the studies loading on this factor focus on how firms mobilize internal capabilities and leadership practices to enable, accelerate, and stabilize digital transformation efforts, thereby shaping performance outcomes.

A first unifying theme is the centrality of dynamic and organizational capabilities as enabling conditions for DT. Studies within this component consistently demonstrate that digital transformation outcomes depend on firms' ability to develop and combine sensing, learning, integration, and reconfiguration competencies that allow them to respond to technological and market changes (Fang et al., 2023; Nasiri et al., 2020; Valdez-Juárez et al., 2024). Rather than treating DT as a mere technological upgrade, this stream frames it as a capability-building trajectory in which organizational readiness and adaptability determine whether digital initiatives translate into improved performance.

A second theme highlights leadership orientations and managerial agency as central drivers of transformation. Several studies emphasize that digital leadership shapes DT outcomes by defining strategic priorities, fostering empowerment, and aligning organizational members around digital initiatives (AlNuaimi et al., 2022; Luu, 2023; Luu, 2024). From this perspective, leadership is not merely supportive but constitutive of DT, influencing employee creativity,

engagement, and willingness to adopt new digital practices. Empirical evidence shows that leadership behaviors mediate the relationship between digital initiatives and performance outcomes, particularly through psychological empowerment, meaningfulness of work, and organizational commitment (Luu, 2023).

A third theme concerns strategic agility and organizational learning as mediating mechanisms. Several studies demonstrate that agility enables firms to reconfigure processes, supply chains, and routines in response to digital pressures, while organizational learning facilitates the assimilation and institutionalization of digital knowledge (Fang et al., 2023; Nasiri et al., 2020; Ramadan et al., 2023). Knowledge transfer and learning processes strengthen the link between leadership and DT outcomes, indicating that transformation is sustained not by isolated initiatives but by continuous learning embedded in organizational practices.

A fourth theme addresses contextual and structural contingencies, particularly in SMEs. Research in this component shows that resource constraints, digital self-efficacy, and managerial cognition condition DT trajectories and performance outcomes (Malodia et al., 2023; Zahoor et al., 2023). SMEs are portrayed as particularly sensitive to leadership quality and capability configuration, as limited organizational slack amplifies the consequences of strategic choices. Studies also highlight that formalized digital strategies contribute to aligning capabilities and leadership actions, providing coherence that enhances DT effectiveness (AlNuaimi et al., 2022; Marino-Romero et al., 2023).

Finally, the component includes performance-oriented empirical evidence linking capabilities and leadership to firm-level outcomes. Studies indicate that capability development and leadership alignment are associated with improved innovation performance, operational efficiency, and financial performance, especially in turbulent or rapidly changing environments (Kargas et al., 2023; Li et al., 2024; Nguyen et al., 2023; Zhang et al., 2023). Performance heterogeneity is explained not by the mere presence of digital technologies but by differences in how organizations mobilize leadership, learning, and capability combinations to sustain transformation.

Taken together, Component 2 frames digital transformation as a capability- and leadership-oriented organizational process. Performance outcomes emerge when firms develop internal capabilities, cultivate digitally oriented leadership, and embed learning and agility into strategic practice. This stream provides strong empirical support for the view that the

performance effects of DT are mediated by internal organizational conditions rather than by technology alone.

2.4.2.3 Component 3: digital transformation and business model innovation

Component 3 captures a cohesive research stream in which business model innovation (BMI) operates as the central mechanism linking digital transformation (DT) to organizational performance. Rather than conceptualizing DT as the direct adoption of digital technologies, studies loading on this factor consistently frame transformation as a process of reconfiguring how firms create, deliver, and capture value. Performance outcomes emerge when digital technologies are embedded in renewed business model architectures through experimentation, learning, and scalability, rather than simply layered onto unchanged value logics.

A first unifying theme concerns business model renewal under technological disruption. Seminal contributions within this component demonstrate that DT unfolds as a continuous process in which incumbent firms adapt their business models in response to new digital technologies, often under conditions of uncertainty and competitive pressure (Cozzolino et al., 2018; Warner & Wäger, 2019). These studies emphasize that successful transformation depends on alignment among technological possibilities, strategic intent, and organizational arrangements, highlighting BMI as a dynamic and path-dependent process rather than a one-off redesign exercise.

A second theme emphasizes digital service innovation and servitization trajectories. Several studies show how firms transition from product-centric logics to digitally enabled services, platforms, and outcome-oriented solutions, requiring continuous alignment between learning and strategic coherence. Business model innovation is portrayed as a recursive process in which experimentation and alignment reinforce one another over time, particularly in digital service contexts (Coreynen et al., 2024; Sjödin et al., 2021). These works demonstrate that performance gains materialize when firms are able to institutionalize learning derived from experiments into scalable business model configurations.

A third theme addresses organizational arrangements and experimentation infrastructures that sustain BMI. Research in this cluster examines how firms organize exploratory activities through innovation labs, pilot projects, and temporary structures, while simultaneously

confronting the challenge of integrating these initiatives into the core organization (Sund et al., 2021; Thomson et al., 2023). This literature demonstrates that isolated experimentation is insufficient; performance effects depend on governance mechanisms that enable the transition from exploration to exploitation and prevent digital initiatives from remaining fragmented or merely symbolic.

A fourth theme highlights ecosystem positioning and the reconfiguration of value networks. Several studies conceptualize BMI as an ecosystem-level phenomenon in which digital technologies reshape interdependencies among actors, redefine roles, and redistribute value capture. From this perspective, platforms, data infrastructures, and AI-based solutions alter not only firm boundaries but also coordination mechanisms and governance arrangements across ecosystems (Burström et al., 2021; Remané et al., 2022). These studies emphasize that business model innovation involves strategic choices regarding openness, control, and orchestration, with direct implications for competitive positioning and performance.

Finally, the component incorporates performance-oriented mechanisms and mediating processes. Empirical evidence shows that DT affects performance indirectly through its influence on business model configurations and associated organizational capabilities. Sophisticated technologies, data-driven processes, and digital infrastructures improve performance when coherently integrated into renewed business models rather than treated as isolated investments (AlMulhim, 2021; Gehde et al., 2022; Heubeck, 2023). Across different contexts, studies converge on the idea that performance heterogeneity reflects differences in firms' ability to validate, scale, and institutionalize digitally enabled business models.

Taken together, Component 3 conceptualizes digital transformation as a business model problem sustained by a logic of repeatable learning. Firms translate digital technologies into performance by experimenting with new value propositions, delivery mechanisms, and revenue models, embedding these experiments into governance and organizational design, and ultimately scaling successful configurations within the firm and its ecosystem. In this interpretation, technology becomes an enabler of strategic architecture, experimentation becomes a central organizational routine, and performance emerges from the institutionalization of business models that work in practice (Coreynen et al., 2024; Cozzolino et al., 2018; Remané et al., 2022; Warner & Wäger, 2019).

2.4.2.4 Component 4: data-driven decision-making and analytics capabilities in digital transformation

Component 4 captures a focused, mechanism-level research stream that examines how digital transformation (DT) affects organizational performance through analytics capabilities and changes in managerial decision-making logics. Unlike the other components, which operate at broader levels — strategic, organizational, or business model — this component isolates the micro-mechanisms through which digital technologies are translated into performance outcomes. This includes the development of analytics capabilities and the institutionalization of data-driven decision-making processes.

A first unifying theme is analytics capability as a mediating mechanism between DT and performance. Studies within this component demonstrate that digital investments do not generate performance gains directly; rather, performance improvements emerge when firms develop capabilities to systematically collect, process, interpret, and use data in organizational decision-making. Based on evidence from firms adopting big data technologies, Garmaki et al. (2023) show that analytics capability enhances performance primarily through organizational learning, positioning it as the primary channel through which data become economically valuable. This finding reinforces the idea that analytics capabilities are not purely technical assets but sociotechnical systems embedded in routines, competencies, and learning processes.

A second theme concerns the transformation of managerial decision-making logics. Rather than treating DT as a uniform shift toward rational optimization, this factor highlights heterogeneity in how managers engage with data and analytics. Korherr et al. (2022) identify distinct managerial archetypes, ranging from intuition-based decision styles to fully data-driven approaches, demonstrating that DT outcomes depend on how decision authority, trust in analytics, and cognitive orientations evolve. From this perspective, digital transformation reshapes not only organizational processes but also the epistemic foundations of managerial judgment, producing divergent performance effects even among firms with similar technological infrastructures.

A third theme emphasizes the integration of analytics capabilities into organizational routines and governance structures. Chen and Luo (2022) show that data analytics contributes to performance when data-driven insights are embedded in operational and strategic routines rather

than remaining isolated within specialized units. Their findings suggest that DT requires aligning analytics capabilities with coordination mechanisms, incentive structures, and process design so that data consistently inform decision-making across organizational levels. Without such integration, analytics initiatives risk remaining symbolic or underutilized, thereby limiting their performance impact.

Taken together, Component 4 conceptualizes digital transformation as a process of decision transformation, in which analytics capabilities and data-driven logics mediate the relationship between digital technologies and performance. This component explains why firms with comparable digital investments frequently achieve different outcomes: performance depends on how data are translated into organizational learning, how managers adjust their decision practices, and how analytics are embedded in everyday routines. By isolating this mechanism, Component 4 complements the broader strategic, business model, and capability-oriented explanations presented in the other components.

2.4.3 Component analysis and theoretical convergence

After describing the four components individually, we now turn to the interpretation of what the thematic structure, considered as a whole, reveals about the theoretical development of the field. The following observations are based on the bibliometric evidence presented in Sections 2.4.1 and 2.4.2 but also engage with theoretical perspectives — including institutional theory, critical organizational studies, and political economy — that inform our reading of the convergence patterns identified in the principal component analysis.

The four-component solution reveals a field that, beneath its apparent thematic diversity, exhibits signs of convergence around a relatively delimited set of theoretical orientations. Rather than constituting competing theoretical programs — in which different theories pose distinct questions and challenge each other's assumptions — the four identified clusters appear to share a common analytical orientation. Across all factors, digital transformation is frequently treated as a necessary organizational response to competitive and technologically dynamic contexts. This orientation directs research predominantly toward optimizing implementation processes (i.e., how to transform effectively), rather than systematically examining the conditions under which digitalization may be unnecessary, unbeneficial, or inequitably distributed. The network metrics

presented in Table 4 are consistent with this interpretation, as intercomponent density and cohesion indicators suggest widely overlapping reference bases rather than clearly dissociated intellectual traditions.

This convergence manifests at different analytical levels, but in a complementary rather than competing manner. Component 1 emphasizes strategic alignment, governance, and organizational design as conditions associated with performance in digital transformation contexts. Component 2 highlights organizational capabilities, leadership orientations, and learning processes through which strategic intent is translated into transformation capacity. Component 3 emphasizes business model innovation as the mechanism through which organizational capabilities are linked to value creation. Component 4, in turn, underscores the role of analytics capabilities and data-driven decision-making practices as elements that inform and feed back into organizational decision processes. Thus, although the components operate at different levels of analysis — including organizational design, managerial capabilities, interorganizational value architectures, and decision-making logics — they tend to converge on the assumption that digital transformation constitutes a relevant process for organizational adaptation, with outcomes depending on how it is conducted and managed.

This complementarity helps explain a recurring pattern in how the literature addresses negative or ambiguous outcomes. In the studies discussed in Section 2.4.2, when digital transformation does not produce the expected performance results, explanations tend to be located within the same analytical architecture. Strategic misalignment is emphasized (Component 1), organizational capabilities are considered insufficiently developed (Component 2), business model experimentation is viewed as incomplete (Component 3), or analytics capabilities are deemed inadequate (Component 4). In this sense, negative outcomes are frequently interpreted as missing or insufficiently developed stages rather than as evidence that digital transformation itself may be inappropriate in certain organizational or institutional contexts. This interpretive pattern may contribute to the formation of self-reinforcing explanatory dynamics, in which the relationship between digital transformation and performance tends to be interpreted within a relatively stabilized set of analytical assumptions.

The interpretation proposed in this study suggests that three structural theoretical gaps remain relatively underexplored in the current literature. These points are not presented as direct results of the bibliometric analysis — which identifies patterns of thematic clustering rather than

conceptual gaps exhaustively — but rather as analytically grounded inferences regarding aspects that tend to remain outside the scope of predominantly adaptation-, capability-, and optimization-oriented approaches.

First, the literature lacks systematic attention to the politics of digital transformation. Across the four identified components, DT is predominantly theorized as a challenge of alignment, capability, and organizational design. Power relations (between management and labor, between platform owners and dependent firms, and between technology vendors and adopters) tend to receive limited systematic attention. As a result, resistance to DT is often explained as a leadership or capability failure rather than as a potentially rational response to asymmetric distributions of transformation costs and benefits.

Second, the literature still offers limited understanding of the structural conditions under which digital transformation processes may fail to generate net benefits. Negative outcomes — such as cost escalation, coordination overload, or organizational tensions — tend to be interpreted as signals of insufficient strategic or organizational preparation. Although such interpretations are often plausible, they may also contribute to consolidating an analytical structure in which unsatisfactory results are predominantly attributed to execution rather than to the structural characteristics of the transformation process itself. Future theoretical development may benefit from approaches that consider the possibility of adverse structural effects associated with digital transformation, such as excessive coordination complexity, strategic overcommitment, or innovation fatigue.

Third, the field's predominant focus on organizational- and ecosystem-level performance tends to leave the distributive consequences of digital transformation relatively underexplored. Business model innovations may generate value creation at the firm level while simultaneously displacing value across occupational, community, or sectoral scales. Similarly, the strengthening of analytics capabilities may enhance organizational decision processes but also contribute to the concentration of epistemic authority within specialized units. Such dynamics are not merely implementation challenges but structural features of the processes through which digital transformation reconfigures organizational and interorganizational arrangements.

These observations do not diminish the empirical contributions associated with the four identified factors. The literature analyzed in this study provides substantial evidence on the mechanisms through which organizations seek to conduct digital transformation processes and on

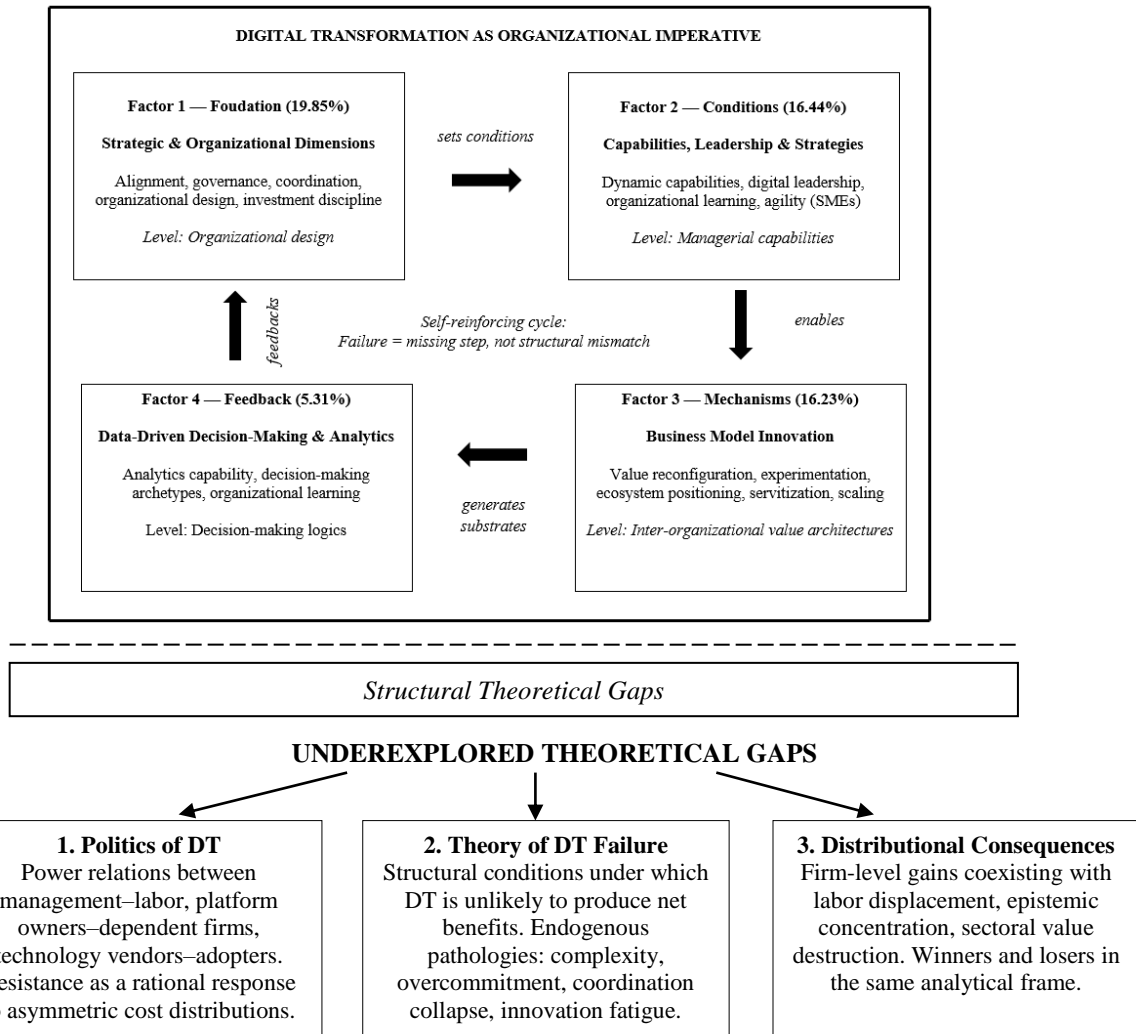
the conditions associated with achieving measurable performance outcomes. At the same time, these observations help delineate the boundaries of the predominant theoretical orientation in the field. The following section synthesizes these interpretations into a contributive framework (Figure 3), which represents both the interrelated thematic structure and the structural theoretical gaps that remain relatively underexplored.

2.5 PROPOSED FRAMEWORK

Figure 3 synthesizes the component analysis into a contributive framework organized around two elements. The first is the mutually reinforcing thematic structure that characterizes the current literature on digital transformation (DT) and performance. The second consists of the three underexplored theoretical gaps identified in Section 2.5.1.

Figure 3

Proposed framework: thematic structure and underexplored theoretical gaps in DT performance research



Note. Author’s elaboration based on cluster analysis (2026).

2.5.1 The relational cycle

The upper portion of the framework corresponds to the four elements empirically identified as a relational cycle. We propose this directional reading based on the thematic content of each element and the interconnections among the components identified in the network analysis, rather than as a statistical result of the principal component analysis (PCA).

Component 1 (Strategic and Organizational Dimensions) establishes the structural conditions required (strategic alignment, governance mechanisms, coordination routines, and investment discipline) within which digital transformation can be implemented. These conditions are not merely contextual; they are constitutive, as they influence whether and how the subsequent factors operate.

Component 2 (Organizational Capabilities, Leadership, and Strategies) delineates the circumstances under which strategic intent is translated into transformation capacity. Dynamic capabilities, digital leadership, and organizational learning develop within the structural context provided by Component 1. The absence of governance and alignment results in fragmented capability development; without these capabilities, the experimentation processes described in Component 3 lack the necessary organizational support.

Component 3 (Business Model Innovation) recognizes the processes through which capabilities are converted into value generation. Experimentation with value propositions, delivery structures, and revenue models requires the availability of the capabilities specified in Component 2. The resulting business model configurations — platforms, digital services, and data-intensive operations — generate the operational information and decision contexts upon which Component 4 performs its function.

Component 4 (Data-Driven Decision-Making and Analytics Capabilities) provides the feedback infrastructure that reconnects the cycle to Component 1. Analytics capabilities transform information derived from digitally enabled operations into organizational learning, which guides strategic adjustments, governance modifications, and resource reallocation.

The suggested directional logic (F1 → F2 → F3 → F4 → F1) indicates a sequential dependency relationship: each element assumes the existence of the preceding one and enables the subsequent one. As discussed in Section 2.4.3, this configuration helps clarify the uniform manner in which the field addresses unfavorable outcomes. When a digital transformation initiative fails to achieve the desired performance, the cycle offers a diagnosis that remains within the same analytical structure rather than questioning whether the transformation itself may be inappropriate for the specific context. Failure is treated as a missing stage rather than as a starting point for alternative explanations.

2.5.2 Underexplored theoretical gaps

The lower portion of the framework, separated by a dashed analytical line, represents the three theoretical gaps identified in Section 2.5 as relatively underexplored in the current literature. They are summarized here in relation to the visual structure of the framework; the complete analytical argument for each gap is presented in Section 2.4.3.

Gap 1 (Politics of Digital Transformation) refers to the power relations reconfigured by digital transformation processes, including interactions between management and labor, between platform orchestrators and dependent organizations, and between technology vendors and adopters. The prevailing relational structure tends to frame organizational resistance as a deficit of leadership or capabilities (Components 1 and 2), rather than considering it as a potentially strategic or rational response to asymmetric distributions of costs and benefits associated with transformation. For example, a university adopts a digital platform that increases administrative productivity but reduces faculty autonomy and strengthens managerial control.

Gap 2 (A Theory of Digital Transformation Failure Beyond Implementation Deficits) concerns the circumstances under which digital transformation may fail to generate net benefits. This occurs not only due to implementation limitations but also because of adverse structural effects associated with the transformation process itself. Such effects include increased coordination complexity, strategic overcommitment, and organizational fatigue linked to continuous innovation. The dominant analytical logic tends to attribute negative outcomes to the absence or insufficiency of process steps, which constrains theorizing adverse outcomes as potentially inherent features of the transformation dynamic. For example, a firm simultaneously implements multiple digital systems.

Gap 3 (Distributional Consequences of Digital Transformation) refers to the possibility that performance gains at the firm level may coexist with value displacement at other levels, such as labor shifts, skill polarization, epistemic concentration, and value extraction from ecosystem partners. The cycle measures digital transformation outcomes at the firm or ecosystem level but does not provide analytical tools to examine performance gains and social costs simultaneously within the same framework. For example, a digital educational platform increases the publisher's profitability but reduces editorial employment.

2.5.3 Contributions of the framework

The framework offers three main contributions. First, it provides a relational structure of the field's thematic domain, demonstrating how four seemingly distinct research streams constitute a mutually reinforcing explanatory architecture. It goes beyond a simple thematic classification by proposing a logic of connection among the clusters and explaining their complementarity. Second, it identifies the self-reinforcing character of this structure: its tendency to absorb negative outcomes as execution deficits rather than to generate alternative theoretical explanations. Third, it highlights three specific theoretical gaps that remain largely outside the analytical scope of the field due to its convergence around logics of adaptation, capability development, and optimization. These gaps are not speculative suggestions; they are analytically grounded observations derived from the pattern of convergence documented in the bibliometric analysis and interpreted in Section 2.5.

For practitioners, the framework clarifies that the dominant literature provides a coherent yet bounded set of analytical tools. The sequence of alignment, capability development, business model innovation, and the creation of analytical capabilities reflects real organizational demands but does not equip managers to address power redistribution, structural failures, or distributive trade-offs. Complementing this sequence requires governance mechanisms that treat resistance as diagnostic information rather than as an obstacle; decision criteria that enable the legitimate non-adoption or reversal of digital initiatives; and performance metrics that track distributive consequences alongside firm-level returns.

2.6 DISCUSSION

This study sought to answer the following research question: how does the thematic structure of empirical research on digital transformation and organizational performance reveal patterns of theoretical convergence, and what are its implications for the development of the field? Through a bibliometric analysis of 63 empirical articles—based on bibliographic coupling, principal component analysis, and network mapping—four thematic components were identified and an interpretive framework was developed (Figure 3), which highlights both the mutually

reinforcing structure of the contemporary literature and three theoretical gaps that remain largely unexplored.

2.6.1 Theoretical contributions

The main theoretical contribution of this study lies in reinterpreting how the field examining the relationship between digital transformation and organizational performance can be understood. Previous reviews have emphasized fragmentation and limited integration in digital transformation research (Reis et al., 2018; Verhoef et al., 2021). The results of this analysis suggest an alternative interpretation: the field exhibits signs of convergence around a shared analytical orientation that tends to treat digitalization as a relevant organizational response in competitive contexts and to frame performance predominantly through logics associated with efficiency and organizational optimization. In this sense, the observed thematic diversity may coexist with relative convergence in managerial and performance-oriented assumptions. The theoretical advancement of the field may therefore benefit not only from greater integration, but also from the development of approaches capable of critically examining the conditions under which digital transformation may not constitute an appropriate organizational response.

The proposed framework (Figure 3) operationalizes this reframing at three levels. First, it provides a relational representation of the thematic structure of the field, demonstrating how four apparently distinct research streams can be understood as components of an interdependent analytical architecture. This move goes beyond the thematic classification commonly associated with bibliometric reviews by proposing a relational logic that helps interpret the complementarity among the identified clusters. Second, it highlights the potentially self-reinforcing character of this interpretive structure, insofar as negative outcomes tend to be analyzed predominantly as execution deficits, as discussed in Section 2.5. This characteristic helps explain why the field may generate diverse empirical evidence while maintaining relative theoretical convergence. Third, it identifies three underexplored theoretical gaps (the politics of digital transformation, a theory of digital transformation failure beyond implementation deficiencies, and the distributive consequences of transformation), whose limited presence in the literature may be related to the centrality of analytical categories such as adaptation, capability, and performance.

A complementary contribution concerns the connection between empirical field analysis and theoretical production. Our investigation indicates that the use of bibliometric methods, combined with critical interpretation, can lead to theory-grounded research programs rather than merely descriptive inventories of the literature. The four theoretical lenses presented in Section 2.6.3 are anchored in specific domains identified as underexamined by the existing theoretical framework. The articulation between methodology and interpretation demonstrates that the structural analysis of a research domain can generate consistent theoretical propositions, rather than simply classifying those already in place.

2.6.2 Practical implications

The practical relevance of the framework lies in clarifying both what the dominant literature enables managers to accomplish and the aspects that tend to remain outside its analytical scope. The identified relational cycle (alignment, capability development, business model innovation, and analytics development) reflects implicit prescriptions embedded in the literature on digital transformation (DT) and performance and corresponds to organizational demands observed across diverse contexts. However, the three underexplored gaps correspond to challenges that managers frequently face in practice but for which the existing literature still provides limited guidance. Based on the framework, four practical implications are derived.

First, the framework suggests the need to move beyond sequential implementation approaches. The literature often presents digital transformation as a progressive process involving stages such as strategic alignment, capability development, and the consolidation of analytical infrastructures. In complex organizational settings, treating this process as a technical checklist may constrain critical evaluation of its feasibility. Structural feasibility assessments may include questions such as: to what extent are specific digital initiatives compatible with institutional constraints, competitive positioning, and the organization's stakeholder configuration? Governance structures may incorporate explicit criteria not only for scaling digital initiatives but also for their review or reconfiguration.

Second, the framework highlights the importance of making visible the power dimensions associated with digital transformation governance. The dominant literature tends to interpret organizational resistance as a deficit in leadership or capabilities. In practice, resistance may

reflect asymmetric reconfigurations of authority, autonomy, and resource distribution across organizational groups and ecosystem actors. Governance structures that incorporate systematic stakeholder impact assessments may help interpret such resistance as signals of distributive tensions relevant to the success or sustainability of transformation initiatives.

Third, the framework suggests considering the possibility of reversibility and legitimate non-adoption within digital transformation portfolios. Part of the literature assumes that unsatisfactory outcomes primarily result from insufficient execution. The proposed framework indicates that certain transformation processes may generate adverse structural effects, such as increased coordination complexity or organizational overload associated with continuous change. In specific institutional or competitive contexts, selective non-adoption may constitute a rational organizational strategy. This implies the inclusion of explicit review and reassessment criteria within digital transformation programs.

Fourth, the framework emphasizes the integration of distributive metrics into performance measurement in digital transformation. Organizational gains associated with operational efficiency or competitive repositioning may coexist with less visible distributive effects, such as changes in job quality, knowledge concentration within specialized units, or shifts in value distribution across ecosystems. Incorporating metrics that capture these dynamics may contribute to more comprehensive assessments of the effects of digital transformation.

2.6.3 Future research agenda

The pattern of convergence identified in this study suggests that significant theoretical advances may require not only incremental refinements but also the exploration of analytical perspectives that have been only marginally mobilized in the field. The present work, through its proposed framework and the three underexplored theoretical gaps, provides a foundation for structuring a research agenda capable of expanding the understanding of digital transformation as an organizational and social phenomenon. This agenda is organized around four theoretical lenses and a set of methodological orientations aimed at broadening the diversity of empirical and temporal perspectives mobilized in future investigations. Table 5 consolidates illustrative research questions associated with these lenses.

Dynamic capabilities theory: from universal imperatives to contested organizational logics. Component 2 is the most internally convergent cluster in our analysis, with studies predominantly adopting sensing, seizing, and transforming frameworks and treating agility as a universal requirement. Future research should reposition dynamic capabilities not as universal imperatives but as contingent organizational logics whose value depends on context. This implies examining how the microfoundations of capability development reproduce power asymmetries (which forms of knowledge are privileged in data-driven systems and which are marginalized) and questioning the adaptation axiom: under what conditions can stability, predictability, and organizational rigidity generate more value for workers, communities, or long-term partners than agility and continuous change? Longitudinal studies may reveal how capabilities generate value in certain temporal and institutional contexts while producing hidden costs (coordination overload, innovation fatigue, employee burnout) in others.

Business model innovation theory: from adaptive virtue to political process. Component 3 celebrates experimentation and adaptation as inherently beneficial without systematically examining their costs. Future research should challenge the innovation imperative by investigating how business model innovation redistributes power, how platforms concentrate control in focal firms, and which interests are marginalized in value capture processes. Alternative organizational logics should also be explored: how can business models prioritize sustainability, collective ownership, or social justice, and under what institutional conditions can they resist purely market-oriented imperatives? Temporal paradoxes deserve particular attention, as short-term pressures for innovation may compromise long-term resilience—an issue that the current literature tends to frame as a managerial dilemma rather than a structural tension.

Institutional and contingency theory: legitimizing alternatives to digital imperatives. Across the four components, institutional and contextual conditions are treated primarily as moderators of implementation rather than as potential sources of legitimate alternatives to digital transformation. Future research should emphasize institutional logics and legitimacy as determinants of when digital transformation should occur—or not. Family firms, religious organizations, and professional associations may operate under logics that prioritize continuity, trust, or ethical commitments over accelerated adaptation. International comparisons should move beyond treating culture as a moderating variable and instead examine when specific digital transformation models are inappropriate for particular institutional contexts. Sectors such as

healthcare, education, and social services may legitimately benefit from traditional organizational forms that prioritize care, equity, or human judgment over algorithmic efficiency. Historical analyses may demonstrate how non-adoption or selective adoption has functioned as a rational survival strategy.

Critical theory and alternative organizational logics. The most consequential limitation of the field's current orientation lies not in what it studies insufficiently, but in what its analytical architecture is not designed to address. Critical theory is necessary to question the political, economic, and ethical assumptions that the adaptive imperative tends to naturalize, examining how digital technologies enable surveillance, control, and value extraction that benefit some stakeholders while externalizing costs to others. Future research should reinterpret resistance as a legitimate organizational strategy, examine cases in which cooperatives, non-profit organizations, or traditional communities resist digital pressures, and investigate alternative temporal logics (degrowth, steady-state strategies, slower decision-making processes) that challenge the linear acceleration assumed in digital transformation discourse. Equally relevant are the ecological implications of digital transformation—from resource extraction to electronic waste—currently excluded from performance metrics.

Methodological advancement. Field convergence is sustained not only by theoretical commitments but also by methodological conventions that tend to confirm the digital imperative. Much of the literature relies on cross-sectional surveys with managers, financial performance metrics, and research designs that presuppose positive relationships between digital transformation and performance. These approaches exclude the perspectives of workers, communities, regulators, and other stakeholders whose experiences may diverge substantially from managerial accounts. Overcoming this pattern requires longitudinal and multi-stakeholder designs that reveal deferred costs and power asymmetries invisible to cross-sectional surveys, distributive metrics that capture consequences beyond the firm level, comparative studies between adopters and non-adopters that correct survival biases, and participatory research that democratizes inquiry by involving organizational members in technology adoption decisions

Table 5

Theory-Driven Research Questions for Advancing Scholarly Production in Digital Transformation, Organized by Underexplored Theoretical Gaps

Theoretical Framework	Addressed Underexplored Theoretical Gap	Core Research Questions	Key Methodological Approaches	Expected Contributions
Dynamic Capabilities Theory	<i>L1: Politics of DT</i>	How do microfoundations of capability development reproduce power asymmetries across organizational levels? Whose knowledge is privileged in data-driven capability systems, and whose is marginalized? How do sensing capabilities become surveillance mechanisms that undermine stakeholder trust?	Multi-stakeholder longitudinal studies Worker-perspective interviews and ethnographic studies of capability development	Reconceptualize capabilities as contested rather than universal Examine differential impacts across organizational stakeholders
	<i>L2: Theory of DT Failure</i>	Under what conditions does organizational rigidity create more value than agility for workers, communities, or long-term partners? How does capability development generate endogenous pathologies (coordination overload, innovation fatigue, burnout)?	Comparative analysis of adopters vs. non-adopters Longitudinal studies tracking delayed costs of capability investment	Legitimate organizational stability as strategic choice Identify temporal conditions under which capability investment produces net negative returns
	<i>L3: Distributional Consequences</i>	How do knowledge management systems reproduce existing hierarchies rather than democratizing learning? How does digital leadership concentrate decision authority while claiming to empower?	Multi-informant designs capturing management and employee perspectives Distributional impact assessments	Examine how capability bundles redistribute epistemic authority and autonomy across organizational levels
Business Model Innovation Theory	<i>L1: Politics of DT</i>	How do digital platforms concentrate power and extract value from ecosystem participants? Whose interests are marginalized in platform-mediated value capture processes?	Power analysis of value creation/capture across ecosystem positions Stakeholder value mapping	Reframe BMI as political rather than technical process Expose power asymmetries in platform ecosystems
	<i>L2: Theory of DT Failure</i>	When does continuous BMI undermine stakeholder trust and organizational identity? Under what conditions do traditional business models create more social value than digitally reconfigured ones?	Long-term impact studies on communities Historical analysis of BMI failure trajectories	Identify conditions under which experimentation itself generates organizational instability and value destruction
	<i>L3: Distributional</i>	How does BMI redistribute value across	Participatory evaluation of BMI	Legitimate alternative organizing

Theoretical Framework	Addressed Underexplored Theoretical Gap	Core Research Questions	Key Methodological Approaches	Expected Contributions
	<i>Consequences</i>	stakeholders (shareholders, employees, suppliers, communities)? What alternative value logics (sustainability, worker ownership, social justice) exist beyond market competition?	outcomes Comparative studies of cooperative vs. investor-owned digital business models	purposes beyond profit maximization Hold firm-level gains and social costs in the same frame
Institutional and Contingency Theory	<i>L1: Politics of DT</i>	How do different institutional logics make certain DT approaches inappropriate or harmful? When should local legitimacy override global competitive pressures for digitalization?	Cross-cultural institutional analysis Multi-level institutional mapping	Examine DT legitimacy as contextually variable rather than universal Map institutional alternatives to market logic
	<i>L2: Theory of DT Failure</i>	Under what structural conditions (industry, regulatory environment, firm type) is DT systematically unlikely to produce net benefits? When has non-adoption or selective adoption served as a rational survival path?	Historical studies of resistance patterns Comparative case studies across institutional contexts	Understand resistance as rational strategy under identifiable structural conditions
	<i>L3: Distributional Consequences</i>	How do family-business, religious, and professional logics conflict with DT imperatives, and what is lost when these logics are overridden? When do healthcare, education, or social service organizations legitimately prioritize human judgment over algorithmic efficiency?	Comparative studies of digitalized vs. non-digitalized organizations in care-intensive sectors	Legitimate non-market organizing logics as viable alternatives to digital imperatives
Critical Theory and Alternative Organizing Logics	<i>L1: Politics of DT</i>	How does DT enable new forms of surveillance, control, and exploitation? How do cooperatives and nonprofits maintain alternative values under DT pressures?	Participatory action research Worker–researcher collaborations	Expose power relations as constitutive of DT, not incidental to it Legitimate resistance and non-adoption
	<i>L2: Theory of DT Failure</i>	When does technological resistance protect vulnerable populations? What are the ecological costs of DT (resource extraction, e-waste) that performance metrics exclude?	Environmental and social impact analysis Democratic technology assessment	Develop alternatives to growth imperatives Theorize DT failure beyond implementation deficiency
	<i>L3: Distributional</i>	What organizational approaches prioritize social	Longitudinal studies of alternative	Reorient the field toward genuine

Theoretical Framework	Addressed Underexplored Theoretical Gap	Core Research Questions	Key Methodological Approaches	Expected Contributions
	<i>Consequences</i>	and environmental goals over efficiency? How can alternative temporal logics (degrowth, steady-state) challenge the linear acceleration of DT discourse?	organizations Comparative analysis of growth-oriented vs. steady-state digital strategies	theoretical pluralism Hold performance and social/ecological costs in the same analytical frame
Methodological Advancement Agenda	<i>Gaps</i>	How can research designs be structured to detect endogenous DT pathologies rather than only implementation gaps? What performance measures capture distributional outcomes (job quality, community stability, epistemic pluralism)? How can survivorship bias be corrected through systematic comparison of adopters and non-adopters?	Longitudinal multi-stakeholder designs Mixed methods combining surveys with ethnography Participatory and action research New distributional metrics for DT dashboards	Break the cycle's self-sealing logic by introducing methodological tools that surface contestation, plurality, and long-term consequences invisible to current approaches

Note. Developed by the author (2026).

2.6.4 Limitations

As in any bibliometric analysis, certain methodological decisions entail trade-offs that must be acknowledged alongside the strategies implemented to mitigate them. The analysis is based on the Web of Science and Scopus databases. Although these databases may not encompass all relevant studies (particularly those published in regional journals, conference proceedings, or emerging journals not yet indexed), they are the most commonly used in bibliometric research in the field of management (Zupic & Čater, 2015). Together, they provide comprehensive coverage of the highest-impact publications in which academic output on digital transformation (DT) and performance is concentrated. The use of two databases, rather than a single source, also reduces the likelihood of systematic coverage gaps.

Principal component analysis is considered appropriate in bibliometric applications (Hair et al., 2009). Of the 85 articles that composed the corpus, 22 did not exhibit significant loadings on any component and were therefore excluded from the main analysis. As discussed in Section 2.3.2, the analysis of these articles indicates that they encompass diverse themes without converging into a discernible cluster, and their dispersion is consistent with the convergence pattern detected among the selected studies. Nonetheless, these articles may contain perspectives not captured by the component structure, and future research employing alternative clustering methods, such as community detection algorithms, may assess whether additional thematic groupings emerge.

Third, bibliographic coupling reveals relationships based on shared references at the time of publication and does not capture the dynamic evolution of thematic connections over time. This is a widely recognized feature of the method rather than a limitation specific to this study (Vogel & Güttel, 2012). The definition of the corpus up to December 2024 establishes a precise temporal boundary, and the fact that most articles in the sample were published between 2018 and 2024 reduces the likelihood that the coupling structure reflects obsolete thematic relationships.

Furthermore, the interpretive labels assigned to each component, the suggested relational cycle, and the identification of theoretical convergence require analytical judgment that goes beyond the statistical outputs of principal component analysis and network analysis. To reduce subjectivity, component labeling was grounded in a systematic examination of each article's

objectives, theoretical foundations, methodologies, and findings, and validated against the rotated component matrix. The relational cycle (F1 → F2 → F3 → F4 → F1) is explicitly presented as an interpretive proposition rather than a statistical result, with Sections 2.4 and 2.5 maintaining a clear distinction between empirical evidence and critical interpretation. Alternative readings of the same component structure are possible, and reinterpretations that reassess or expand the proposed theoretical framework are encouraged.

Fifth, the network filtering threshold—set at ten shared references—influences the density, cohesion, and centrality indicators reported in Table 4. This threshold was selected based on established practices in bibliometric network evaluation (Wasserman & Faust, 1994) and calibrated to preserve the core relational structure while eliminating weak or incidental connections.

Sixth, the corpus includes only empirical articles published in journals within the field of management and business, in accordance with the study's methodological design. Theoretical, conceptual, and interdisciplinary contributions were excluded because bibliographic coupling requires comparable reference structures to generate meaningful similarity measures. This decision implies that the observed convergence characterizes empirical research practice rather than the broader intellectual landscape of digital transformation scholarship as a whole. Critical and institutional perspectives—identified as underexplored in Section 2.4.3—may be more visible in theoretical and interdisciplinary literature than in the analyzed corpus. This possibility strengthens, rather than weakens, the central argument: if such perspectives are present in theoretical discourse but absent in empirical research, the disarticulation between critical theorization and empirical practice constitutes, in itself, a significant finding.

2.7 FINAL CONSIDERATIONS

This study aimed to demonstrate how the thematic structure of the literature on digital transformation and organizational performance reveals patterns of theoretical convergence and their implications for the development of the field. Based on the bibliometric analysis conducted, the results indicate that the research question was successfully addressed by showing how the literature is structured around relatively convergent analytical orientations, despite its apparent thematic diversity.

The findings suggest that, although empirical research on digital transformation and performance encompasses multiple conceptual approaches, there is a tendency toward convergence around a shared orientation that treats digitalization as a relevant organizational response in competitive environments and frames performance primarily through logics associated with efficiency and organizational optimization. The four components identified in the bibliometric analysis correspond to distinct thematic approaches but exhibit analytical interdependencies that contribute to the formation of a mutually reinforcing relational structure. The proposed framework (Figure 3) illustrates both this convergent structure—manifested through the relational cycle integrating strategic alignment, capability enhancement, business model innovation, and the advancement of analytics—and three theoretical gaps that have been relatively underexplored in the literature: the politics of digital transformation, a theory explaining digital transformation failure beyond implementation shortcomings, and the distributive consequences of transformation.

By empirically demonstrating how these assumptions structure the field and by providing a theoretical interpretation of the identified patterns, the study suggests that conceptual convergence may coexist with analytical diversity, influencing the ways in which digitalization is understood as an organizational and social process. This finding contributes to qualifying debates that emphasize the urgency of greater theoretical integration by showing that progress in the field may also depend on the development of alternative analytical approaches capable of examining digital transformation as a contingent, contextual, and potentially contested phenomenon.

The implications of these findings extend beyond the organizational domain, encompassing broader debates on the relationship between technological advancement and social impacts. Organizations face the challenge of assessing not only how to implement digital transformation processes but also how such processes contribute to relevant strategic objectives or require reconfigurations that align technological capabilities with social, ethical, and environmental values. The theoretical lenses proposed and the practical implications derived from the framework provide a basis for such assessments by recognizing the viability of diverse transformation trajectories and by proposing governance mechanisms, decision criteria, and performance metrics that expand the prevailing analytical scope in the field.

More broadly, progress in digital transformation research may benefit from analytical shifts that expand the perspective of investigations. This includes not only analyzing how

organizations can improve transformation processes but also examining the circumstances under which digital transformation is appropriate, advantageous, or sustainable for different organizational and societal groups. By contributing to the reconceptualization of digital transformation as a value-laden and context-dependent process, this study provides a theoretical foundation for more comprehensively assessing the conditions under which digitalization supports—or generates tensions with—organizational and social well-being.

3 STUDY 2: AN INTEGRATIVE FRAMEWORK OF DIGITAL TRANSFORMATION DIMENSIONS: A META-SYNTHESIS REVEALING DYNAMIC INTERRELATIONSHIPS

Abstract:

Study Objective: To develop an integrative theoretical framework that highlights the main dimensions involved in Digital Transformation (DT) processes and their dynamic interrelationships over time.

Methodology and Approach: A qualitative meta-synthesis was conducted based on the systematic analysis of 45 articles published between 2019 and 2024, encompassing 206 organizational cases, drawn from the Web of Science and Scopus databases and selected through rigorous criteria, including the 2024 ABS journal ranking. The analysis employed the five-dimensional analytical framework (Who, Why, Where, How, What) combined with grounded theory techniques for open, axial, and selective coding.

Originality and Relevance: This study stands out by uniquely integrating the core dimensions of Digital Transformation (Who, Why, Where, How, and What) into a theoretical framework that highlights their dynamic interrelationships. By adopting a qualitative meta-synthesis of 206 organizational cases, the research overcomes the fragmentation observed in the literature and offers a systemic and relational view of Digital Transformation. This approach enables the phenomenon to be understood not as mere technology adoption, but as an iterative sociotechnical process capable of generating self-reinforcing cycles that distinguish successful initiatives from superficial transformations.

Findings: Digital Transformation (DT) emerges as a complex ecosystem in which five dimensions interact dynamically: (1) multilevel actors encompassing internal hierarchies and external stakeholder networks; (2) dual motivational forces that combine strategic transformation imperatives with external pressures; (3) contextual factors that actively mediate transformation trajectories; (4) synergistic processes of adaptive governance and dynamic capability development; and (5) multidimensional outcomes that generate operational, strategic, and institutional impacts. The framework reveals how transformation outcomes feed back into and reshape motivational structures, creating self-reinforcing cycles that distinguish successful Digital Transformation from mere technology adoption.

Theoretical/Methodological Contributions: This study offers three core contributions: (1) it organizes dispersed qualitative evidence into five dimensions of Digital Transformation (Who, Why, Where, How, and What); (2) it conceptualizes Digital Transformation as a dynamic, feedback-driven system in which outcomes reshape motivations and subsequent cycles; and (3) it proposes an integrative theoretical articulation that combines dynamic capabilities, the resource-based view, and institutional theory to explain continuous reconfiguration and value creation. For

managers, the framework serves as a diagnostic map to align stakeholders, governance, and transformation capabilities over time.

Keywords: Digital Transformation; Organizational Change; Dynamic Capabilities; Sociotechnical Processes; Meta-Synthesis.

3.1 INTRODUCTION

Digital Transformation (DT) poses challenges for contemporary organizations by reconfiguring their structures, processes, and strategies in increasingly dynamic, competitive, and interconnected contexts (Bharadwaj et al., 2013; Verhoef et al., 2021). This reconfiguration implies profound changes throughout the organization, resulting in business model innovation linked to technological advancements (Verhoef et al., 2021). In this sense, the convergence of technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and data analytics has expanded both value creation opportunities and innovation demands, making DT essential for competitiveness and long-term sustainability in complex and decisive digital environments (Kane et al., 2015). Thus, DT emerges as an adaptive strategy that integrates technological dimensions (Kao et al., 2024).

However, digital transformation goes beyond the mere use of digital tools. It represents a sociotechnical transformation involving changes in organizational culture, leadership, structure, and business models, as digital technologies interact with how organizations operate and compete (Fitzgerald et al., 2013; Hess et al., 2016; Abbu et al., 2022). In this context, DT mobilizes multiple actors across hierarchical levels, with particular emphasis on the role of leadership (Fitzgerald et al., 2013; Abbu et al., 2022), and extends beyond organizational boundaries, driven by both strategic and institutional motivations. It unfolds across diverse organizational and sectoral environments, materializing through transformation processes that integrate governance arrangements with capability development (Nambisan et al., 2019; Vial, 2019).

Despite significant advances, research on DT remains fragmented. Although prior studies have recognized important aspects and outcomes of digital transformation, evidence is often structured around isolated dimensions—technology, strategy, culture, governance, or performance—rather than theorizing the coevolution of these elements as an integrated system (Vial, 2019; Verhoef et al., 2021). Two key limitations stand out. First, the literature offers

limited integrative guidance on how the core dimensions of digital transformation interact, either constraining or enabling one another throughout transformation processes (Nambisan et al., 2019). Second, DT outcomes are frequently treated as end states rather than as forces that reshape subsequent motivations, actor configurations, and governance choices—a gap that restricts understanding of DT as an iterative, feedback-driven process rather than a linear one (Mendes et al., 2022; Laorach & Tuamsuk, 2023).

Moreover, although recent literature has advanced conceptual consolidation of digital transformation, gaps persist in the systematic integration of qualitative evidence capable of capturing the processual, relational, and temporal complexity of the phenomenon. Existing reviews tend to privilege conceptual or quantitative approaches, providing relevant syntheses but limited explanations of how multiple DT dimensions dynamically interact in concrete organizational contexts. In this regard, a qualitative meta-synthesis approach becomes necessary to integrate dispersed empirical evidence and to make explicit recurring patterns of interaction among actors, motivations, contexts, processes, and outcomes. By adopting this perspective, the present study seeks to move beyond the identification of isolated dimensions, proposing a systemic and process-oriented interpretation of digital transformation that contributes to the theoretical development of the field.

This gap becomes particularly relevant as organizations face continuous transformation cycles rather than isolated change initiatives. Effective digital transformation has been associated with significant impacts in both small and medium-sized enterprises (Hermann et al., 2024) and large corporations (Xie & Qi, 2024). Nevertheless, managers still lack systemic-level guidance that enables the identification of which combinations of actors, motivations, contexts, and processual mechanisms sustain transformational momentum over time. What is needed is an integrative framework that defines not only the core dimensions of digital transformation but also how they dynamically interconnect, particularly through feedback cycles linking outcomes to renewed motivations and subsequent transformation processes. Accordingly, this study asks: **what are the main dimensions that compose the digital transformation process, and how do these dimensions dynamically interrelate over time?**

To address this question, the primary objective is to develop an integrative theoretical framework that elucidates the key dimensions involved in digital transformation processes and their dynamic interrelationships over time. To this end, a qualitative meta-synthesis was

employed (Sandelowski & Barroso, 2007; Hoon, 2013). Systematic searches were conducted in the Web of Science and Scopus databases, resulting in the analysis of 45 peer-reviewed case-based articles published between 2019 and 2024, encompassing 206 organizational cases across different sectors and regions. By applying the analytical lens (Who–Why–Where–How–What) to organize evidence extraction and grounded theory–informed coding procedures, it was possible to synthesize recurring patterns and construct an integrative conceptual framework encompassing DT dimensions and their dynamic interdependencies.

This study offers three contributions. First, it consolidates dispersed qualitative evidence into five DT dimensions—actors (Who), motivations (Why), context (Where), processes (How), and outcomes (What). Second, grounded in theory, it conceptualizes DT as a feedback-driven dynamic system, establishing interrelationships among dimensions and emphasizing how transformation outcomes reshape motivational structures and influence subsequent DT cycles. Third, it proposes an integrative theoretical articulation in which dynamic capabilities provide the core processual logic for continuous reconfiguration (Teece, 2007), while the resource-based view clarifies which digital and complementary resources underpin value creation (Barney, 1991). In addition, institutional theory explains how legitimacy concerns and external pressures shape motivations and contextual constraints (DiMaggio & Powell, 1983). For managers, the resulting framework offers a diagnostic guide to align stakeholder configurations, adjust governance mechanisms to contextual limitations, and develop sustainable transformation capabilities across successive DT cycles.

3.2 LITERATURE REVIEW

3.2.1 Dimensions of digital transformation: current understanding

The literature on Digital Transformation (DT) identifies multiple dimensions that define digitalization processes within organizations, including technological, organizational, cultural, and strategic aspects (Hess et al., 2016; Reis et al., 2018; Vial, 2019; Verhoef et al., 2021). These dimensions are recognized as interconnected, with DT understood as a process that alters value creation pathways through digital technologies, impacting structures, processes, and business models (Bharadwaj et al., 2013; Vial, 2019; Verhoef et al., 2021). Studies emphasize the role of

organizational actors in driving DT, such as top leadership, IT departments, and external stakeholders, who influence the adoption and implementation of technologies (Kane et al., 2015; Reis et al., 2018; Singh et al., 2020).

Motivations for DT include competitive pressures, operational efficiency, innovation, and regulatory compliance, prompting strategic responses in volatile environments (Fischer et al., 2020; Hanelt et al., 2021; Verhoef et al., 2021). Organizational, sectoral, and institutional contexts shape DT approaches, varying according to firm size, industry, and external environment, as observed in SMEs that face specific challenges related to resource constraints but demonstrate organizational flexibility (Bharadwaj et al., 2013; Verhoef et al., 2021; Mladenova, 2024). DT processes involve change management, capability development, and technological implementation, often in iterative and adaptive forms (Fitzgerald et al., 2013; Teece, 2018; Reis et al., 2018). Finally, DT outcomes include operational improvements, strategic repositioning, and sustainable value creation, with positive impacts on efficiency and innovation (Correani et al., 2020; Björkdahl, 2020; Verhoef et al., 2021; Mladenova, 2024).

Despite these advances, the literature tends to examine these dimensions in isolation, without deeply exploring how they dynamically interconnect over time (Vial, 2019; Nambisan et al., 2019; Hanelt et al., 2021). For instance, there is limited analysis of how actors interact with one another across continuous transformation cycles or how motivations evolve in response to changing contexts (Verhoef et al., 2021; Mendes et al., 2022). Contextual factors are frequently treated as static variables, overlooking their active interaction with processes and outcomes (Bharadwaj et al., 2013; Mladenova, 2024). Moreover, processes are often analyzed separately from actors and motivations, restricting the understanding of DT as a systemic and iterative phenomenon (Fitzgerald et al., 2013; Reis et al., 2018). Outcomes are typically viewed as end states, without considering their feedback into subsequent phases, thereby limiting understanding of dynamic trajectories (Correani et al., 2020; Verhoef et al., 2021).

The current DT literature exhibits significant fragmentation, with studies adopting narrow analytical lenses that focus on specific aspects—such as technology or strategy—without integrating interconnected dimensions (Reis et al., 2018; Nambisan et al., 2019; Vial, 2019; Verhoef et al., 2021). This fragmentation creates gaps that constrain both theoretical and practical understanding by overlooking the systemic nature of DT, in which actors, motivations, contexts, processes, and outcomes mutually influence one another (Mendes et al., 2022; Hanelt et al., 2021;

Mladenova, 2024). Research often presents static snapshots, highlighting isolated dependencies or synergies, even while acknowledging that DT is dynamic and shaped by external environments, as in the case of SMEs facing both internal and external barriers (Verhoef et al., 2021; Mladenova, 2024). There is also a notable absence of integrative frameworks, particularly for analyzing interactions and impacts across different sectors and organizational sizes (Laorach & Tuamsuk, 2023; Hermann et al., 2024; Xie & Qi, 2024).

Fragmentation persists because few studies capture the dynamic interrelationships among dimensions that generate tensions or evolve over time (Vial, 2019; Nambisan et al., 2019; Mendes et al., 2022). There is a scarcity of analyses on how these elements combine within continuous cycles, limiting guidance for organizations that require holistic perspectives (Reis et al., 2018; Verhoef et al., 2021). Integrative frameworks remain rare, particularly in contexts such as SMEs, where internal barriers (e.g., resistant cultures) and external constraints interact in complex ways (Laorach & Tuamsuk, 2023; Mladenova, 2024). Additionally, the literature lacks stronger emphasis on feedback cycles and longitudinal impacts, widening the gap between theory and practice (Hanelt et al., 2021; Hermann et al., 2024; Xie & Qi, 2024).

3.3 METHOD

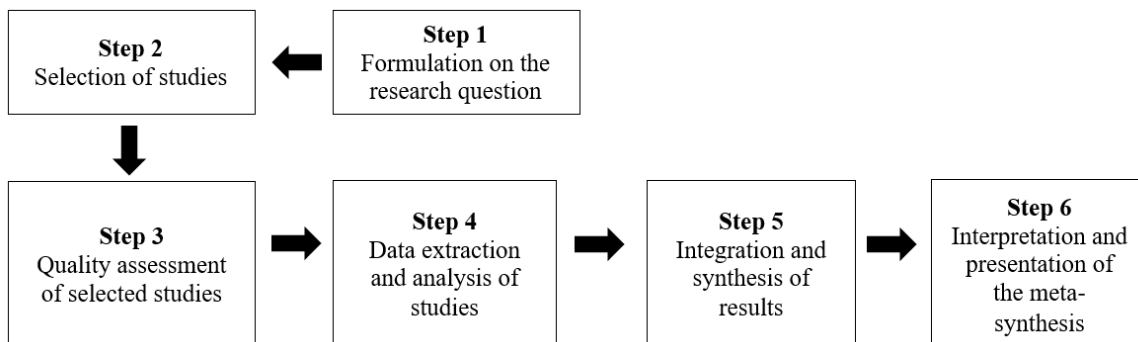
3.3.1 Research design

To achieve the study's objective, we adopted meta-synthesis as the methodological approach. Meta-synthesis is characterized as a systematic literature review that uses meta-data—that is, empirical evidence collected by prior qualitative studies within a given body of literature—with the aim of integrating and synthesizing them to produce contributions that go beyond each individual study (Sandelowski & Barroso, 2007; Hoon, 2013). While primary qualitative studies (i.e., the analytical material of the meta-synthesis, or its sample) focus on describing, exploring, or understanding phenomena, meta-syntheses are suitable for elucidating antecedents, attributes, mechanisms, and/or outcomes of the processes examined in these primary studies (Finfgeld-Connett, 2018). Although qualitative studies generate context-rich findings that are important for advancing knowledge, such results often remain isolated, reducing their potential for generalization (Hoon, 2013).

Despite being widely used in fields such as health and education (Sandelowski & Barroso, 2007; Finfgeld-Connett, 2018), meta-synthesis has gained increasing prominence in the fields of Business Administration and Management (Sarkar & Mateus, 2022; Scazziota et al., 2023; Habersang & Reihlen, 2024). Although meta-synthesis accepts any qualitative method or combination of methods within a single sample, we followed the guidelines proposed by Hoon (2013) and by other published meta-syntheses that employed case studies (Sarkar & Mateus, 2022; Scazziota et al., 2023). Case studies constitute a highly representative type of qualitative research in the fields of Management and Organizational Studies. As a method, they enable the capture of complex phenomena and provide context-specific insights that quantitative studies cannot fully address. Because of their widespread use, they also allow for the construction of a sample composed of studies with comparable methodological approaches (Noblit & Hare, 1988). Figure 4 illustrates the steps followed.

Figure 4

Main steps for conducting a meta-synthesis



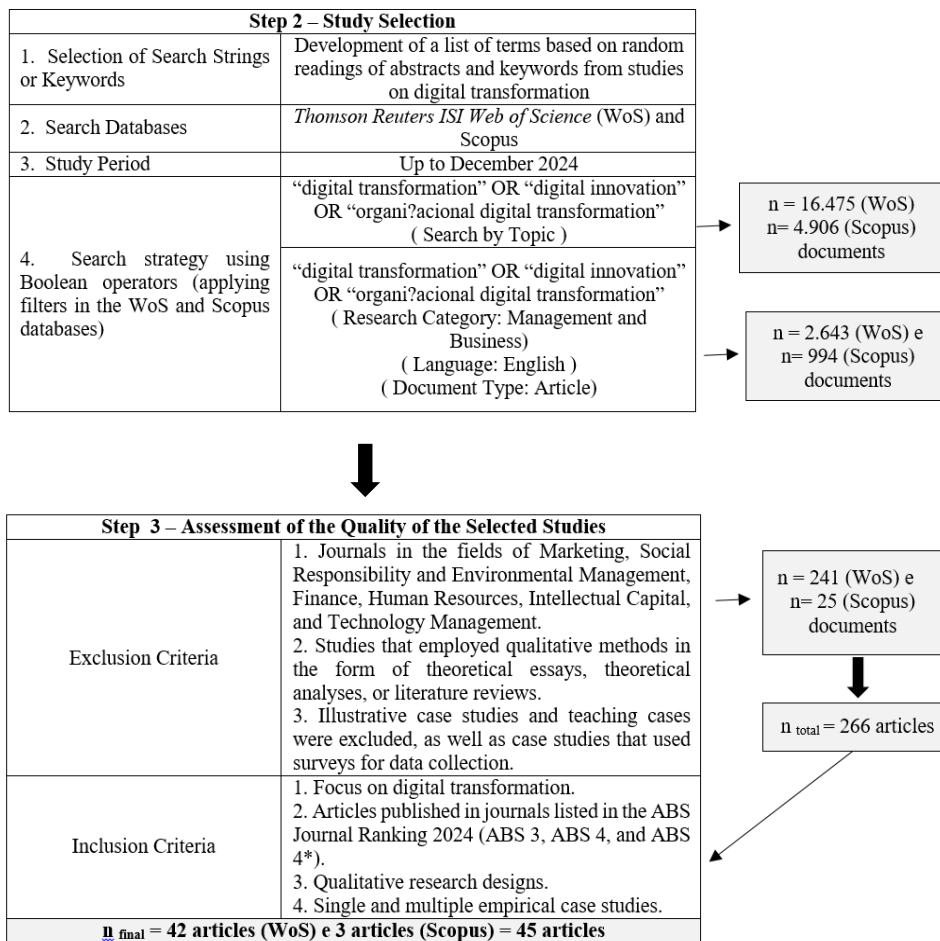
Note. Adapted from Paterson et al. (2001), Sandelowski and Barroso (2007), Sarkar and Mateus (2022), and Scazziota et al. (2023).

3.3.2 Sample and study selection

After formulating the research question, we used the Thomson Reuters ISI Web of Science (WoS) and Scopus databases to search for the articles that composed the initial sample. These databases were selected due to their recognized breadth of journal coverage and relevance in scientific publications, particularly in the social sciences (Scazziota et al., 2023).

The search strategy employed Boolean operators with the following selected terms: “digital transformation” OR “digital innovation” OR “organizational digital transformation,” adapting the spelling of “organizational” to capture both American and British English variants. The filters applied in the initial selection focused on topic searches (title, abstract, and keywords). The scope was restricted to the “Business and Management” category, including articles published in English. The search was conducted on February 3, 2025, with no initial temporal restriction but with a cutoff date of December 31, 2024, reflecting the contemporary relevance of DT studies. This search resulted in 2,643 articles in WoS and 994 articles in Scopus, as detailed in Figure 5.

Figure 5
Study selection and quality assessment of selected studies



Note. Authors’ own elaboration (2025).

Studies were included if they addressed Digital Transformation (DT) as a central element of the investigation, whether as an observed phenomenon, as the primary empirical object of analysis, or as a theoretical lens (either independently or in combination with other management theories/approaches). Because the study involves a meta-synthesis, the selected research had to be qualitative, as this approach enables in-depth exploration and captures the nuances and complexities of the phenomenon under investigation (Hoon, 2013).

The choice of empirical case studies, both single and multiple, enables detailed investigation of the main dimensions involved in the DT process in real-world contexts, as well as an in-depth analysis of the interrelationships among these dimensions. Moreover, the studies selected for this meta-synthesis exhibit significant geographic diversity, including research conducted in countries across Europe, North America, Asia, and Oceania, such as Italy, Germany, the United Kingdom, Canada, India, Japan, and Australia. These investigations involved firms of different sizes—small, medium, large, and family-owned—reflecting diverse organizational contexts. Sectors such as manufacturing, technology and innovation, security, transportation, and healthcare were represented in several case studies, reinforcing the methodological robustness and suitability of the case study method for capturing the specificities of DT across multiple contexts (Ates & Acur, 2022; Lis et al., 2022; Reuschl et al., 2022; Zoppelletto et al., 2022). Further details are provided in Appendix C.

Single case studies offer in-depth analysis and the generation of unique insights derived directly from real-world contexts. Multiple case studies, in turn, are valuable for enabling comparisons across different contexts, strengthening the generalizability of findings and making conclusions less susceptible to criticism regarding representativeness, particularly in areas where research remains limited (Ates & Acur, 2022; Lis et al., 2022; Reuschl et al., 2022; Zoppelletto et al., 2022).

To compose the sample, articles published in journals ranked in the Academic Journal Guide (ABS 2024 edition) at the ABS 4*, ABS 4, and ABS 3 levels were selected (Appendix C). Although journals classified as ABS 1 and ABS 2 contain scientifically relevant work, the sample in a meta-synthesis must be broad yet parsimonious and manageable (Hoon, 2013). The exclusion of studies published in ABS 1 and ABS 2 journals is therefore justified by the need for parsimony in sample management. There is no fixed rule regarding sample size in meta-synthesis; it depends on the content of the study and the quality of the evidence presented (Rauch et al., 2014). In the

field of Business and Management, references suggest that samples ranging from 13 to 22 articles may be sufficient (Hoon, 2013; Lesner et al., 2018). Considering the data processing requirements and sample sizes validated in prior studies (Habersang & Reihlen, 2024), the final sample in this study is deemed appropriate.

As shown in Figure 5, publications in the areas of marketing, corporate social responsibility and environmental management, finance, human resources, intellectual capital, and information technology management were excluded. Although relevant to the topic of Digital Transformation (DT), these studies tend to direct analysis toward isolated functional or sectoral dimensions, such as: the impact of DT on customer experience and marketing; the use of DT as a tool for sustainability, ESG reporting, and energy efficiency (corporate social responsibility and environmental management); financial performance, fintech, and blockchain (finance); online recruitment, digital competencies, and the impacts of automation on work (human resources); knowledge management and the protection of intangible assets (intellectual capital); and technical aspects such as systems implementation and cybersecurity (information technology management).

Rather than examining in an integrated manner the strategic, organizational, cultural, and processual dimensions of DT and their dynamic interrelationships over time—which constitute the primary focus of this meta-synthesis—these approaches favor fragmented or specialized perspectives. Finally, case studies employing surveys or structured questionnaires were also excluded, as they adopt mixed methods (qualitative and quantitative), rendering them incompatible with the inclusion criteria restricted to exclusively qualitative research. Preference was given to in-depth qualitative studies, such as those based on interviews and observations, to enable more robust analysis of the interactions among the various DT dimensions. Illustrative or teaching-oriented case studies, as well as articles that self-identified as case studies but did not involve empirical evidence collection, were likewise excluded from the sample.

Thus, the exclusion criteria adopted do not reflect an arbitrary methodological or thematic restriction but rather a theoretical delimitation necessary to ensure analytical coherence with the study's objective. The meta-synthesis focuses on understanding digital transformation as a systemic and dynamic organizational process, requiring integrated analysis of multiple dimensions. Therefore, studies addressing DT predominantly through isolated functional or sectoral perspectives were excluded not due to their intrinsic relevance but because they did not

directly contribute to the construction of an integrative theoretical framework. In this sense, the selected sample constitutes an analytical subset representative of the research problem under investigation rather than an attempt to exhaustively map the entire body of scientific production on DT. Table 6 presents the 45 articles selected for the meta-synthesis, detailing publication year, authors, journal, and characteristics of the analyzed organizational sample.

Table 6

Survey of single and multiple case studies

No.	Year	Authors	Journal	Sample/Cases
1	2024	Abi Saad et al.	<i>Technovation</i>	01 case from Canada
2	2022	Ambos & Tatarinov	<i>Journal of Management Studies</i>	08 cases in UN organizations (Nepal, Pakistan, and Kenya)
3	2022	Ates & Acur	<i>Journal of Business Research</i>	01 case from the United Kingdom
4	2021	Baptista et al.	<i>Journal of Information Technology</i>	01 case from the United Kingdom
5	2023	Beretta & Smith	<i>California Management Review</i>	01 case from Denmark
6	2023	Biancone et al.	<i>Technovation</i>	02 cases from Italy
7	2022	Browder et al.	<i>Academy of Management Discoveries</i>	02 cases (country not specified)
8	2024	Brünker et al.	<i>Journal of Information Technology</i>	02 cases from Germany
9	2021	Burström et al.	<i>Journal of Business Research</i>	04 cases from Europe
10	2024	Butt et al.	<i>Long Range Planning</i>	03 cases from Europe
11	2023	Chaudhuri et al.	<i>Technovation</i>	11 cases from four countries: United Kingdom (3), India (4), France (1), and Israel (3)
12	2021	Chirumalla	<i>Technovation</i>	02 cases from Sweden
13	2023	Deist et al.	<i>Journal of Business Research</i>	08 cases (country not specified)
14	2023	Essen et al.	<i>Technovation</i>	04 cases from Sweden
15	2023	Geurts & Cepa	<i>Long Range Planning</i>	01 case from the Netherlands
16	2022	Ghosh et al.	<i>Technovation</i>	05 cases (country not specified)
17	2023	Gkinko & Elbanna	<i>Journal of Business Research</i>	01 case (country not specified)
18	2021	Haaker et al.	<i>Journal of Business Research</i>	06 cases from Vietnam
19	2021	Hadjielias	<i>Journal of Business Research</i>	03 cases from Europe

20	2024	Hoblos et al.	<i>Journal of Information Technology</i>	01 case from Australia
21	2024	Ji et al.	<i>Journal of Information Technology</i>	01 case (country not specified)
22	2022	Kateb et al.	<i>Technovation</i>	03 cases from the Netherlands
23	2024	Kazantsev et al.	<i>British Journal of Management</i>	01 case from the United Kingdom
24	2022	Khanagha et al.	<i>Strategic Management Journal</i>	01 case (country not specified)
25	2022	Khurana et al.	<i>Journal of Business Research</i>	08 cases from India
26	2023	Koponen et al.	<i>Journal of Business Research</i>	01 case from Scandinavia
27	2020	Kronblad	<i>Academy of Management Discoveries</i>	22 cases from Sweden
28	2021	Leone et al.	<i>Journal of Business Research</i>	01 case (country not specified)
29	2024	Li et al.	<i>Journal of Information Technology</i>	11 cases from China
30	2024	Lóska & Uotila	<i>California Management Review</i>	01 case from Europe
31	2024	Marinelli et al.	<i>Technovation</i>	03 cases from Italy
32	2021	Matarazzo et al.	<i>Journal of Business Research</i>	06 cases from Italy
33	2023	Mathiassen et al.	<i>Journal of Information Technology</i>	02 cases from Sweden
34	2019	Øvrelid & Bygstad	<i>Journal of Information Technology</i>	03 cases from Norway
35	2022	Piepponen et al.	<i>Journal of Business Research</i>	01 case from Finland
36	2021	Plattfaut & Koch	<i>Journal of Business Research</i>	02 cases from Germany
37	2022	Reuschl et al.	<i>Journal of Business Research</i>	07 cases from Germany
38	2023	Santarsiero et al.	<i>Technovation</i>	01 case from Finland
39	2020	Selander & Jarvenpaa	<i>Academy of Management Discoveries</i>	04 cases from four countries: United States (1), United Kingdom (1), Australia (1), and Sweden (1)
40	2021	Simmonds et al.	<i>Journal of Business Research</i>	01 case from New Zealand
41	2020	Singh et al.	<i>Long Range Planning</i>	04 cases (country not specified)
42	2021	Sjödín et al.	<i>Journal of Business Research</i>	06 cases from Sweden
43	2021	Sund et al.	<i>Journal of Business Research</i>	04 cases from Europe
44	2019	Warner & Waeger	<i>Long Range Planning</i>	07 cases from Germany
45	2023	Zoppelletto et al.	<i>Journal of Business</i>	38 cases from Italy

Note. Prepared by the author based on selected articles, whose complete information is listed in Appendix B e C (2025).

3.3.3 Data collection and treatment

The data collection began with a full reading of each article in the sample, followed by the coding of general information for each study, such as objectives, context (types of firms and field of activity; country or region; single or multiple case study), results, contributions, and suggestions for future research. This information was systematized in an Excel spreadsheet for subsequent descriptive analysis (Appendix D).

Next, to address the research question, a second Excel spreadsheet was developed, grounded in and adapted from the analytical framework proposed by Secundo et al. (2021) (Appendix E). The authors' framework was adjusted to focus specifically on the dimensions of Digital Transformation (DT), through five key questions: who are the actors involved in developing DT? Why are organizations motivated to engage in DT? Where does DT occur and under which organizational contexts and conditions? How has DT been developed through specific pathways, strategies, and practices? What are the outcomes of DT?

By addressing these five analytical dimensions, the study sought to provide a comprehensive and detailed analysis of the dimensions and interrelationships of DT. It is important to note that the data source of the meta-synthesis consists of the interpretations produced by the authors of the primary studies—that is, how these authors interpret their own findings. These data were extracted from the articles included in the sample, specifically from the results and discussion sections (Hoon, 2013). Therefore, the primary data reported in the analyzed articles (such as verbatim transcripts) did not constitute material for analysis (Sandelowski & Barroso, 2007).

The collected data were subsequently exported to Atlas.ti software (version 25) to support the coding process and the organization of qualitative evidence. Each of the five analytical dimensions was examined iteratively and coded across all studies in the sample. Although the study adopted initial analytical dimensions inspired by Secundo et al. (2021), these dimensions were used as sensitizing concepts rather than as fixed analytical categories. This strategy enabled

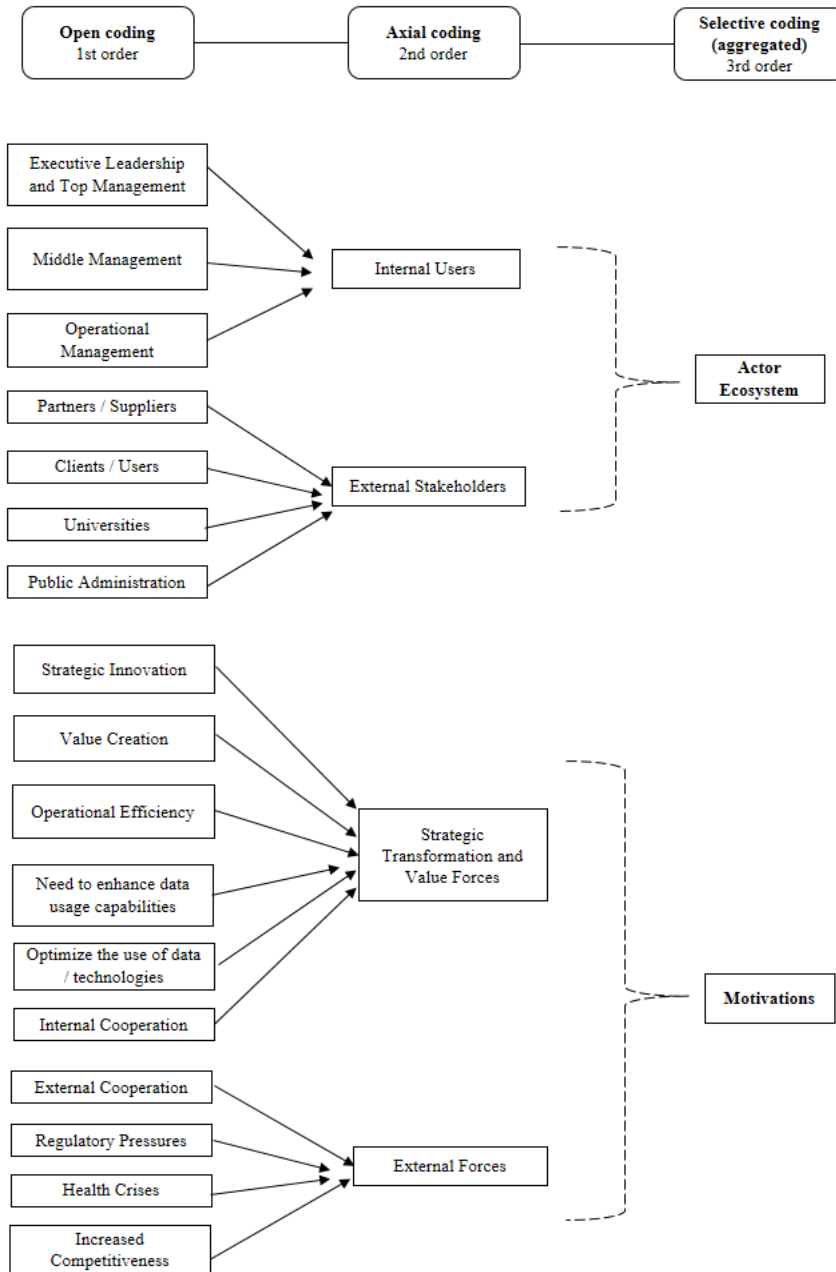
the structuring of the systematic reading of empirical evidence without constraining the interpretive emergence of findings.

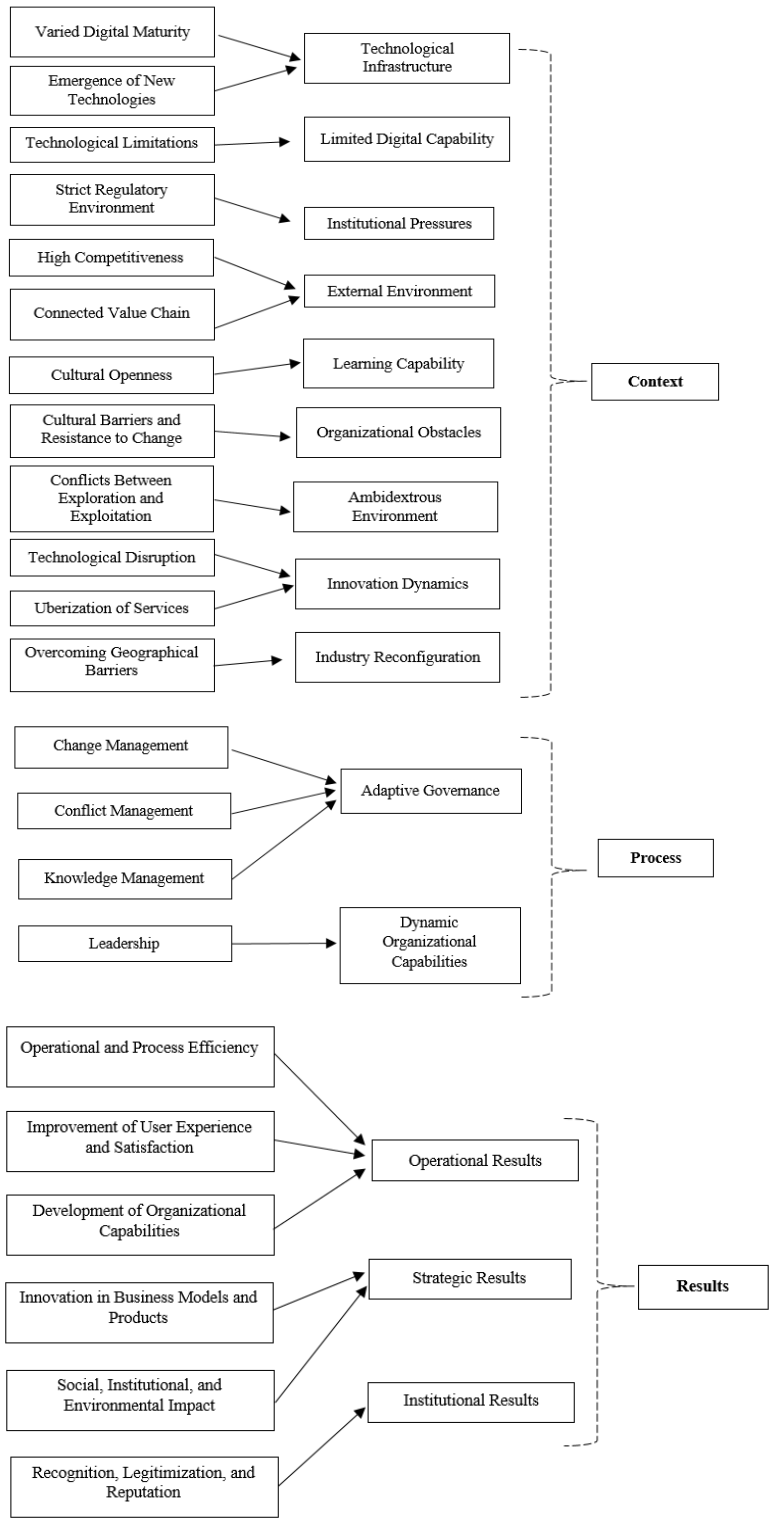
Coding was initially conducted in an open manner, following the recommendations of Sandelowski and Barroso (2007), which enabled the generation of first-order codes (open coding). The data were analyzed line by line, allowing the identification of first-order themes expressed in words or phrases associated with each textual fragment, capturing literal and observable aspects. In qualitative research, this stage represents the identification of concepts directly from the data, without initial interpretive abstraction, thereby contributing to the hierarchical organization of findings (Corbin & Strauss, 2015).

Subsequently, the data were grouped according to their conceptual proximity and organized by thematic similarity through the axial coding process (Corbin & Strauss, 2015), enabling the formation of second-order themes. Finally, selective coding was employed to integrate these themes and generate the aggregate dimensions (actors, motivations, context, processes, and outcomes). This structured coding trajectory is presented in Figure 6.

Figure 6

Coding structure (actors/motivations/context/processes/outcomes)





Note. Prepared by the author based on the data structure (2025).

Analytical procedures inspired by grounded theory were adopted, including open coding, constant comparison, axial and selective coding, as well as an iterative process of theory building. These procedures were used as analytical strategies to organize and interpret qualitative evidence, rather than constituting the application of grounded theory as a complete methodological approach. Instead, grounded theory served as a heuristic reference to support the interpretive meta-synthesis. Accordingly, the study does not position itself as a classical grounded theory, but mobilizes analytical techniques inspired by this tradition to sustain a process of progressive theorization. The analysis followed an abductive logic, combining initial theoretical guidance with openness to the emergence of empirical patterns, a characteristic commonly observed in interpretive meta-syntheses within the field of Management.

It is also important to note that the analytical process followed the principle of conceptual and theoretical saturation. Conceptual saturation was considered to have been achieved when the inclusion of additional studies did not result in the identification of new codes or relevant analytical dimensions, but only in the refinement of previously established categories. In parallel, theoretical saturation was observed when the relationships among the identified dimensions became analytically stable, allowing for the consolidation of the proposed integrative framework. Thus, the final sample size reflects not only criteria of quality and theoretical relevance, but also the analytical maturity reached throughout the interpretive process.

3.4 RESULTS

3.4.1 Descriptive analysis of the Who-Why-Where-How-What analytical framework

Based on the review and the single and multiple case studies presented in Table 6, five dimensions were explored to understand the Digital Transformation (DT) process, encompassing: (1) the actors involved (Who?); (2) the motivations driving the transformation (Why?); (3) the organizational and sectoral contexts in which it occurs (Where?); (4) the pathways, strategies, and practices adopted (How?); and (5) the observed outcomes (What?).

3.4.1.1 Who: actors driving digital transformation

From the 45 articles selected for this meta-synthesis, the identification and analysis of the actors involved in driving digital transformation (DT) reveal a heterogeneous organizational ecosystem in which different groups perform complementary and interdependent roles. Overall, the findings show that DT is not driven by a single agent but by a multilevel architecture composed of strategic leadership, middle management, operational actors, and external stakeholders.

At the strategic level, the role of executive leadership and top management stands out, including Chief Executive Officers (CEOs), Chief Information Officers (CIOs), Marketing and Communication Directors, Chief Innovation Officers (CINOs), Chief Digital Officers (CDOs), and Chief Technology Officers (CTOs). These professionals belong to the strategic layer of firms and are essential for defining digital vision, allocating resources, conferring legitimacy, and driving innovation initiatives and cultural change. Empirical evidence from the financial sector reinforces the relevance of these actors. In the banking context, top management plays an active role in building digital capabilities and reconfiguring operational models in response to increasing complexity and competitiveness in the digital environment.

Thus, executive teams not only approve or fund digital initiatives but also act directly as transformative agents, articulating vision, structure, and legitimacy for DT processes. Across sectors and organizational sizes, senior executives are responsible for leading profound changes, including the reconfiguration of business models, processes, and value experiences. For instance, in incumbent European banks, innovation labs have been established as formal mechanisms for digital exploration, supported and legitimized by top leadership, functioning as bridges between corporate strategy and exploratory innovation efforts. Similarly, studies indicate that corporate leaders should not merely react to digital disruptions but adopt proactive stances as “designers of the future,” redesigning business models and experiences from the executive level.

Among executive roles, CDOs, CINOs, and CTOs perform distinct yet complementary functions. The CDO, more frequently observed in large firms and highly digitalized sectors, is vital for leading and coordinating digital initiatives and addressing strategic governance gaps. The CINO is associated with the creation of new products, services, and future-oriented business models, particularly in highly regulated and competitive contexts such as banking. The CTO, in

turn, acts at the interface between technological infrastructure and business strategy, contributing to interoperability, innovation, and the development of digital solutions focused on customer experience. Other positions, such as Head of Digital Transformation and Group Chief Technology and Operations Officer, also emerge as central actors in coordinating digital journeys and articulating operations, technology, and strategy.

Beyond these roles, some studies highlight emerging functions such as the Chief Happiness Officer (CHO), responsible for promoting employee well-being, motivation, and engagement in contexts of intense digitalization, thereby fostering safe and collaborative environments for adopting new technologies. In industrial firms, technical directors also stand out as relevant actors by orchestrating technical resources, sustaining continuous innovation, and facilitating technological organizational learning in response to external changes.

Overall, most articles in the sample identify executive leadership and top management as the primary actors of DT. These executives predominantly operate in large firms across sectors such as finance, industry, manufacturing, technology, logistics, and healthcare, with greater concentration in Europe, North America, and Asia. CEOs and CIOs are highlighted as fundamental leaders in defining digital vision and orchestrating innovation culture, particularly in European and Asian banking sectors. CTOs and CDOs frequently appear in industrial, technological, and financial contexts, leading the implementation of digital initiatives and integrating technological capabilities into corporate strategy.

However, DT is operationalized across multiple hierarchical levels. At the middle-management level, managers and directors play a key role in translating strategy into policies, processes, and operational plans, including project managers, innovation managers, technology managers, hospital managers, and marketing and relationship managers. These actors function as intermediaries between strategic formulation and practical execution, playing a central role in coordinating DT processes in contexts such as healthcare and financial services.

At the operational level, IT teams, employees, operational specialists, developers, squads, and scrum masters stand out as responsible for executing digital solutions, integrating workflows, and adjusting internal processes. These actors are essential for ensuring continuity, operational stability, and rapid adaptation to new digital demands. Thus, executive leadership, middle management, and operational staff can be understood as internal users, as they operate within

organizational boundaries and play decisive roles in formulating, translating, and implementing DT.

Nevertheless, DT is not driven solely by internal actors. The sample also highlights the relevance of external stakeholders, including partners, suppliers, customers, users, universities, and public administrations. These actors expand innovation capacity, introduce complementary competencies and technologies, and foster interorganizational collaboration. The role of knowledge intermediaries and digital ecosystems in supporting micro and small enterprises demonstrates how interaction with external actors can expand innovative capacity and accelerate DT. Similarly, metaverse platforms reshape value-creation logics by engaging broad networks of external partners.

Among these external stakeholders, healthcare professionals, consultants, and technology specialists also stand out. Although external to the permanent organizational structure, they become integrated into transformation processes by providing expertise, technical support, and implementation acceleration. This hybrid role becomes particularly relevant in dynamic digital environments, where boundaries between organizations and ecosystems tend to become more fluid.

In summary, the “Who” dimension reveals that DT is a collective, multilevel, and ecosystemic process. Its advancement depends on the articulation between strategic leadership, managerial mediation, operational execution, and external collaboration. Rather than merely identifying specific roles, the findings demonstrate that digital transformation is sustained through coordination among actors with different sources of authority, knowledge, and capacity for action. This configuration reinforces the need for integrated approaches to leadership, people management, and partnership management to sustain transformation in contexts of technological change.

3.4.1.2 Why: motivations for developing digital transformation

The analysis of the sample shows that the development of Digital Transformation (DT) is driven by a heterogeneous set of motivations that combine internal demands of a strategic and operational nature with external pressures of an institutional and environmental character. These motivations were organized into two main categories, according to axial and selective coding: (1)

strategic forces of transformation and value creation, predominantly internal and proactive; and (2) external forces, reactive or environmental in nature.

Among the strategic forces, strategic innovation and value creation constitute the most recurrent motivation. The studies describe DT as a mechanism to develop new business models, products and services, as well as differentiated experiences for customers and users. In the healthcare sector, digitalization enables innovations that impact the quality of care and clinical management, generating value for patients and professionals (Santarsiero et al., 2023; Abi Saad et al., 2024; Biancone et al., 2023). In the financial sector, DT is associated with the development of hybrid models and the redefinition of value propositions (Lóska & Uotila, 2024; Singh et al., 2020), while in traditional industries digitalization is mobilized as a mechanism to overcome structural constraints and create new revenue streams (Ghosh et al., 2022; Beretta & Smith, 2023; Kronblad, 2020; Piepponen et al., 2022).

Operational efficiency also emerges as a central motivation, associated with cost reduction, process automation, error mitigation, and increased organizational productivity. DT enables greater decision-making accuracy, reduces the burden on IT teams, and expands the geographical reach of operations (Koponen et al., 2023; Chirumalla, 2021; Ghosh et al., 2022). In the post-pandemic context, the institutionalization of hybrid structures and remote work has been associated with significant operational gains (Beretta & Smith, 2023), while industrial sectors use digitalization to optimize maintenance and increase production efficiency (Ghosh et al., 2022; Chirumalla, 2021; Warner & Wäger, 2019).

Another recurring motivation concerns the strengthening of data-driven capabilities. DT is frequently mobilized as a means to develop analytical skills and integrate technologies such as big data, artificial intelligence, and the Internet of Things into organizational decision-making (Ghosh et al., 2022; Chirumalla, 2021; Leone et al., 2021; Burström et al., 2021). In sectors such as healthcare, these capabilities support interoperability and more informed clinical decisions (Abi Saad et al., 2024), whereas in finance and manufacturing they are associated with organizational value creation and talent management (Lóska & Uotila, 2024; Ghosh et al., 2022).

Internal cooperation also appears as a relevant motivation, especially in contexts that require integration across teams, organizational units, and multidisciplinary competencies. Innovation labs and agile structures are described as spaces that foster internal collaboration and

organizational learning, thereby supporting the implementation of DT (Santarsiero et al., 2023; Beretta & Smith, 2023; Chirumalla, 2021; Kronblad, 2020).

Regarding external forces, interorganizational cooperation, regulatory pressures, health crises, and intensified competition stand out. External cooperation involves partnerships with universities, suppliers, and digital ecosystems, expanding access to knowledge and accelerating innovation processes (Marinelli et al., 2024; Abi Saad et al., 2024; Geurts & Ceba, 2021). Regulatory pressures frequently appear in sectors such as healthcare, finance, and industry, where DT is adopted as a mechanism for compliance, transparency, and traceability (Essen et al., 2023; Kronblad, 2020; Ghosh et al., 2022; Plattfaut & Koch, 2021).

The COVID-19 pandemic emerges as a strong exogenous factor, accelerating the digitalization of organizational processes, particularly in contexts of telemedicine, automation, and the virtualization of activities (Denicolai & Previtali, 2023; Beretta & Smith, 2023). Complementarily, increased competitiveness constitutes a transversal motivation, associated with the need for differentiation, adaptation to customer demands, and strategic repositioning in digital markets (Beretta & Smith, 2023; Nudurupati et al., 2022; Lóska & Uotila, 2024; Ghosh et al., 2022).

Overall, the findings indicate that internal motivations, especially those related to strategic innovation, value creation, and operational efficiency, predominate in the sample, while external forces act as catalysts or accelerators of the transformation process. This pattern suggests that DT is simultaneously guided by deliberate organizational objectives and conditioned by environmental and institutional pressures, configuring itself as a dynamic process of strategic response to multiple demands.

3.4.1.3 Where: organizational and sectoral context of DT development

Digital Transformation (DT) is profoundly shaped by the organizational and environmental context in which it unfolds, configuring itself as a sociotechnical phenomenon conditioned by institutional, technological, cultural, and competitive factors. The analysis of the sample indicates that this context simultaneously combines opportunities and constraints that influence the pace, direction, and outcomes of digitalization processes.

Among the main internal conditioning factors, limitations related to technological infrastructure and levels of digital maturity stand out. In industrial sectors and organizations with a strong legacy of analog processes, the adoption of digital technologies encounters structural barriers arising from rigid systems, resistant organizational cultures, and technological integration challenges (Ghosh et al., 2022; Chirumalla, 2021; Warner & Wäger, 2019). In this sense, digital maturity is less associated with the mere adoption of technologies and more closely linked to the capacity to promote deep organizational changes in practices, culture, and management models.

These challenges are particularly evident in micro, small, and medium-sized enterprises (MSMEs), which face financial resource constraints, gaps in digital competencies, and difficulties in incorporating emerging technologies, thereby compromising the sustainability of transformation initiatives (Marinelli et al., 2024; Nudurupati et al., 2022). Such limitations indicate that DT is not distributed homogeneously across organizations, but rather conditioned by structural and institutional asymmetries.

At the external level, disruptive events and institutional pressures emerge as central vectors of transformation. The COVID-19 pandemic acted as an abrupt catalyst for digitalization, accelerating the adoption of technological solutions across different sectors and imposing organizational changes that were often unplanned but necessary for operational continuity (Denicolai & Previtali, 2023; Beretta & Smith, 2023; Christou et al., 2023; Bansal et al., 2023). Simultaneously, regulatory requirements and growing societal demands intensify the need for compliance, transparency, and organizational accountability, influencing DT trajectories (Oliveira et al., 2022; Bez et al., 2023; Essen et al., 2023; Kronblad, 2020; Plattfaut & Koch, 2021).

The competitive and interconnected environment of digital value chains also imposes significant challenges, requiring organizations to develop dynamic capabilities and continuous learning to respond to pressures of hypercompetition and accelerated innovation (Beretta & Smith, 2023; Nudurupati et al., 2022; Ghosh et al., 2022; Lóska & Uotila, 2024). In this context, DT emerges as a contingent process shaped by the interaction between external pressures and internal capabilities.

Internally, digital transformation is likewise influenced by cultural and organizational factors, such as resistance to change, departmental silos, and the challenge of organizational ambidexterity—that is, the tension between exploiting existing models and exploring new digital

opportunities (Ghosh et al., 2022; Kronblad, 2020; Piepponen et al., 2022). At the same time, external forces such as technological disruptions and the increasing platformization of services pressure organizations to reconfigure their business models and positions within digital ecosystems (Essen et al., 2023; Geurts & Cepa, 2021).

The sectors most represented in the sample include healthcare, finance, manufacturing, tourism, professional services, and public administration, reflecting distinct levels of digital maturity and diverse transformation trajectories (Santarsiero et al., 2023; Abi Saad et al., 2024; Biancone et al., 2023; Bez et al., 2023; Lóska & Uotila, 2024; Sia et al., 2021; Ghosh et al., 2022; Chirumalla, 2021; Warner & Wäger, 2019; Christou et al., 2023; Kronblad, 2020; Essen et al., 2023; Plattfaut & Koch, 2021). While financial and technological sectors exhibit more advanced digital development, areas such as healthcare and the public sector demonstrate greater institutional complexity and structural resistance.

Thus, DT is configured as a deeply contingent and institutionally conditioned phenomenon, whose effectiveness depends on the organizational capacity to articulate technological resources, strategic agility, and the management of tensions between external pressures and internal dynamics.

3.4.1.4 How: how digital transformation is being developed

The analysis of the 45 articles indicates that the development of Digital Transformation (DT) unfolds through organizational trajectories that combine structural coordination mechanisms with continuous processes of capability reconfiguration. These pathways do not constitute linear sequences of technological implementation; rather, they emerge as adaptive arrangements that enable organizations to cope with uncertainty, institutional tensions, and environmental change.

In this context, the role of adaptive governance becomes particularly salient, understood as the set of organizational practices and structures that enable flexible and iterative responses to the challenges inherent in digital transformation. Unlike traditional governance models grounded in stability and hierarchical control, adaptive governance assumes more fluid and collaborative configurations, allowing organizations to accommodate multiple rhythms of change and varying levels of digital maturity (Oliveira et al., 2022; Kronblad, 2020; Essen et al., 2023).

Adaptive governance materializes primarily through three interdependent organizational practices: change management, conflict management, and knowledge management. Change management involves mechanisms of strategic communication, continuous training, and the revision of organizational incentives, aimed at aligning behaviors and processes with the demands of digitalization (Beretta & Smith, 2023; Ghosh et al., 2022). Conflict management becomes central in transformation contexts, particularly in addressing tensions between traditional models and emerging digital logics, as well as between operational efficiency and disruptive innovation (Ghosh et al., 2022; Kronblad, 2020; Piepponen et al., 2022). Knowledge management, in turn, sustains the organizational learning required for the incorporation of new technologies and digital practices (Denicolai & Previtali, 2023; Chirumalla, 2021; Leone et al., 2021).

Complementarily, the development of DT depends on the strengthening of organizational dynamic capabilities, understood as the ability to integrate, build, and reconfigure internal and external resources in response to volatile digital environments. In the analyzed sample, these capabilities are manifested primarily through the action of digital leadership and the institutionalization of continuous learning practices (Oliveira et al., 2022; Singh et al., 2020; Ghosh et al., 2022; Beretta & Smith, 2023; Kronblad, 2020). Leadership simultaneously performs a symbolic function—by shaping new organizational mindsets—and an instrumental function, by guiding strategic decisions that reconcile short- and long-term objectives (Beretta & Smith, 2023; Kronblad, 2020; Sia et al., 2021).

The interaction between adaptive governance and dynamic capabilities is particularly evident in regulated sectors and large organizations, where digital transformation requires coordination among multiple actors, structures, and temporalities. Practices such as innovation labs, digital centers of excellence, agile squads, and hybrid governance forums operate as institutional mechanisms that mediate between immediate operational demands and long-term strategic requirements (Essen et al., 2023; Beretta & Smith, 2023; Abi Saad et al., 2024).

Thus, the development of DT is configured as a relational and iterative process, sustained by the articulation between adaptive governance mechanisms—which enable organizational alignment and the management of internal tensions—and dynamic capabilities—which support continuous learning, innovation, and strategic reconfiguration. This arrangement highlights that digital transformation cannot be reduced to technological adoption alone; rather, it involves the

construction of organizational architectures capable of sustaining ongoing change within complex digital ecosystems.

3.4.1.5 What: outcomes of digital transformation

The analysis revealed that the outcomes of Digital Transformation (DT) are not limited to isolated technological or operational gains; rather, they constitute multidimensional organizational effects that unfold across interdependent levels. These outcomes were organized into three main analytical categories: operational outcomes, strategic outcomes, and institutional outcomes.

Operational outcomes represent the most recurrent dimension in the sample and reflect improvements related to process efficiency, cost reduction, routine automation, and the integration of digital systems (Ghosh et al., 2022; Chirumalla, 2021; Bansal et al., 2023; Koponen et al., 2023). DT also contributes to enhancing user experience and satisfaction through service personalization and the integration of digital channels, with significant impacts in sectors such as healthcare and financial services (Bez et al., 2023; Santarsiero et al., 2023; Abi Saad et al., 2024; Lóska & Uotila, 2024). Such operational gains often involve greater decision accuracy, reduced bias, and the optimization of organizational resource utilization (Gkinko & Elbanna, 2023; Ghosh et al., 2022).

At a second level, strategic outcomes express the capacity of organizations to reconfigure their competencies and competitive positioning in digital environments. These outcomes include the development of organizational capabilities, the promotion of strategic agility, and the institutionalization of continuous innovation processes (Beretta & Smith, 2023; Ghosh et al., 2022; Chirumalla, 2021; Warner & Wäger, 2019). DT enables the creation of new business models, digital platforms, and data-driven solutions, allowing organizations to redefine their roles within digital value chains and expand their capacity for differentiation and scalability (Essen et al., 2023; Denicolai & Previtali, 2023; Lóska & Uotila, 2024; Piepponen et al., 2022; Nudurupati et al., 2022).

Beyond the economic logic, institutional outcomes demonstrate that DT also produces social, environmental, and symbolic effects. These effects include the expansion of access to digital services, the incorporation of sustainable practices based on green technologies, and the

strengthening of organizational legitimacy among stakeholders (Nudurupati et al., 2022; Denicolai & Previtali, 2023; Biancone et al., 2023; Bez et al., 2023). The adoption of digital technologies becomes interpreted as an indicator of organizational modernity and alignment with contemporary societal expectations, influencing reputation and institutional recognition (Oliveira et al., 2022; Kronblad, 2020; Essen et al., 2023; Plattfaut & Koch, 2021).

The findings suggest that these outcomes do not occur in isolation but rather constitute a cumulative and interdependent process. Operational gains often support the emergence of strategic outcomes, which in turn reinforce the institutional positioning of organizations within their ecosystems. This dynamic indicates that DT should not be understood solely as an efficiency mechanism, but as a process of organizational reconfiguration capable of producing simultaneous effects across multiple performance dimensions.

Thus, the analysis demonstrates that the outcomes of DT constitute not only outputs of transformation processes, but also inputs for subsequent cycles of organizational change, reinforcing the iterative and systemic nature of digital transformation in complex organizational contexts.

3.5 INTEGRATIVE FRAMEWORK OF DIGITAL TRANSFORMATION

The results of this meta-synthesis reveal that Digital Transformation (DT) does not constitute a linear, homogeneous phenomenon or one restricted to technological adoption. Rather, it emerges as a dynamic, contingent, and deeply contextualized sociotechnical process, shaped by the interaction among multiple actors, diverse motivations, organizational conditions, and processual pathways that configure differentiated trajectories of transformation. This interpretation aligns with perspectives that conceptualize DT as a holistic process involving structural, cultural, strategic, and relational transformations (Vial, 2019; Teece, 2018; Kane et al., 2015), but advances this view by empirically demonstrating how these dimensions are articulated within an interdependent and self-reinforcing system.

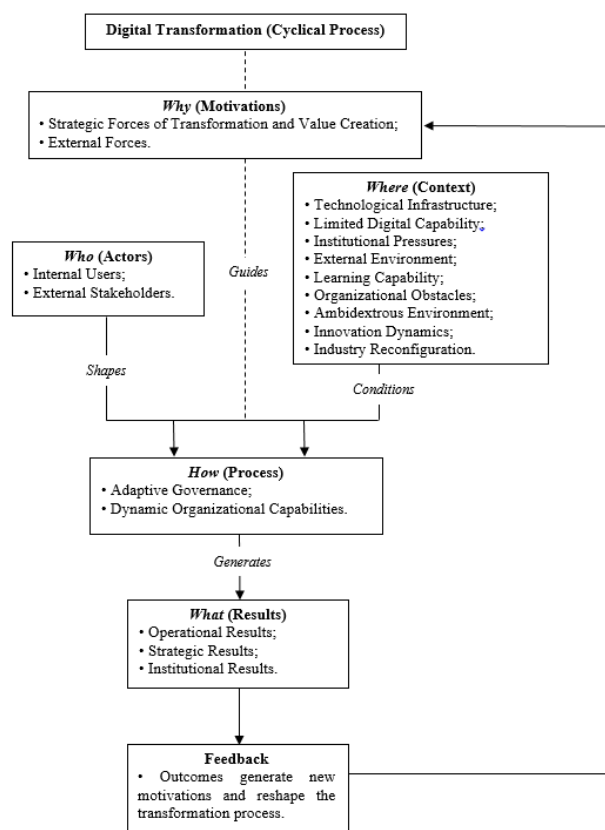
3.5.1 The dynamic five-dimension framework

Based on the synthesis conducted, we propose understanding Digital Transformation (DT) as a relational system in which five dimensions—actors (WHO), motivations (WHY), context

(WHERE), processes (HOW), and outcomes (WHAT)—interact continuously through feedback mechanisms. The framework (Figure 7) addresses the fragmentation observed in the literature, in which approaches tend to analyze elements in isolation, by offering a systemic perspective in which changes in one dimension produce effects on the others, thereby configuring cumulative cycles of transformation.

Figure 7

Integrative DT Framework with Dynamic Feedback Mechanisms



Note. Author’s elaboration based on the five dimensions of digital transformation (2026).

The model operates through four main mechanisms. First, organizational motivations activate specific configurations of actors, highlighting the socially constructed nature of transformation. Second, the organizational and institutional context mediates the translation of motivations into effective processes of change, explaining why organizations with similar objectives follow distinct trajectories. Third, transformation processes generate multidimensional

outcomes that extend beyond operational efficiency, affecting strategic positioning and institutional legitimacy. Fourth, outcomes feed back into the system by reshaping organizational motivations and capabilities, thereby establishing continuous cycles of transformation.

Within this system, adaptive governance emerges as a central organizational mechanism. Unlike approaches that treat governance merely as a structure of control, the framework highlights its dynamic function in mediating tensions between exploitation and innovation, as well as between institutional demands and strategic imperatives. Adaptive governance creates the conditions for the development of dynamic capabilities, while these capabilities, in turn, sustain the evolution of governance practices, configuring a mutually reinforcing process.

3.5.2 Theoretical integration and value creation logic

The framework integrates the Resource-Based View (RBV) and the dynamic capabilities perspective to explain how Digital Transformation (DT) contributes to organizational value creation (Barney, 1991; Teece, 2007). Digital assets—such as data, algorithms, and platforms—become strategic only when integrated into organizational capabilities that enable their mobilization and reconfiguration within competitive contexts. Thus, competitive advantage does not derive from technology per se, but from the organizational combinations that make its application possible.

In this regard, organizations that advance in DT develop three interrelated mechanisms of value creation. First, they configure digital technologies in conjunction with human and organizational resources to generate differentiated value propositions (Teece et al., 1997). Second, they build dynamic capabilities that sustain continuous processes of learning and adaptation (Eisenhardt & Martin, 2000). Third, they expand their organizational boundaries through the orchestration of digital ecosystems, accessing complementary resources and co-creating value with stakeholders (Adner, 2017; Jacobides et al., 2018). The framework demonstrates that these mechanisms operate in an integrated manner and depend on specific contextual configurations, thereby challenging universalistic prescriptions of transformation.

3.5.3 The self-reinforcing transformation cycle

The primary theoretical contribution of the framework lies in conceptualizing Digital Transformation (DT) as a cyclical and self-reinforcing process, in contrast to the linear models that predominate in the literature (Fitzgerald et al., 2013; Westerman et al., 2011). Operational, strategic, and institutional outcomes do not represent final states, but rather elements that reconfigure motivational structures and organizational capabilities, thereby driving new cycles of transformation.

Operational improvements generate incentives for continuous efficiency, strategic advancements expand innovative ambitions, and institutional gains reinforce stakeholders' expectations for ongoing evolution (DiMaggio & Powell, 1983). This process attracts new resources—financial, human, and relational—while simultaneously strengthening organizational capabilities for learning and adaptation, in line with organizational learning theory (Levitt & March, 1988).

However, feedback may also follow non-linear trajectories. Challenges and failures in transformation generate adaptive pressures that require the reconfiguration of priorities, the revision of governance practices, or more profound structural changes (March, 1991). The organizational capacity to diagnose and respond to these tensions distinguishes sustainable digital transformation processes from isolated technological initiatives, which may generate temporary gains but fail to consolidate enduring transformational capabilities.

Thus, the framework demonstrates that DT should be understood as a relational, cumulative, and contingent process, in which value creation depends on the articulation among organizational, institutional, and technological dimensions over time.

3.6 DISCUSSION, IMPLICATIONS, AND LIMITATIONS

3.6.1 Theoretical contributions and comparison with the literature

Our findings directly address the fragmentation problem identified in the Digital Transformation (DT) literature, in which prior studies tend to examine specific dimensions in relative isolation (Nambisan et al., 2019; Vial, 2019). The framework developed in this study

demonstrates how actors, motivations, contexts, processes, and outcomes are systematically and interdependently articulated, offering an integrated interpretation of the phenomenon that complements predominantly sequential or linear models of transformation (Fitzgerald et al., 2013; Hess et al., 2016). By emphasizing the cyclical and feedback-oriented nature of DT, the results contribute to expanding the understanding of the phenomenon as a dynamic and evolutionary process.

The existing literature frequently focuses on specific categories of actors, with an emphasis on executive leadership or information technology departments (Singh et al., 2020; Kane et al., 2015). The results of this meta-synthesis indicate the presence of a broader multilevel ecosystem, in which the effectiveness of transformation depends on coordination across different organizational levels and external stakeholder networks. The emergence of new organizational and interorganizational roles suggests the evolution of governance structures associated with DT, thereby extending perspectives that are predominantly organization-centric.

Although prior studies identify multiple motivations for digital transformation, the proposed framework highlights how internal and external motivational forces interact dynamically (Fischer et al., 2020; Hanelt et al., 2021). This interaction helps explain the coexistence of distinct and, at times, tension-laden strategic objectives throughout transformation processes. Accordingly, the findings suggest that DT involves the continuous management of multiple organizational demands, rather than the simple optimization of isolated objectives.

The findings also indicate that organizational context functions as an active mediating element, influencing transformation trajectories and outcomes. Unlike approaches that treat context as a control variable (Bharadwaj et al., 2013; Verhoef et al., 2021), this study demonstrates how digital maturity, infrastructure constraints, and cultural aspects condition transformation pathways. This interpretation reinforces contingency-based perspectives on DT, highlighting the need for context-sensitive analyses.

The identification of adaptive governance as a relevant processual mechanism contributes to expanding the literature on change management and organizational transformation by emphasizing the importance of structures capable of dealing with uncertainty, experimentation, and continuous learning. This perspective aligns DT with discussions on organizational ambidexterity, underscoring the need to balance operational stability and transformational innovation (O'Reilly & Tushman, 2013).

Finally, the findings indicate that DT generates not only operational and strategic outcomes but also institutional effects, such as legitimacy, reputation, and social impact (Correani et al., 2020; Björkdahl, 2020). This dimension broadens the understanding of transformation by highlighting its connection to stakeholder expectations and broader institutional pressures.

3.6.2 Practical implications

The developed framework provides relevant conceptual insights for the actions of organizational leaders involved in Digital Transformation (DT) processes. The findings indicate that transformation tends to be more effective when supported by leadership capabilities distributed across multiple organizational levels, rather than being exclusively concentrated in top management. In this regard, the development of digital competencies throughout the organizational structure emerges as a key element for the consistent implementation of transformation initiatives.

The findings also suggest that DT involves the simultaneous management of internal motivations and external pressures, requiring strategic approaches capable of balancing operational efficiency, innovation, and institutional compliance. This complexity reinforces the need for alignment between organizational objectives and environmental demands throughout the transformation process. Furthermore, the study highlights the importance of relationships with external stakeholders as a structural component of transformation strategy. Technological partnerships, interorganizational collaboration, and interaction with regulatory bodies tend to influence both the availability of resources and the pace of change initiatives.

The results further indicate that governance mechanisms capable of accommodating experimentation and continuous learning contribute to the sustainability of transformation processes. Organizational structures that reconcile operational stability with incremental and radical innovation may foster the continuity of transformational efforts. Finally, the iterative nature identified in the framework suggests that DT tends to be conducted progressively, through successive cycles of learning and organizational reconfiguration. Multidimensional evaluation systems that consider not only operational outcomes but also capability development and institutional effects may contribute to more effective management of transformation initiatives.

3.6.3 Sectoral and contextual applications

The findings indicate significant variations in Digital Transformation (DT) approaches across organizations of different sizes and sectors. Large firms tend to establish internal units dedicated to digital innovation, whereas small and medium-sized organizations often rely on external partnerships and network-based arrangements. These differences suggest that transformation strategies should be sensitive to resource availability and specific structural conditions.

Additionally, the predominance of studies conducted in European contexts, combined with evidence from emerging markets, indicates that DT trajectories may vary according to institutional and cultural characteristics. Therefore, the application of the proposed framework requires adaptation to local regulatory, technological, and organizational conditions.

3.6.4 Limitations and directions for future research

This study presents limitations inherent to the meta-synthesis approach. The reliance on evidence derived from previously published studies may constrain the incorporation of emerging practices that are not yet consolidated in the literature. Moreover, the predominance of studies conducted in specific institutional contexts may limit the generalizability of the findings to other organizational environments.

The interpretive nature of the meta-synthesis implies that the proposed framework should be understood as a mid-range theoretical construction, whose further empirical validation may contribute to its refinement. Future research may explore quantitative tests of the identified relationships, as well as longitudinal investigations examining the evolution of transformation cycles over time.

3.6.5 Concluding remarks

This study contributes to advancing the understanding of Digital Transformation (DT) by offering an integrative interpretation of the phenomenon, addressing gaps identified in the literature that tends to treat its dimensions in a fragmented manner. The five-dimension

framework, articulated through feedback mechanisms, proposes an understanding of DT as a dynamic, sociotechnical, and interdependent process, moving beyond approaches that predominantly describe it as a linear trajectory of technological adoption.

The integration of actors, motivations, contexts, processes, and outcomes demonstrates that DT constitutes a complex organizational phenomenon shaped by multiple factors and transformation trajectories. This perspective contributes to theoretical advancement by providing an analytical structure capable of supporting more contextualized and process-oriented interpretations of digital transformation.

From a practical standpoint, the findings suggest that DT initiatives are more likely to be sustainable when understood as continuous processes of organizational learning and reconfiguration. Conceptualizing DT as an evolutionary cycle, driven by interactions between structural and processual dimensions, may support organizations in formulating strategies that are better aligned with their specific conditions and institutional environments. Thus, the study underscores the need for integrated and context-sensitive approaches to the analysis and implementation of DT, contributing to the development of more comprehensive and theoretically grounded interpretations of the phenomenon.

4 STUDY 3: ASYMMETRIC DIGITAL TRANSFORMATION IN THE SCIENTIFIC-TECHNICAL-PROFESSIONAL SUBSECTOR: PLATFORM-BASED COOPETITION AND STRATEGIC RECONFIGURATION IN THE BRAZILIAN PUBLISHING MARKET

Abstract:

Study Objective: To investigate how publishers in the Scientific-Technical-Professional subsector enact the dimensions of digital transformation to reconfigure strategies, processes, and relationships in the Brazilian market, with particular attention to the role of institutional complexity, asymmetric transformation, and platform-based coopetition.

Methodology and Approach: Qualitative abductive research (Timmermans & Tavory, 2012) with data structure following the Gioia methodology (Gioia et al., 2013). Fifteen semi-structured interviews with CEOs, platform leaders, industry specialists, and institutional representatives were triangulated with documentary sources (CBL/SNEL reports, Nielsen BookData, PublishNews). Analysis proceeded through first-order coding, second-order themes, and aggregate dimensions, iterating between empirical surprises and the Who-Why-Where-How-What framework.

Originality and Relevance: The study integrates institutional logics, dynamic capabilities, ecosystem, platform, and coopetition perspectives to analyze digital transformation in a sector governed by competing academic, state, market, and technological logics. It addresses the undertheorized intersection between institutional complexity and asymmetric transformation trajectories.

Findings: Digital transformation in the STP is asymmetric, hybrid, and predominantly reactive. The most distinctive finding is the emergence of platform-based coopetition as the dominant structural strategy: competing publishers created and share collective access infrastructure while preserving rivalry over catalogs and authors. The book shifts from core product to “institutional anchor asset”, underpinning B2B subscription models, educational services, and hybrid ecosystems. Conflicting logics coexist in tension, generating hybrid governance arrangements and selective reconfiguration of competencies through AI, print-on-demand, and metadata management.

Theoretical/methodological contributions: The study reveals how platform-based coopetition operates as a reconciliation mechanism between conflicting institutional logics, extending coopetition theory to contexts of prolonged crisis and regulatory disruption. It introduces the concept of “institutional anchor asset” to explain value reconfiguration in knowledge-intensive ecosystems, and enriches dynamic capabilities theory by positioning inter-organizational collective arrangements as the relevant unit of capability reconfiguration in institutionally complex fields.

Keywords: Asymmetric digital transformation; Platform-based coopetition; Institutional logics; Publishing ecosystems; Institutional anchor asset

4.1 INTRODUCTION

Digital transformation has attracted extensive scholarly attention in the fields of management, information systems, and strategy (Vial, 2019; Verhoef et al., 2021; Hanelt et al., 2021). However, dominant frameworks tend to conceptualize it as a progressive, firm-level phenomenon in which organizations advance along a maturity curve ranging from digitization to full digital transformation (Westerman et al., 2014; Matt et al., 2015). This linear perspective, largely developed in technology-intensive industries, leaves significant gaps in the literature.

Research on digital transformation has devoted insufficient attention to how institutional complexity shapes transformation trajectories. Most studies examine technology adoption, capability development, or business model innovation within individual firms or dyadic relationships, without considering that organizations in knowledge-intensive and highly regulated sectors must simultaneously respond to multiple institutional logics, often conflicting (Thornton et al., 2012; Greenwood et al., 2011). When academic, state, market, and technological logics coexist and compete, digital transformation cannot follow a single rational path; rather, it becomes a negotiated process whose outcomes are shaped by how organizations manage legitimacy demands across different institutional orders (Friedland & Alford, 1991; Scott, 2014). The interaction between institutional complexity and digital transformation trajectories remains under-theorized.

Moreover, the literature predominantly examines digital transformation as a symmetric process, implicitly assuming that technological adoption translates proportionally into strategic value. However, in sectors where institutional constraints are strong and heterogeneous, significant technological advances may coexist with incomplete strategic, cultural, or organizational reconfigurations, producing what can be termed asymmetric digital transformation (Aguiar et al., 2023; Peukert & Reimers, 2022). The mechanisms that generate and sustain this asymmetry, particularly the role of conflicting institutional logics and platform-mediated power relations, have not yet been adequately specified.

Additionally, although coopetition research has advanced significantly in explaining how firms cooperate and compete simultaneously (Bengtsson & Kock, 2000; Gnyawali & Ryan Charleton, 2018), it has predominantly conceptualized coopetition as a firm-level strategic arrangement for value creation or competitive positioning. Less attention has been devoted to understanding how coopetition operates as a collective response to technological disruption in institutionally complex fields, where organizations must reconcile competing market, regulatory, academic, and technological logics. Recent work calls for greater attention to the processual and contextual dynamics of coopetition in digital ecosystems (McGrath et al., 2025; Dagnino & Ritala, 2025; Klimas et al., 2024), yet empirical evidence remains limited on how rival actors jointly build and govern shared digital infrastructures as mechanisms for managing legitimacy tensions and field-level instability. In such contexts, coopetition may function not merely as a competitive strategy but as a coordinated mechanism of adaptation through which organizations collectively sustain transformation under institutional constraints.

These gaps converge into a common theoretical challenge: understanding how digital transformation unfolds in fields characterized by persistent institutional complexity, where multiple logics constrain and enable strategic responses in ways that dominant linear, firm-centric models fail to capture. Addressing this challenge requires an empirical context that exhibits high institutional complexity, active platform-mediated dynamics, and observable asymmetries between technological adoption and strategic reconfiguration.

The Scientific-Technical-Professional (STP) subsector of the Brazilian publishing market provides precisely such a context. STP represents a strategic segment of the Brazilian publishing industry, responsible for producing content aimed at academic education, professional development, and scientific dissemination (CBL & SNEL, 2025). Since the early 2010s, the subsector has faced cumulative economic, technological, and institutional pressures (Mello, 2012; Cerlalc, 2021), intensified by the 2016 economic crisis and the COVID-19 pandemic, which together resulted in an estimated real decline of 44% in printed book revenues over nearly two decades (SNEL, 2025; PublishNews, 2025). Simultaneously, digitalization has driven significant growth in e-books, audiobooks, digital platforms, and institutional subscription models (Aguiar et al., 2023; CBL & SNEL, 2025). The subsector operates at the intersection of academic, state, market, and technological logics, with regulatory bodies (MEC), sectoral associations (CBL, SNEL, LIBRE), global platforms (Amazon), and consortium-based digital libraries shaping the

transformation landscape. It therefore constitutes a theoretically fertile context for empirically investigating the interaction between institutional complexity, platform dynamics, and asymmetric transformation.

Despite the extensive production of sectoral reports and market analyses (PublishNews, 2024; CBL & SNEL, 2025), the academic literature lacks an integrated approach that articulates digital transformation, ecosystems, platforms, dynamic capabilities, institutional logics, and competition within the STP subsector. Existing research tends to examine technological, economic, or market impacts in isolation, without investigating how these dimensions interact asymmetrically within the publishing field. Little is known about who the central actors are and how their identities are being reconfigured, which motivations and pressures drive transformation, where transformation materializes in terms of spaces and platforms, how strategies and processes are implemented, and what outcomes emerge from these dynamics.

In light of these gaps, this study formulates the following research question: **how do publishers in the Scientific-Technical-Professional subsector operationalize, in practice, the dimensions of digital transformation (Who, Why, Where, How, and What) to reconfigure strategies, processes, and relationships in the Brazilian market?** To address this question, the study adopts a qualitative design grounded in abductive analysis (Timmermans & Tavory, 2012), structuring data according to the Gioia methodology (Gioia et al., 2013). Fifteen in-depth semi-structured interviews with publishing leaders, platform representatives, sector specialists, and institutional actors were triangulated with documentary sources, enabling a comprehensive and holistic analysis of the sector. The analysis proceeds iteratively, connecting empirical evidence to the analytical dimensions established in Study 2, thus capturing the localized, relational, and asymmetric manifestation of digital transformation.

The study offers several contributions. It provides a detailed analysis of digital transformation as an asymmetric process within a platform-based publishing ecosystem, specifying the institutional mechanisms that produce and sustain such asymmetry. It integrates institutional logics, dynamic capabilities, and ecosystem/platform perspectives to explain publishers' strategic reconfiguration, revealing platform-based competition as a mechanism for reconciling conflicting logics. It also introduces the concept of an "institutional anchor asset" to theorize how knowledge products may shift from economic centrality to symbolic function while simultaneously sustaining new value-creation architectures. In doing so, the study advances the

understanding of digital transformation as an institutionally shaped, relationally structured, and strategically asymmetric phenomenon.

4.2 THEORETICAL FRAMEWORK

4.2.1 The Scientific-Technical-Professional (STP) subsector as an institutional field

The Brazilian publishing market is traditionally divided into four subsectors: Trade (General Interest), Educational, Religious, and Scientific-Technical-Professional (STP). The STP subsector is responsible for producing content aimed at academic education, professional development, and scientific dissemination, primarily serving university students, researchers, technical specialists, and professionals seeking specialized knowledge (CBL & SNEL, 2025). Unlike the other subsectors, STP operates under hybrid institutional logics, articulating academic demands, state regulations, and market imperatives. The institutional logics perspective helps explain how broader institutional orders shape organizational practices, meanings, and structures through symbolic and material systems that guide action and confer legitimacy (Friedland & Alford, 1991; Thornton et al., 2012).

From an organizational field perspective (Scott, 2014), the STP subsector constitutes an institutionalized space of interaction among multiple actors, including publishers, universities, digital platforms, regulatory bodies, and sectoral associations, all governed by formal and informal rules. The field is structured by diverse sources of authority (public, academic, associative, and technological), generating interdependence and institutional dependence, particularly in relation to public policies and academic evaluation systems. The Ministry of Education (MEC) exerts indirect influence by regulating higher education institutions, thereby affecting knowledge production and circulation. At the associative level, the Brazilian Book Chamber (CBL), the National Union of Book Publishers (SNEL), and the Brazilian Independent Publishers League (LIBRE) play central roles in coordinating the subsector, defending collective interests, and promoting bibliodiversity (SNEL, 2022; LIBRE, 2024).

Digitalization extends beyond technical innovation: it reconfigures the bases of coordination and authority within the field, shifting power toward digital platforms and technological intermediaries while intensifying structural asymmetries. STP publishers have

expanded investments in e-books, learning platforms, and digital libraries to respond to emerging patterns of access and consumption (Denck, 2023; Regina, 2023). In 2024, the subsector recorded nominal market sales growth of 3.3%, the strongest nominal performance among all subsectors in the decade, driven primarily by digital content, which accounted for 31% of new titles and 22% of units sold in digital format (CBL & SNEL, 2025; Nielsen BookData, 2025).

Nevertheless, barriers to the full consolidation of digital business models persist, stemming from institutional logics still anchored in print, long publication cycles, and traditional financing mechanisms, both within publishing houses and across public and university institutions (Ferreira & Oliveira e Silva, 2018; Vendrell-Herrero et al., 2017; Verhoef et al., 2021). This heterogeneity produces differentiated patterns of digital adaptation among actors within the field.

4.2.2 Digital transformation and strategic reconfiguration

Digital transformation extends beyond the mere digitization of processes, understood as the conversion of analog formats to digital ones. It constitutes a sociotechnical and strategic process characterized by the continuous reconfiguration of structures, processes, and business models. Whereas digitization focuses on the implementation of specific technologies, digital transformation entails a structural shift in how organizations create, deliver, and capture value in dynamic contexts, driven by technologies such as artificial intelligence, cloud computing, big data, the Internet of Things, and digital platforms (Bharadwaj et al., 2013; Reis et al., 2018; Vial, 2019; Verhoef et al., 2021).

This process reconfigures governance models, coordination mechanisms, and interactions within digital ecosystems, promoting a new distribution of power and value across productive chains (Verhoef et al., 2021). No unanimous definition exists: the concept develops from perspectives related to technological innovation, organizational strategy, institutional transformation, and consumer behavior (Susanti et al., 2023; Vial, 2019). Its effectiveness depends on the interplay of technological, human, and institutional elements, requiring organizational learning, experimentation, and constant adaptation.

The literature highlights five fundamental dimensions: (1) technological and infrastructural (system upgrades and connectivity); (2) organizational and cultural (resistance to

change and adoption of new practices); (3) strategic and business model-related (reconfiguration of value propositions); (4) competency and human capital (training and new roles); and (5) institutional and regulatory (regulations, public policies, and standards) (Matt et al., 2015; Mugge et al., 2020; Verhoef et al., 2021; Westerman et al., 2014). Benefits include operational effectiveness, innovation, personalization, and the strategic use of data (Chesbrough, 2010; Teece, 2010; Verhoef et al., 2021), with platform-based models further enhancing collaboration and open innovation.

However, in highly specialized and regulated sectors, what we term asymmetric digital transformation emerges: technological innovations coexist with limited or incomplete strategic, cultural, or institutional restructuring, preventing the full realization of sustainable value (Aguiar et al., 2023; Peukert & Reimers, 2022). In publishing, this phenomenon manifests through the integration of digital tools while preserving traditional print logics, historical ties to public policies, and established financing structures (Scott, 2014).

Digitalization has reshaped the publishing value chain: global platforms such as Kindle/Amazon, operating since 2007, control distribution, data, recommendation algorithms, and access, thereby transferring authority from publishers to intermediaries (Adner, 2006; Aguiar et al., 2023; Miller & Wang, 2024; Wang & Miller, 2019). Publishers differentiate themselves through curatorial expertise, specialization, and relational capabilities (Thompson, 2021). Hybrid models (print, digital, and audio), self-publishing, and crowdfunding reconfigure roles, narrowing the distance between producers and consumers (Crosby, 2019; Mustafa & Adnan, 2017).

Transformation trajectories vary according to institutional context: in Spain, they follow a gradual and cautious pace (Magadán-Díaz & Rivas-García, 2018); in Brazil, they were accelerated by the pandemic (Endo, 2021; Nobrega, 2021), with nominal growth of 21.6% in digital content revenue in 2024 (16% in real terms), a 47.6% increase in virtual library revenue (representing 44% of total digital revenue), and STP growth driven by these formats (CBL & SNEL, 2025; Denck, 2023; Ferreira Da Silva & Moller, 2023). Despite barriers related to financing and regulation, diversification into audiobooks, print-on-demand, and interactive platforms indicates structural change, albeit with persistent asymmetries between digitalization and value creation.

Dynamic capabilities theory provides an additional lens for understanding strategic reconfigurations under uncertainty. Dynamic capabilities consist of microfoundations that enable

firms to sense changes, seize opportunities, and reconfigure resources and structures (Teece et al., 1997; Teece, 2007; Teece, 2018). In publishing, dynamic capabilities are expressed through curatorial practices, data utilization, process restructuring, and integration with platforms and institutions.

In digital ecosystems, adaptation takes a relational form: relational capabilities enable the creation, management, and renewal of partnerships built on trust and complementarity (Cozzolino, et al., 2021; Danneels, 2016; Dyer & Singh, 1998). In the STP context, publishers develop capabilities to manage relationships with authors, educational institutions, platforms, and regulatory bodies, balancing technological innovation with academic legitimacy. These capabilities materialize through sensing practices (identifying trends), seizing (new formats and partnerships), and reconfiguring (digital integration without diminishing symbolic authority) (De la Torre & De la Vega, 2025; Rahman et al., 2025; Teece, 2007).

In sum, digitalization in the STP subsector is an uneven and context-dependent process in which technological upgrading alone does not ensure positive outcomes without strategic restructuring through dynamic capabilities and relational competencies. This perspective grounds the analysis of ecosystems, platforms, and institutional logics that follows.

4.2.3 Ecosystems, platforms, and platform-based cooptation

Digitalization has significantly altered organizational interactions, replacing linear chains with highly interconnected structures in which multiple actors simultaneously collaborate and compete (Hanelt et al., 2021; Nambisan et al., 2019; Verhoef et al., 2021). Markets are increasingly understood as business ecosystems: clusters of interdependent entities that co-evolve around a shared value proposition, blending cooperation and competition on a continuous basis (Iansiti & Levien, 2004; Jacobides et al., 2018; Moore, 1993; Moore, 1996).

Unlike conventional perspectives grounded in isolated transactions or linear value chains, the ecosystem approach emphasizes boundary permeability between organizations, functional complementarity, and relational coordination as key drivers of competitive advantage (Adner, 2017; Jacobides et al., 2018). Ecosystems evolve through distinct phases, including emergence, growth, dominance, and self-renewal, while facing both collaborative challenges (standard-

setting, alliance building) and competitive ones (differentiation, contestation of strategic positions) (Moore, 1996).

In publishing, particularly in the STP subsector, this approach illuminates how digital transformation entails a significant restructuring of the sector: traditional methods of knowledge creation and dissemination coexist with new forms of interdependent coordination shaped by academic norms, public policies, and professional logics (Adner, 2017; Jacobides et al., 2018).

Within digital ecosystems, platforms perform a central function as structures of mediation and governance. They operate not merely as distribution channels but as architectures that organize interactions, regulate informational flows, define technical and algorithmic norms, and structure mechanisms of access, visibility, and value appropriation (Gawer & Cusumano, 2014; Jacobides et al., 2018). In publishing, platforms (e.g., Amazon, SciELO, Springer Nature) reconfigure interactions among publishers, authors, readers, and institutions, transferring part of publishers' conventional control to algorithmic recommendation systems and engagement metrics.

This mediation is closely linked to the attention economy (Davenport & Beck, 2001): in a context of informational superabundance, attention becomes the scarce resource, with algorithms, engagement metrics, and presentation formats determining what is disseminated, discovered, and prioritized. Conventional editorial validation criteria, such as academic quality, institutional endorsement, and peer review, begin to coexist with, and in some cases compete against, quantitative indicators of visibility and engagement, producing a new symbolic dynamic in the field (Hinings et al., 2018; Scott, 2014).

This arrangement fosters the emergence of platform-based cooptation: collaboration and competition occur simultaneously, mediated by the platform's rules and infrastructure (Bengtsson & Kock, 2000; Gnyawali & Park, 2011; Gnyawali & Ryan Charleton, 2018). Platforms act as "orchestrators," promoting complementarities (cooperation) while simultaneously intensifying competition for attention, data, and prominent positions (Adner, 2017; Jacobides et al., 2018). Recent research indicates that cooptation in digital ecosystems is not static but dynamic and processual: participants "enter and exit" interactive contexts as opportunities and constraints evolve, continuously seeking a new equilibrium between collaboration and rivalry (Dagnino & Ritala, 2025; Klimas et al., 2024; McGrath et al., 2025).

In the STP context, platform-based cooperation takes a distinctive form: publishers cooperate through virtual library platforms and institutional licensing arrangements to expand their reach and financial sustainability, while simultaneously competing intensely for algorithmic visibility, ranking positions, and usage data. The ability to manage this tension through relational dynamic capabilities becomes critical for survival and strategic reconfiguration (McGrath et al., 2025; Teece, 2018).

Platforms also function as entities controlling data and metadata, constituting a strategic source of competitive advantage. The management of informational flows, metadata, and user behavior analytics enables platforms to capture a significant share of the value generated within the ecosystem, reshaping publishers' business models (Jacobides et al., 2018; Teece, 2018). STP publishers, historically reliant on specialized catalogs and institutional acquisitions, must now extend their value proposition beyond the standalone printed book or e-book by integrating services, analytical data, and hybrid experiences (Chesbrough, 2010; Teece, 2018).

In summary, digital ecosystems in the publishing field configure an environment of platform-based cooperation in which platforms simultaneously serve as governance infrastructures, attention mediators, and data managers. STP publishers are no longer mere content producers; they are becoming orchestrators of relationships within hybrid ecosystems, continuously negotiating their position between cooperation (aimed at scale and legitimacy) and competition (aimed at visibility and value capture). This processual dynamic of entering and exiting interactive contexts requires relational capabilities and continuous reconfiguration processes, directly connecting to the research question of this study.

4.2.4 Institutional logics and complexity in the publishing field

Institutional logics are sets of beliefs, values, and practices that guide organizational conduct and confer legitimacy to activities within a given field (Friedland & Alford, 1991; Thornton et al., 2012). According to Friedland and Alford (1991), contemporary society comprises multiple institutional orders, including market, state, profession, and community, each possessing distinct symbolic and material principles that are often in conflict. Thornton et al. (2012) elaborate this view by proposing that institutional logics operate as “grammars of action” that shape how actors perceive issues, set goals, and validate solutions.

In publishing, particularly in the STP subsector, these logics do not operate in isolation but hybridize in a context of institutional complexity (Greenwood et al., 2011; Scott, 2014). Greenwood et al. (2011) conceptualize institutional complexity as the condition in which organizations face simultaneous and sometimes conflicting demands from multiple logics, generating tensions that require ongoing strategic responses. Scott (2014) adds that organizational domains are organized around institutional pillars, regulative (governmental), normative (professional/academic), and cultural-cognitive (technological/market-based), whose intersection produces hybrid and dynamic environments. In the STP publishing domain, four predominant institutional logics intertwine, as presented in Table 7.

Table 7

Institutional logics in the STP subsector

Logic Type	Description	Theoretical Foundation
Academic/Professional Logic	Centers on the production and validation of scientific knowledge through peer review, methodological rigor, and disinterested diffusion of knowledge. Its legitimacy derives from the symbolic authority of science and the academic community.	Thornton et al. (2012); Scott (2014)
Governmental/Public Logic	Centers on public policies, governmental regulation, institutional financing, and open access directives (e.g., MEC, CAPES, library acquisition policies). Emphasizes the book as a public good and the state's role in democratizing knowledge.	Friedland & Alford (1991); Greenwood et al. (2011)
Market Logic	Centers on economic efficiency, profitability, market expansion, and customer satisfaction (purchasing institutions or end-readers). Prioritizes scalability, revenue diversification, and competitiveness.	Thornton et al. (2012)
Technological Logic	Centers on digitalization, valuing technological innovation, platform scalability, data analytics, algorithmic personalization, and control of digital infrastructure.	Scott (2014)

Logic Type	Description	Theoretical Foundation
	Imposes new performance metrics based on engagement, visibility, and usage data.	

Note. Authors' elaboration based on the literature (2026).

These logics do not succeed one another but coexist and compete within the same space, provoking characteristic institutional tensions (Greenwood et al., 2011). The academic logic may conflict with the market logic when the pursuit of profitability undermines quality or open access. The state logic may conflict with the technological logic when public policies cannot keep pace with the speed of digital platforms. The technological logic, in turn, challenges both the academic sphere, by prioritizing engagement over rigor, and the state sphere, by concentrating power among a limited number of global actors. The result is a field marked by persistent institutional complexity in which publishers cannot simply “choose” a dominant logic but must continuously manage hybridizations (Thornton et al., 2012; Scott, 2014).

Organizational responses to this complexity range from conformity, compromise, and avoidance to defiance or creative combination of logics (Greenwood et al., 2011). In the context of digital transformation in the STP, the most resilient publishers adopt strategies of active hybridization: they preserve academic legitimacy while integrating technological tools and commercial models, and they engage with the state in pursuit of favorable policies, such as institutional licenses and public acquisitions of digital content. The capacity to navigate and integrate antagonistic logics thus becomes a source of competitive advantage and sustainability in the hybrid publishing ecosystem.

4.2.5 Theoretical synthesis: asymmetric digital transformation in the STP subsector

The integration of the theoretical perspectives developed in this chapter enables a multidimensional and processual understanding of digital transformation in the STP subsector. The institutional field (Scott, 2014), institutional logics (Friedland & Alford, 1991; Thornton et al., 2012), institutional complexity (Greenwood et al., 2011), business ecosystems and platforms (Adner, 2017; Gawer & Cusumano, 2014; Jacobides et al., 2018; Moore, 1993, 1996), platform-based cooperation (Bengtsson & Kock, 2000; Gnyawali & Ryan Charleton, 2018; McGrath et al.,

2025), and relational dynamic capabilities (Teece, 2007; Teece, 2018) cease to function as isolated lenses and instead become interconnected components of a single phenomenon: asymmetric digital transformation.

This study defines asymmetric digital transformation as a process in which significant technological advances (platform adoption, workflow automation, expansion of digital catalogs and virtual libraries) coexist with limited or incomplete strategic, cultural, and institutional reconfigurations, generating disproportionate gains in performance and sustainability across actors within the same field (Aguiar et al., 2023; Peukert & Reimers, 2022). The concept differs from related notions in the literature in important respects. Unlike the “digital divide”, which primarily captures differential access to technology across populations or regions (Norris, 2001; Van Dijk, 2020), asymmetric digital transformation focuses on within-field disparities in the capacity to convert technological adoption into strategic value. It also moves beyond “uneven digitalization” (Brennen & Kreiss, 2016), which tends to describe variation in the pace of technology adoption, by foregrounding the institutional and relational mechanisms that produce and sustain these disparities. Specifically, asymmetry here is not merely a matter of speed or resources but is structurally embedded in the interplay of conflicting institutional logics, platform-mediated power relations, and differentiated dynamic capabilities. In the Brazilian STP, this asymmetry manifests in the coexistence of accelerated technical modernization with the persistence of historical dependence on print, traditional academic logics, and slow institutional financing models (CBL & SNEL, 2025; Denck, 2023).

This asymmetry is a structural feature of the field: STP publishers operate in a hybrid ecosystem marked by permanent institutional complexity, in which academic, state, market, and technological logics overlap and generate continuous tensions (Friedland & Alford, 1991; Greenwood et al., 2011; Scott, 2014; Thornton et al., 2012). Digital platforms function as orchestrators of platform-based coopetition, enabling collaboration while simultaneously intensifying disputes over attention, data, and visibility (Jacobides et al., 2018; McGrath et al., 2025).

The synthesis of these lenses reveals that digital transformation in the STP is a relational, situated, and multidimensional process. To apprehend it empirically, this study proposes an analytical model organized around five interdependent dimensions: (1) Who, the central actors of the ecosystem and their relative positions; (2) Why, the motivations and pressures generated by

institutional complexity; (3) Where, the contextual spaces of interaction (platforms, virtual libraries, hybrid channels); (4) How, the reconfiguration processes enacted through relational dynamic capabilities; and (5) What, the emergent outcomes in the redefinition of strategies, processes, and editorial value. This model addresses the gap identified in the introduction by offering an integrated approach that captures how STP publishers mobilize, in practice, the dimensions of digital transformation to reconfigure strategies, processes, and relationships within a hybrid ecosystem.

4.3 THEORETICAL-METHODOLOGICAL ARTICULATION

The five-dimension analytical framework (Who, Why, Where, How, and What), constructed in the theoretical synthesis, directly orients both the interview protocol and the interpretation of empirical data. The Who and Why dimensions guide the understanding of how publishers position themselves in relation to actors, institutional pressures, and economic constraints. The Where dimension directs attention to the spaces and infrastructures of coordination, with emphasis on digital platforms and arrangements such as virtual libraries. The How dimension captures the strategic and organizational processes through which publishers respond to digitalization. The What dimension orients the analysis of outcomes, particularly new revenue models, forms of value capture, and the redefinition of the book's role within the educational ecosystem. This articulation ensures that data collection and analysis remain coherent with the proposed theoretical model, enabling a systematic and integrated response to the research question.

Importantly, rather than imposing a rigid a priori structure on the data, the five-dimension framework functions as a set of theoretically informed sensitizing concepts (Blumer, 1954) that orient the researcher's gaze without predetermining what will be found. This approach is consistent with the abductive logic adopted in the study (Timmermans & Tavory, 2012), whereby the researcher enters the field with theoretical awareness but remains open to empirical surprises that may refine, challenge, or extend the initial framework.

4.4 METHODOLOGICAL PROCEDURES

Understanding how Scientific-Technical-Professional (STP) publishers operationalize the dimensions of digital transformation in practice requires an approach that acknowledges the complexity of the phenomenon: a hybrid, dynamic, and continuously evolving process involving multiple actors, strategies, technologies, and institutions. In this regard, this study adopts a qualitative research design with an abductive approach, which is appropriate for examining contextualized practices, emerging patterns, and the meanings attributed by participants engaged in the reconfiguration of the Brazilian publishing market.

This design allows analytical categories and theoretical propositions to emerge from the systematic analysis of empirical data, rather than being tested based on pre-established hypotheses (Lincoln & Guba, 1985; Thomas, 2006). In the STP context—characterized by diverse trajectories, particularized institutional configurations, and asymmetric technological adoption—the abductive approach recognizes convergences, tensions, and contradictions in strategies and practices based on observed evidence, while simultaneously mobilizing theoretical concepts to interpret surprising or seemingly paradoxical patterns (Timmermans & Tavory, 2012). This orientation is aligned with the purpose of the research: to understand how the five dimensions of digital transformation are operationalized in practice, based on the perceptions, experiences, and actions of organizational actors themselves.

4.4.1 Research approach

The study adopts an interpretive qualitative approach, as it seeks to understand organizational practices, perceptions, and social interactions that cannot be reduced to quantitative measurement. Digital transformation in the STP subsector manifests through strategic actions, internal processes, interorganizational relationships, and technological decisions that require a contextualized analysis sensitive to the multiple levels involved (Creswell & Poth, 2018; Flick, 2018).

Abductive reasoning constitutes the central analytical axis: the study begins with immersion in the data to identify emerging themes, patterns, and relationships, while iteratively engaging with theoretical concepts to generate surprising and theoretically rich insights (Dubois

& Gadde, 2014; Timmermans & Tavory, 2012). This logic is particularly suited to emergent and asymmetric phenomena, such as digital transformation in the publishing sector, as it allows understanding to be constructed from the empirical context while being informed by prior theoretical knowledge. The approach privileges the phenomenological perspective of the actors and organizations under investigation, emphasizing how publishers make sense of change, negotiate interpretations, and develop adaptive practices.

Data structuring follows the Gioia methodology (Gioia et al., 2013), which provides a systematic and transparent procedure for transitioning from informant-centered raw data to theoretically grounded categories. This methodology is particularly appropriate for the present study because it explicitly accommodates the researcher's theoretical sensitivity while maintaining grounding in empirical evidence, thereby addressing the tension between framework-driven inquiry and emergent theorizing.

4.4.2 Data collection procedures

The data collection process was organized through a combination of qualitative methods, implemented sequentially and, at certain stages, simultaneously, allowing for the cross-validation of information and the deepening of analytical categories. Both primary and secondary sources were used, as detailed below.

4.4.2.1 In-depth interviews

Semi-structured interviews constituted the primary source of data. A total of fifteen interviews were conducted online by the researchers during November and December 2025. All interviews were recorded in Portuguese with prior consent, subsequently fully transcribed and reviewed, resulting in Word documents containing exclusively the informants' statements. This procedure was adopted to ensure rigor and accuracy in the treatment and analysis of qualitative data.

The interviews generated a substantial volume of empirical data, totaling 810 minutes of recordings (equivalent to 13 hours and 30 minutes of content) and approximately 131 pages of transcripts, demonstrating the depth and richness of the information obtained. This volume is

consistent with qualitative investigations aimed at understanding complex and dynamic organizational phenomena from the perspectives of key actors (Creswell & Poth, 2018; Patton, 2015).

Participants were selected among CEOs of publishing groups and relevant professionals from the publishing ecosystem, including editors, consultants, industry specialists, association representatives, and CEOs of digital platforms, as described in Table 8 and organized by group. The primary objective of the interviews was to capture perceptions, strategies, practices, and challenges faced by actors directly involved in digital transformation processes within the CTP subsector.

It is important to note that, for one of the publishing groups, the researchers already had prior access, with the CEO of that organization serving as the initial point of contact for subsequent interviews. From this initial access, a snowball sampling technique was adopted, widely used in exploratory qualitative research (Biernacki & Waldorf, 1981; Noy, 2008). At the end of each interview, participants were invited to recommend other professionals relevant to the study. Interviewees themselves facilitated introductions, enabling the gradual expansion of the sample and access to strategic actors within the publishing ecosystem.

This procedure was maintained iteratively until category stabilization was achieved, at which point new interviews began to confirm previously identified patterns and categories without generating substantively new information (Guest et al., 2006), justifying the final total of fifteen interviews. Specifically, recurring patterns began to stabilize after the sixth interview, and subsequent interviews reinforced and refined emerging categories across different actor groups within the ecosystem rather than producing new first-order concepts. Additionally, after each interview, researchers conducted analytical reflection sessions to discuss emerging insights, adjust the conduct of subsequent interviews, and refine the protocol, which remained flexible and evolving in accordance with the abductive logic of the investigation (King & Horrocks, 2019; Patton, 2015).

Prior to each interview, researchers formally introduced themselves to participants, clarified the research objectives, requested authorization for recording, and communicated that the confidentiality of both interviewees and institutions would be ensured. The interview protocol began with questions regarding the interviewee's professional trajectory, facilitating rapport building and contextualizing their experience in the sector. At the end, participants were invited

to share their perspectives on the future of the Brazilian publishing market and the CTP subsector, as well as to comment on any relevant aspects not addressed during the interview. Additional questions flexibly covered themes such as: the definition of the CTP subsector; how this segment has addressed digital transformation in recent years; key challenges and opportunities; the profile and competencies required of sector professionals; the effects of the COVID-19 pandemic; issues related to piracy and copyright; collaborations among publishers; and the role of digital platforms and other channels for content access and commercialization.

Although semi-structured interviews constituted the main data source, understanding digital transformation in the CTP subsector required the incorporation of additional sources, broadening the analytical context and reducing biases arising from individual perceptions. Empirical evidence derived from the interviews was therefore complemented and contrasted with secondary data, enabling the contextualization of organizational actors' narratives within a broader sectoral, historical, and institutional landscape. This procedure follows methodological guidelines of interpretive qualitative research, which emphasize the importance of triangulating sources to strengthen the consistency, credibility, and analytical robustness of findings (Denzin, 1978; Flick, 2018).

Table 8*Characterization of interview groups (primary sources)*

Interviewee Group	Interviewee Code	Profile/Role in the Publishing Sector	Mode of Contact	Interview Date	Duration	Interview Format	Interviewee's Relevance to the Study
<i>Publishing Groups</i>	E2	CEO of a Publishing Group, with 45 years of experience in the publishing industry.	<i>E-mail and WhatsApp</i>	2025/11/11	64 min	<i>Online</i>	Provided a strategic and decision-making perspective on how the dimensions of digital transformation are enacted within the largest publishing group in the CTP subsector, especially in relation to business model reconfiguration, platform strategies, and institutional relationships.
	E4	CEO of a Publishing Group, with 7 years of experience in the publishing industry.	<i>E-mail and WhatsApp</i>	2025/11/18	62 min	<i>Online</i>	Provided empirical evidence on the integration between publishing activities and digital educational solutions, allowing for the examination of how digital transformation reshapes strategies, organizational processes, and relationships with higher education institutions.
	E8	Editor at a publishing group, with over 20 years of experience in the publishing industry.	<i>E-mail and WhatsApp</i>	2025/11/28	43 min	<i>Online</i>	Provided insights into editorial and operational practices within the CTP subsector, enabling the examination of shifts in production processes, the editor's role, and the adaptation of content to technological and

							institutional pressures linked to digital transformation.
	E13	Head of Marketing at a Publishing Group	<i>E-mail and WhatsApp</i>	2025/12/15	32 min	<i>Online</i>	Provided insights into communication strategies, customer relationship management, and digital positioning, enabling the examination of how market practices, user engagement, and publisher visibility are reconfigured within the digital ecosystem of the CTP subsector.
	E15	CEO of a Publishing Group	<i>E-mail and WhatsApp</i>	2025/12/24	32 min	<i>Online</i>	Provided a strategic and historical perspective on digital transformation in a traditional CTP publishing house, allowing for the examination of tensions between editorial continuity, technological innovation, and business model sustainability.
<i>Group of Digital Platforms and Infrastructures</i>	E6	CEO of a Digital Platform	<i>E-mail</i>	2025/11/26	36 min	<i>Online</i>	Contributed to the understanding of technological mediation and collective access models to content, supporting the analysis of the role of digital platforms and virtual libraries in the transformation of the CTP subsector.
	E10	CEO of a Metadata Platform	<i>E-mail and WhatsApp</i>	2025/12/09	63 min	<i>Online</i>	Contributed to the understanding of digital infrastructure, data

							management, and interoperability within the publishing ecosystem, supporting the analysis of the <i>Where</i> dimension of digital transformation and the increasing centrality of technological platforms in the CTP subsector.
	E14	Director of a company operating in the digital market serving the publishing industry.	<i>E-mail and WhatsApp</i>	2025/12/18	29 min	<i>Online</i>	Contributed to the external and comparative analysis of technological adoption in the publishing sector, supporting the identification of patterns, asymmetries, and challenges in the incorporation of digital solutions by publishers in the CTP subsector.
<i>Group of Field Experts/Observers</i>	E1	Specialist in the Publishing Industry, with 30 years of experience in the publishing sector.	<i>WhatsApp</i>	2025/11/05	79 min	<i>Online</i>	Contributed to a historical and cross-sectional understanding of the CTP subsector, supporting the comparative analysis across publishing segments and the interpretation of practices, structures, and challenges associated with digital transformation in the sector.
	E3	Consultant/Shareholder of a Publishing Group, with 54 years of experience in the publishing industry.	<i>WhatsApp</i>	2025/11/12	83 min	<i>Online</i>	Contributed to the strategic and longitudinal analysis of the CTP subsector, supporting the understanding of digital transformation trajectories and the structural decisions adopted by

							publishers over time.
	E7	Consultant and Research Lead in the Brazilian Publishing Sector	<i>E-mail</i>	2025/11/27	66 min	<i>Online</i>	Contributed to the empirical analysis of the Brazilian publishing market by providing aggregated data, industry indicators, and interpretations of consumption trends, content formats, and the performance of the Scientific-Technical-Professional (CTP) subsector, enabling the triangulation of qualitative perceptions obtained from the interviews.
	E9	Publishing Industry Specialist	<i>E-mail and WhatsApp</i>	2025/12/08	22 min	<i>Online</i>	Contributed to the analysis of relationships among publishers, educational institutions, and end users, supporting the understanding of shifts in consumption patterns, content access mechanisms, and decision-making logics within the CTP subsector.
<i>Sectoral/Institutional Coordination Group</i>	E5	Representative of a Publishing Group and of an Association related to the Publishing Sector	<i>E-mail</i>	2025/11/19	78 min	<i>Online</i>	Contributed to the institutional and sectoral contextualization of the CTP subsector by providing aggregated data and market analyses on the economic, regulatory, and technological dynamics influencing digital transformation in the publishing sector.

	E11	President of an organization affiliated with the Brazilian Publishing Sector	<i>E-mail and WhatsApp</i>	2025/12/11	52 min	<i>Online</i>	Contributed to the institutional and political contextualization of the Brazilian publishing market, supporting the analysis of collective articulations, regulatory challenges, and sectoral strategies related to digital transformation in the CTP subsector.
	E12	Publishing Sector Specialist and Former Publishing Director	<i>E-mail and WhatsApp</i>	2025/12/12	69 min	<i>Online</i>	Contributed to the understanding of public policies, regulatory mechanisms, and book and reading promotion initiatives, supporting the analysis of the institutional environment that shapes the strategies of publishers in the CTP subsector in the context of digital transformation.

Note. Authors' elaboration based on in-depth interviews conducted by the researchers (2025).

4.4.2.2 Documentary research

The documentary research stage consisted of the systematic collection and analysis of secondary sources. Its purpose was to provide a robust macro-structural context and complementary data on trends, economic performance, and structural transformations in the Brazilian publishing market, with particular emphasis on the Scientific-Technical-Professional (STP) subsector. The following types of materials were examined: (1) national and international industry reports; (2) specialized press coverage; (3) market studies; (4) podcasts and public interviews with experienced professionals in the sector; (5) reports and publications from representative industry associations; and (6) statistical data and technical reports from national and international organizations.

Among the industry reports analyzed, particular attention was given to those produced by representative entities such as the Brazilian Book Chamber (CBL) and the National Union of Book Publishers (SNEL). At both the national and international levels, statistical data and technical reports from institutions such as Nielsen BookData, the World Intellectual Property Organization (WIPO), the Regional Center for the Promotion of Books in Latin America and the Caribbean (Cerlalc), and the International Publishers Association (IPA) were examined.

This documentary analysis played a complementary and integrative role in relation to the in-depth interviews. It enabled: (1) the contextualization of the practices and strategies reported by interviewees; (2) the provision of quantitative and qualitative evidence regarding digitalization, sectoral performance, and structural changes; (3) the cross-validation (triangulation) of information obtained through interviews; and (4) the construction of a more comprehensive, theoretically grounded, and multidimensional understanding of the phenomenon under investigation.

To ensure methodological transparency and explicitly present the set of secondary sources used, two summary tables were developed. Table 9 presents the main documents, journalistic materials, public interviews, and institutional content analyzed. These materials were selected based on their direct relevance to understanding structural, strategic, and technological transformations in the Brazilian publishing market, with a focus on the STP subsector.

Table 9*Principal documents, reports, public interviews, and institutional content*

Responsible for Publication	Type of Secondary Source	Title	Publication Outlet	Date	Link	Relevance to the Study
<i>PublishNews</i>	<i>News Article on Website/Portal</i>	Where Have STP Readers Gone? – An Analysis of the Brazilian Context	Website/Portal	2020/11/11	https://www.publishnews.com.br/materias/2020/11/11/para-onde-foram-os-leitores-de-ctp-uma-analise-da-conjuntura-brasileira	Documentary source used to contextualize the Brazilian STP subsector, contributing to the understanding of changes in consumption profiles, reader behavior, and the structural challenges faced by publishers.
Brazilian Book Chamber (CBL)	<i>YouTube Interview</i>	Digital transformation and challenges for the publishing market during the 1st São Paulo virtual book biennial	<i>Youtube</i>	2021/02/04	https://www.youtube.com/watch?v=oq8uX9SLBRg&t=525s	Institutional documentary source for analyzing the challenges of digital transformation in the Brazilian publishing market, contributing to the understanding of sectoral strategies, collective initiatives, and the tensions between innovation and sustainability in the STP subsector.
<i>YPOcast</i>	<i>Video Podcast</i>	Innovation and Technology in the Publishing Sector	<i>Youtube</i>	2022/09/01	https://www.youtube.com/watch?v=Ebjj1q7ASNM	Complementary documentary source for understanding the professional trajectories of industry actors and technological advancements in the Brazilian publishing market, contributing to the historical and technological contextualization of digital transformation.

<i>PublishnewsTV</i>	<i>YouTube Interview</i>	Survey on production, sales, and digital content of the brazilian publishing sector – 2022	<i>Youtube</i>	2023/03/19	https://www.youtube.com/watch?v=NKNueHHtTGI	Documentary source for the analysis of sectoral data on production, sales, and digital content, contributing to the triangulation of qualitative perceptions with economic and structural indicators of the Brazilian publishing market.
<i>PublishNews</i>	<i>News Article on Website/Portal</i>	STP: Shifts in Commercialization Strategy and Digital Growth as the Subsector's Strategic Bets	Website/Portal	2024/06/12	https://www.publishnews.com.br/materias/2024/06/12/ctp-mudanca-na-estrategia-de-comercializacao-e-crescimento-do-digital-sao-as-apostas-assertivas-do-subsetor#:~:text=%20Mercado%20Editorial.%20	Documentary source for analyzing recent changes in commercialization and digitalization strategies within the STP subsector, contributing to the understanding of organizational responses to crisis and digital transformation.
<i>RadioBandNewsFM</i>	<i>YouTube Interview</i>	The publishing market in the age of AI	<i>Youtube</i>	2024/12/11	https://www.youtube.com/watch?v=Ay4yM1T2fEQ&t=278s	Complementary documentary source for analyzing the impacts of artificial intelligence on the publishing market, contributing to the understanding of emerging challenges related to copyright, content production, and business models.
Journal Estadão	<i>News Article on Website/Portal</i>	Book Sales Decline Once Again in Brazil; Publishing Market	Website/Portal	2025/05/22	https://www.estadao.com.br/cultura/literatura/venda-de-livros-cai-mais-uma-vez-no-brasil-mercado-	Documentary source for the macroeconomic contextualization of the Brazilian publishing market, contributing to

		Assesses the Crisis			editorial-faz-balanco-da-crise/?srsltid=AfmBOopxX3fjYnguCBDSeFUNbWiUWkNUeBGyjsOXHERBfcJfMrxaLwA	the understanding of long-term trends of contraction, structural crisis, and sectoral reconfiguration.
<i>PublishNews</i>	<i>News Article on Website/Portal</i>	Modest Growth in the Brazilian Publishing Market Reinforces Investment in Physical Bookstores and Digital Innovation	Website/Portal	2025/05/29	https://www.publishnews.com.br/materias/2025/05/29/crescimento-timido-do-mercado-editorial-brasileiro-reforca-aposta-em-livrarias-fisicas-e-inovacao-digital	Documentary source for the macroeconomic contextualization of the Brazilian publishing market, contributing to the understanding of long-term trends of contraction, structural crisis, and sectoral reconfiguration.
<i>PublishNews</i>	<i>News Article on Website/Portal</i>	Over Nearly Two Decades, the Brazilian Publishing Market Shrinks by 44%	Website/Portal	2025/07/08	https://www.publishnews.com.br/materias/2025/07/08/em-quase-duas-decadas-mercado-editorial-brasileiro-encolhe-44	Documentary source for the macroeconomic contextualization of the Brazilian publishing market, contributing to the understanding of long-term trends of contraction, structural crisis, and sectoral reconfiguration of the sector.
SNEL (National Union of Book Publishers)	<i>News Article on Website/Portal</i>	Over Nearly Two Decades, the Publishing Market Shrinks by 44%	Website/Portal	2025/07/08	https://snel.org.br/2025/07/08/em-quase-duas-decadas-mercado-editorial-encolhe-44/	Documentary source for the macroeconomic contextualization of the Brazilian publishing market, contributing to the understanding of long-term trends of contraction, structural crisis, and sectoral reconfiguration.
<i>YPOcast</i>	<i>Video Podcast</i>	Innovation, Copyright, and the	<i>Youtube</i>	2025/07/10		Complementary documentary source for

		Future of the Book in Brazil			https://www.youtube.com/watch?v=XHw8b9Lt3xA	analyzing the tensions between technological innovation, copyright, and the sustainability of the book industry in Brazil, particularly within the STP subsector.
<i>PublishNews</i>	<i>News Article on Website/Portal</i>	PublishNews Magazine #2 Discusses AI in the Publishing Market	Website/Portal	2025/11/05	https://www.publishnews.com.br/materias/2025/11/05/revista-publishnews-2-discute-ia-no-mercado-editorial	Documentary source for analyzing the emerging impacts of artificial intelligence on the Brazilian publishing market, contributing to the understanding of contemporary debates on automation, content production, copyright, and the reconfiguration of business models, with direct implications for the Scientific-Technical-Professional (STP) subsector.
<i>PublishNews</i>	<i>News Article on Website/Portal</i>	Retail Panel Suggests Recovery in Book Prices	Website/Portal	2025/11/26	https://www.publishnews.com.br/materias/2025/11/26/painel-do-varejo-sugere-recuperacao-no-preco-dos-livros	Documentary source for contextualizing recent pricing and commercialization dynamics in the Brazilian publishing market, contributing to the analysis of economic conditions, retail strategies, and structural pressures affecting publishers' sustainability, particularly within the STP subsector.

Note: Authors' elaboration based on documentary research and analysis of publicly available secondary content (2025).

Table 10 summarizes the technical reports, statistical databases, and institutional publications examined. These documents supported the analysis of economic performance, long-term structural trends, and the evolution of digitalization in the sector.

Table 10*Technical reports, statistical databases, and institutional publications*

Responsible Institution	Type of Report	Reference Period	Scope	Contribution to the Study
Nielsen BookData, CBL and SNEL	<i>Historical Series on Production and Sales of the Brazilian Publishing Sector</i>	2006 a 2024	Official benchmark report of the Brazilian publishing sector for understanding “the current state of the printed book market and how it has evolved.	Report produced through a partnership between Nielsen BookData, CBL, and SNEL. It is important for supporting statistical data on the Brazilian publishing sector by enabling comparisons of trends over time.
	<i>Historical Series of the Digital Content Survey of the Brazilian Publishing Sector</i>	2019 a 2024	Official report and historical record of digital growth in the Brazilian book market, showing how it has been expanding rapidly and transforming the sector.	Report produced through a partnership between Nielsen BookData, CBL, and SNEL. It is important because it captures the actual performance of the digital book market in Brazil.
	<i>Portraits of Reading in Brazil</i>	2008, 2012, 2016, 2020 e 2024	Report released every four years on Brazilian readers’ behavior and on reading conditions and access to books, both print and digital.	Report produced through a partnership between Nielsen BookData, CBL, and SNEL. It is important because it contextualizes Brazil’s book ecosystem and complements reports on print production/sales and digital performance (supply–demand cycle).
	<i>Overview of Book Consumption</i>	2023 e 2024	Report aimed at outlining the detailed profile and purchasing habits of book consumers in Brazil.	Report produced through a partnership between Nielsen BookData, CBL, and SNEL. It is important because it adds the specific profile of the buyer, explaining why the print market declines in real terms, digital grows, yet overall consumption remains low (supply–demand–consumption cycle).
CBL	<i>Relevance and Impact of the Publishing and Bookselling Sector in Brazil</i>	2025	Report whose primary purpose is to map and quantify the economic, social, and territorial dimensions of the Brazilian publishing and bookselling sector, highlighting its relevance as a productive chain essential to the	Important because it completes the full cycle of the book ecosystem by adding the macroeconomic and social/employment impact dimension, even amid challenges in the print segment.

			economy, employment, culture, and sustainable development.	
CERLALC	<i>El Espacio Iberoamericano Del Libro</i>	2020	Main regional report on the publishing sector in Latin America and the Caribbean, analyzing trends in the supply of published titles, the impact of the COVID-19 pandemic, and the behavior of different publishing agents.	Important because it contextualizes Brazil within Latin America in relation to the publishing sector (resilience during the COVID-19 crisis and growth in digital titles).
IPA	<i>Annual Report</i>	2023/2024	Report presenting the international context of the publishing sector (annual review and strategic manifesto).	Important because it contributes information on the publishing sector in the global context, adding depth to the discussion on digital transition, public policy, and the relevance of the book.
WIPO	<i>The Global Publishing Industry</i>	2022	Official global statistical report on the publishing industry.	Important because it enables direct comparisons between Brazil and the rest of the world regarding the publishing industry, with a focus on digital transition and formats.
	<i>World Intellectual Property Report</i>	2026	It is not a report specifically focused on books, but it addresses the diffusion of technologies worldwide.	Important for grounding the discussion of digital transformation in the publishing sector and debates on generative AI, as it complements the IPA report.

Note. Authors' elaboration based on technical reports and institutional databases (2026).

The combination of documentary analysis with primary interview data thus enabled a more solid and multifaceted reading of asymmetric digital transformation dynamics in the STP subsector, contributing to the robustness of the research findings.

4.4.2.3 Complementary digital content research

As a complementary secondary data source, systematic observation of digital content and environments related to publishers and key actors in the publishing ecosystem was conducted. This phase included the observation of digital platforms, institutional websites, and YouTube channels of industry professionals and organizations. The objective was to capture practices, discourses, and communication strategies in real time, providing evidence on product launches, digital business models, and forms of engagement with the academic and professional community.

The observation of digital platforms and websites encompassed an analysis of how publishers and technology companies structure their digital offerings, including platform functionalities, user interfaces, and content access mechanisms. This analysis proved particularly relevant for understanding the hybrid nature of digital transformation in the STP subsector, characterized by the coexistence of print formats, digital formats, and platform-based solutions. In complementary fashion, the digital presences of the studied publishers were observed, including websites, social media profiles, digital catalogs, and reading or learning applications, as well as one of the major service platforms serving the publishing sector. The purpose was to understand the digital positioning of organizations, their relationship strategies with readers and institutions, and their communication and engagement practices. Observed information was recorded in analytical diaries and used to corroborate, contrast, and deepen the perceptions obtained through interviews.

The integration of these data sources, in-depth interviews, documentary research, and digital content observation, enabled the construction of a comprehensive, contextualized, and analytically consistent view of the digital transformation phenomenon in the STP subsector. While interviews revealed meanings, interpretations, and strategies from the perspective of organizational actors, documents provided structural, historical, and institutional evidence, and digital observations captured everyday practices and concrete manifestations of digitalization in

the publishing sector. This combination ensured alignment between the phenomenological objectives of the research and the analytical rigor of the study, reinforcing interpretive validity and the robustness of findings (Denzin, 1978; Flick, 2018).

4.4.3 Data analysis and interpretation

The analysis and interpretation of the data were conducted in a systematic, iterative, and reflexive manner, following the Gioia methodology (Gioia et al., 2013) combined with abductive reasoning (Dubois & Gadde, 2014; Timmermans & Tavory, 2012). The process was grounded in the perceptions, experiences, and strategies reported by different actors within the publishing ecosystem, based on the full transcripts of the in-depth interviews, as well as on documents and secondary materials analyzed individually and in their entirety. ATLAS.ti software was used as the primary tool to organize, code, track, and systematize the qualitative data.

The use of ATLAS.ti was complemented by Excel spreadsheets, which supported coding control, category refinement, and the monitoring of analytical progression throughout the study. It is important to note that the initial Excel database, developed after reviewing all interviews, documents, and secondary materials, generated a total of 265 first-order codes (concepts closely aligned with informants' language and documentary excerpts). These codes were progressively reduced at each successive stage of analysis, resulting in the gradual consolidation of more abstract categories (Appendix F).

The analytical process began with first-order coding, in which concepts emerged directly from the empirical data, preserving the language and expressions of informants, in line with the Gioia methodology's emphasis on participant-centric terms. The analysis proceeded iteratively, alternating between coding, analytical reflection, and revisiting the original data, enabling the identification of recurring patterns, tensions, ambiguities, and specificities in the trajectory of digital transformation within the STP subsector. This process naturally led to second-order coding, in which first-order concepts were grouped into theoretically informed emergent themes and subsequently articulated into aggregate dimensions grounded in broader theoretical constructs, as presented in Table 11.

Recurring patterns began to stabilize from the sixth interview onward, at which point new data no longer generated substantively new first-order concepts or significant changes in the

relationships among previously identified categories. Nevertheless, all fifteen interviews were completed in order to confirm the stability of emerging patterns, deepen contextual nuances, and strengthen interpretive robustness through the inclusion of a broader diversity of ecosystem actors.

Table 11

Data structure of digital transformation in the STP subsector

Empirical Code (1st Order)	Emergent Theme (2nd Order)	Aggregate Dimension	
Joint Platform	Shared Infrastructure	Coopetition	
Partnership Among Competitors			
Collective Action			
Separation of Access × Content			
Collective Access Model	Governance and Legitimation of Cooperation		
Sectoral Response to Crisis			
Legitimation of the Model			
Governança compartilhada			
Institutional Mediation	Sectoral Governance		Institutional Coordination
Protection of Diversity			
Public–Market Mediation			
Data Infrastructure	Data-Driven Coordination		
Environmental Monitoring			
Incremental Change			
Platformization of Access			

Shared Infrastructure	Incremental Transformation	Transformação digital assimétrica
Structural Inertia	Institutional Constraints	
Digital as Transposition		
Incremental Adjustment	Limited Adaptive Capacity	Capacidades dinâmicas
Limites gerenciais		

Note. Author's own elaboration (2026).

The interpretation followed an analytical cycle composed of interdependent movements: description, comparison, and theorization. The descriptive movement preserved the voices of informants, examining narratives in detail to capture the meanings attributed to technological changes, institutional pressures, and organizational strategies. The comparative movement analyzed convergences and divergences in actors' strategic responses across the interviews, refining categories and eliminating interpretive redundancies. The theorization movement employed abductive reasoning to articulate empirical data and theory, progressively confronting the findings with concepts from the literature on digital transformation, institutional logics, business ecosystems, platform-based competition, and dynamic capabilities (Dubois & Gadde, 2014; Timmermans & Tavory, 2012). This dialogue was not intended to test predefined hypotheses, but rather to refine and reinterpret observed patterns in light of robust theoretical explanations, generating theoretically dense and, at times, surprising insights.

The adoption of abduction enabled digital transformation in the STP subsector to be treated as a processual, relational, and situated phenomenon, avoiding linear or deterministic interpretations. Categories were revisited, redefined, or reorganized as new insights emerged, ensuring that the final analytical model remained grounded in the data and theoretically consistent. This procedure aligned the findings of Study 3 with the analytical dimensions of Study 2, thereby ensuring internal coherence across the dissertation.

The reliability and robustness of the analysis were strengthened through data triangulation, combining in-depth interviews, documentary research, and digital observation. Interpretations were continuously cross-checked across these sources, reducing individual biases

and reinforcing interpretive validity. The analytical process was also supported by reflexive practices, including the systematic documentation of interpretive decisions to ensure transparency and traceability.

As a result of this process, a multilevel analytical structure was developed, composed of first-order concepts, second-order themes, and aggregate dimensions. This structure synthesizes how STP publishers interpret the digital environment, mobilize strategies, reconfigure capabilities, and negotiate legitimacy within an ecosystem characterized by the coexistence of print and digital formats, the centrality of platforms, and strong institutional constraints. This structure is not presented as a closed theory, but rather as an analytically informed and empirically grounded interpretation capable of explaining the trajectories of asymmetric digital transformation in the STP subsector.

4.5 RESULTS

Note: All interviews were conducted in Portuguese. Quotes have been translated into English by the authors.

4.5.1 The Who dimension: actors, roles, and central identities of digital transformation in the STP

The Who dimension reveals an articulated set of central actors whose roles, institutional identities, and competencies are undergoing profound transition. These actors encompass executive leadership (particularly the CEO), internal editorial teams (editors, managers, and operational professionals), digital platforms, and institutional actors (university presses and industry associations) that influence or mediate the process. The findings reveal strategic articulations and gradual reconfiguration amid tensions between tradition and innovation.

Specialized in producing content for academic training, professional development, and scientific dissemination, the STP constitutes one of four main pillars of the Brazilian publishing market, alongside General Works, Educational, and Religious subsectors (CBL & SNEL, 2025). Industry studies indicate that the STP has a distinctive dynamic, with more pronounced decline in

individual readership, high institutional dependence, and growing fragmentation of content consumption, particularly in higher education (PublishNews, 2020; PublishNews, 2024).

The findings are organized around first-order and second-order codes anchored in raw interview data. First-order codes include “structural inertia” and “managerial limitations”, which support, respectively, the emergent themes “institutional limits” and “limited adaptive capacity” (Table 11). Executive leadership, primarily the CEO, emerges as the principal strategic agent, responsible for setting priorities, directing investments, and articulating the relationship between technological innovation and editorial identity. The institutional logic of STP actors reveals an identity marked by field distinctiveness and a profound transition in the publisher's role, from producer of physical objects to manager of educational authority. Interviewee E2 establishes the basis for this identity: *“The STP is really a distinct sector. We always say that we have four sectors, and each one has a different relationship with its market and with technologies”*. This institutional specificity is also crossed by a logic of tradition and gender, as observed by E15: *“I think from the interviews you noticed, right? This technical-scientific world, I don't think there is a single female CEO”*.

Within this field, the publisher's role undergoes radical repositioning, shifting from an exclusive product orientation to a service logic. E4 describes this identity shift in which the company ceased “being a publisher” and “transformed editorial activity into educational activity”, coming to view the book as “an ancillary activity... a by-product” of the learning ecosystem. This new identity is supported by E13, who describes the publisher as a *“reputational hub”* or *“one stop shop”* for authors, who participate in various educational projects such as graduate programs and events beyond book launches. In this new business format, the editorial asset provides the credibility needed to validate other digital formats.

This institutional mediation is fundamental, as reinforced by E15: *“Editors will always play a role as intermediaries between the scientific world and everyone else”*, requiring refined “critical judgment” for curating trustworthy content. This logic prioritizes knowledge over format, as consolidated by E2: *“The book packaging is good packaging... but it is just packaging... what I think is most important is precisely the content”*. To sustain this legitimacy among new generations, E8 emphasizes the need for “brand reconstruction work”, as the publisher's role now requires a more direct connection with the immediate needs of the digital native student. The digital native student, as described by this interviewee, is especially from

Generation Z, with entirely different behaviors from previous generations: this student does not study by writing, using sticky notes, or making handwritten summaries. This student has neither patience nor interest in the traditional book format, seeking not deep knowledge but simply “to pass the exam”.

The specialist and field observer perspective reveals a profound change in the identity and competencies required of professionals, who are transitioning from an intellectual, traditional model to one oriented toward technology and platform management. Findings indicate a redefinition of the editor's role, which now incorporates competencies related to digital product management, content adaptation to multiple formats, and coordination with technology and marketing teams. This transition occurs unevenly across organizations, reflecting tensions between traditional editorial practices and new digital demands, anchored in the empirical codes “structural inertia” and “managerial limitations”.

According to E1, the operational routine now requires distancing from the classic editor's role: “What you will least do at a publishing house is read books... You will be much more involved in heavy logistics, marketing, and everything else”. E3 criticizes the field's structural inertia, describing it as “a disorganized sector... that does not plan... companies lack critical financial and accounting reasoning... it has always been an amateur sector”. E7 defines the STP's identity by its strategic importance and the intensity of change: “*In the case of STP... this transformation was brutal... you have this content made available in other ways*”, such as video channels and artificial intelligence. E9 points out that the current identity remains trapped in incomplete transition models: “*We did a media transposition... the e-book is a transposition... but I think that STP publishers failed to achieve a much deeper revolution*”, such as creating digital teaching systems and fully platform-based content.

The perspective of actors representing platforms and digital infrastructure consolidates an institutional logic where the STP identity detaches from manufacturing physical objects and centers on managing information flows and multiplatform accessibility. These actors function as mediators between publishers, educational institutions, and end users, influencing access models, pricing, and content use. E10 observes that the sector was historically resistant to technology, but survival now demands that editors change their mindset: “*It's not that I have to make a printed book; I have to produce content. This content can be seen and used in many different ways*”. E14 defines the new operating logic based on format complementarity: “*The three formats*

complement each other in serving the multiformat reader, who cares about the essence of the content and not the medium". E6 adds that the publisher's role evolves toward creating integrated educational ecosystems: *"The e-book or digital content in a broader sense, which does not even need to be a book, being the starting point, the organizer, and the launching pad for diverse learning objects"*.

Additionally, sectoral and institutional coordination exercises significant influence over digital transformation in the STP, particularly through regulatory changes and public policies related to higher education and copyright. E5 exemplifies this institutional mediation: *"I represent [the organization] at the International Publishers Association, the IPA... on the Copyright Committee and the Executive Committee. And I am also on the board of ABDR"*. While large entities focus on combating digital piracy and regulating AI, sectoral coordination focuses on catalog plurality, as explained by E11: *"[The organization] was created precisely to give visibility to small and medium publishers... it defends bibliodiversity"*. E12 extends this coordination to public policy formulation, noting his role in *"not only coordination, but developing strategies for the editorial area, for libraries, for public policies, and for reader development"*.

In synthesis, the Who dimension highlights executive leadership as the strategic driver, the publisher's identity repositioning toward educational ecosystems, and the uneven reconfiguration of internal teams, marked by structural inertia and managerial limitations. A recurrent element is the perception that digital transformation in the STP was reactive and defensive, oriented toward survival in a historically conservative subsector. Recent analyses indicate that, although digital has become indispensable, its growth does not yet fully compensate for the decline in print within the STP, reinforcing the defensive character of this transition (PublishNews, 2024; PublishNews, 2025).

4.5.2 The Why dimension: pressures, motivations, and legitimacy of digital transformation in the STP

The Why dimension examines the pressures and motivations driving digital transformation in the STP, revealing a complex institutional environment marked by multiple legitimacy demands involving the obsolescence of the physical book model. The findings are

organized around first-order codes including “sectoral response to crisis”, “model legitimation”, “incremental change”, and “digital as transposition”, linked to second-order themes “governance and legitimation of cooperation”, “incremental transformation”, and “institutional limits” (Table 11).

For the publisher group, the central motivation lies in the pursuit of economic sustainability in a scenario where the printed book has ceased to be the core axis of revenue and learning. This sectoral crisis response is evidenced by Nielsen BookData reports, which indicate a 66% decline in real revenue from printed book sales in the STP subsector since the onset of the economic crisis (approximately 2014/2015), with an accumulated real contraction of 27% over the last decade (Historical Series Report, 2024). Conversely, the decline in the average real price of STP books has driven the transition to digital, where STP content accounted for 31% of new releases (out of 15,000 digital titles launched in 2024) and contributed to nominal growth of 21.6% in digital content revenue across the sector in 2024 (Digital Content Report, 2024).

A principal pressure factor lies in the disconnect between the traditional book format and the behavior of “digital natives”. E8 highlights: *“The main challenge we face is how to retain the attention of someone who is on TikTok... The book is tedious for them. They don't want it anymore”*. E2 observes a transformation at the base of the readership pyramid: *“My granddaughters are less avid readers than I was at their age; they are more digital... and that changes the understanding and vision of information”*. E8 further notes that *“the student today wants to pass the exam; they do not want to acquire knowledge”*.

The cost of maintaining large physical inventories and distribution logistics has become a critical barrier, constituting an operational crisis response. E13 reported the disproportion between physical effort and financial return, noting that events require *“truck after truck... to sell R\$1 million... The event sold 11 million digitally”*. This economic unviability forced the sector to adopt the print-on-demand (POD) model. As E4 explains, *“Today we have almost 50% of our titles in POD... the old approach of producing for inventory... that barely happens anymore”*.

Changes in the Ministry of Education (MEC) evaluation rules were decisive for legitimating the platform-based model. E4 notes that the viability of the textbook was undermined when the government ceased requiring physical collections: *“From the moment Brazil stopped requiring textbooks and the Ministry of Education stopped requiring physical books in universities, editorial activity... became severely threatened... almost to the point of*

making some publications unviable". E13 reinforces that financial pressure on colleges accelerated the transition: "The one thing educational institutions cannot do is spend money... The moment you can subscribe to a virtual library that has everything, that doesn't need a building... it makes much more sense".

Piracy is identified as a chronic structural vulnerability that forced the sector toward controlled access models and subscription platforms. E4 describes: "*Reprography, the photocopy, was replaced by internet piracy... increasingly students do not adopt textbooks*". This scenario evolved from simple copying to content appropriation by AI models. E15 identifies AI as the new frontier of this challenge: "*I think that increasingly professionals entering university are having less contact with books... Influencers and content creators have taken over this market, and piracy that used to be by photocopy is now in artificial intelligence*". E8 warns: "*I think the service platform itself will be threatened by AI... I think this format where we grab the book and hold it, I think that will become outdated*".

From the specialist perspective, the STP field is described as historically "rigid" (E1) and "amateur" (E3) in management terms. The pressure for transformation arises from an economic and access crisis, where the sector shrank nearly 50% in print since 2014 due to cuts in programs like FIES and changing student habits (E7). E1 notes that disruption came not only from e-commerce but from the breaking of the bookstore monopoly by social media and the need for publishers to become "EdTechs" to survive. E9 offers the most critical view of technological pressures, connecting AI to piracy and the end of the authorship cycle. For her, AI is the most powerful driver of current transformation because it strikes at the core of the STP: technical consultation in Law and Medicine. She states: "*AI will continue at full speed and in the STP it will be most cruel... ChatGPT and AI will be able to deliver much of what books used to provide*". She also raises an ethical and sustainability concern: "*My great worry is that today it is feeding, in a pirated way, on everything that was produced... If I remove the incentive for new authors, it will keep going in circles, repeating content from the past without renewing the collection*".

From the platform perspective, the central motivators are the logistical inefficiency of the physical model, the fragmentation of student consumption, and the need to combat piracy through convenience. E6 explains: "*The professor's folder emerged both as an initiative to offer the market another option for accessing content legally and as a way to combat piracy*". E10 notes:

“Students today want to read the absolute minimum... the STP needed to make better use of the digital book”. E14 affirms: *“The digital market is the vector that grows, while everything else has a bit of suffering in the curves”*.

The sectoral coordination group observes pressures from a macroeconomic and political perspective. E15 reports a steep decline in the STP segment over the past 15 years, where current revenue represents *“perhaps less than 20% of what it meant 15 years ago”*. E11 argues that the pressure for change is more economic than technological, citing the explosion in paper costs and the low cultural valuation of books. E12 sees the Why in an educational and public policy crisis: *“In the last 8 years, we lost 11.5 million readers... without public policy in Brazil, there is no editorial development or reader formation”*.

These accounts align with Nielsen BookData (2025) and CBL and SNEL (2025), which record nominal growth of 3.3% in STP market sales in 2024, though with a real decline of approximately 1.1% when adjusted for inflation. They also corroborate Cerlalc (2020), which highlighted Brazil's relative resilience during the pandemic compared to Mexico (18.4% drop in ISBN registrations), with digital titles accelerating to 41.22% of the regional total (Table 10).

In synthesis, the Why dimension reveals that digital transformation in the STP is driven by a combination of sectoral crisis response, legitimation of the platform-based model, incremental change, and an initial vision of digital as transposition, configuring a reactive and defensive transition in a historically conservative sector.

4.5.3 The Where dimension: spaces, platforms, and arenas of interaction

The Where dimension refers to the spaces, platforms, and arenas of interaction where digital transformation in the STP effectively takes place. This dimension encompasses both traditional physical environments (bookstores, university libraries) and, predominantly, the new digital ecosystems, collective platforms (B2B), marketplaces, and integrated learning environments that have reconfigured the circulation of scientific and technical knowledge. The principal first-order codes identified are: “joint platform”, “partnership among competitors”, “collective action”, “separation of access vs. content”, “collective access model”, “data infrastructure”, “platformization of access”, and “common infrastructure”, supporting second-

order themes such as “shared infrastructure”, “governance and legitimation of cooperation”, “data-driven coordination”, and “incremental transformation” (Table 11).

The primary arena of interaction for undergraduate content in the Brazilian STP shifted from physical libraries to digital libraries, with a specific publisher consortium platform marking the central milestone of this change. E6 defines the platform as the apex of this transformation: “*Today we have 17,000 works available digitally in my library... we are the absolute leaders in the academic market*”. This joint platform resolved the problem of subscription fragmentation, functioning, according to E4, as a “*one stop shop concept so that the institution did not have to subscribe to each publisher's library*” individually. The economic impact is confirmed by E2, who reveals the platform is now “*responsible for 40% of our revenue*”.

In direct-to-consumer retail, the physical arena of traditional bookstores was largely replaced by platformized access through global marketplaces, where Amazon exercises a near-monopolistic role. E13 highlights the drastic concentration of sales outside the academic environment: “*Today, excluding Minha Biblioteca, 90% of our sales are via Amazon*”. This dependence creates strategic vulnerability, as E15 notes: “*Today, anyone who sells books depends heavily on a single customer, which is Amazon*”. E10 adds that this digital arena requires new data infrastructure: “*The online buyer needs metadata... in digital the person navigates alone... they have to find what they want*”.

Where the “book object” once resided, Learning Management Systems (LMS) and teaching systems now fragment the work into educational objects. E4 illustrates this transition with a specific company described as “*the largest teaching system for higher education in Brazil*”, where content is assembled in diverse formats. E3 presents a platform under development as a new multimodal arena for distance education based on editorial curation. This separation of “access vs. content” and the creation of common infrastructure consolidate the cloud as the definitive space for storage and access, ending the era of local servers at universities (E5).

The search for technical information has migrated to arenas of rapid and audiovisual consumption. E10 observes: “*The student today reads on YouTube... young people look for someone who read [the book] and says something about it on YouTube, and that's it*”. E8 sees TikTok as a direct competing arena: “*The main challenge is how to retain the attention of someone who is on TikTok*”. E9 broadens this view by pointing to AI as the definitive arena for

future technical consultation: “*ChatGPT and AI will be able to deliver much of what books used to provide*”.

The data infrastructure of digital transformation inhabits virtual spaces of standardization. E14 explains that editorial interaction now passes through his company, which serves as the distribution hub for ecosystems such as Kindle, Google Play, Apple, and Spotify. Despite digital hegemony, physical and political spaces of resistance remain crucial for field diversity. E11 defends the importance of “street bookstores” and independent fairs, seeking visibility for small publishers and “bibliodiversity”. In the political arena, E12 emphasizes that transformation requires coordinated strategies between the publishing sector and the public sector across “*libraries... public policies and reader development*”.

These findings confirm the WIPO (2022) report, in which Brazil recorded 72.4% of titles in digital/audio format (the largest global sample), and align with Cerlalc (2020), which registered a 47.37% increase in digital titles in Latin America in 2020, consolidating the migration to shared infrastructures (Table 10).

In synthesis, the Where dimension reveals that digital transformation in the STP has consolidated an environment of platform-mediated intermediation, where scientific knowledge is accessed primarily through joint platforms, collective access models, shared infrastructure, and platformized access, drastically reducing the relevance of traditional physical spaces.

4.5.4 The How dimension: processes, strategies, and organizational response

The How dimension describes the profound restructuring of publishers’ operational mechanisms and business models. It encompasses the practical mechanisms, strategies adopted by organizations, and collective and individual responses to the pressures identified in the Why dimension, revealing a transition from a model centered on producing and selling physical objects to processes centered on educational services, automation, data, and integrated platforms. The first-order codes identified in this dimension are: “collective action”, “shared governance”, “institutional mediation”, “protection of diversity”, “public-market mediation”, “environmental monitoring”, and “incremental adjustment”, supporting second-order themes such as “shared infrastructure”, “governance and legitimation of cooperation”, “sectoral governance”, “data-driven coordination”, and “limited adaptive capacity” (Table 11).

The central strategy shifts from selling physical copies to offering educational services, achieving logistical efficiency through data, and automating production via new technologies, constituting an incremental adjustment evolving toward more structured responses. The most decisive organizational response was the transformation of publishers into EdTechs, where the book becomes a component of a broader service portfolio. E4 details: *“Today I am no longer a publisher... if the company's revenue was once 65% editorial, today it is 15%”*, with the editorial activity becoming a reputational asset for leveraging courses and certificates.

Operationally, digital transformation enabled the dismantling of heavy physical inventory structures through incremental adjustment in logistics and production. The POD strategy became the standard for ensuring the sustainability of niche titles. E5 reports that the transition to the cloud ended the era of local hardware: *“The CD solution is over. Everyone was already accessing our digital content online; the need for local servers at universities ended”*.

A vital strategy for content discoverability in the saturated internet environment was the professionalization of metadata management, sustained by data-driven coordination and environmental monitoring. E10 highlights that his role was to *“evangelize the market about metadata”*, since in the digital environment the buyer lacks a bookseller's assistance: *“In digital, the person navigates alone, right? They have to find what they want”*. E14 reinforces that the organizational response involved adapting the code of works for digital semantics: *“If you have EPUB 3.1... the code semantics are already prepared for accessibility”*.

The integration of AI into internal processes is the current strategy for reducing costs and accelerating releases. E14 reports that AI voice production for audiobooks represents *“15% of the cost of analog recording and 20% of the time”*. E1 observes that this efficiency is already reality in translation: *“The translator used to take two months to deliver the book. Today, they deliver in two weeks”*. E3 exemplifies the use of AI for creating supplementary materials such as *“flashcards and mind maps”*.

Internally, the organizational response was marked by the adoption of remote work and the search for new professional profiles. E2 highlights that the pandemic was the inflection point: *“We have 200 employees today, and only three are in-person... this turning point happened during COVID”*. E8 notes that this change required team requalification: *“All work went online... the team had to adapt... everyone has to master online tools they didn't master before”*.

For independent publishers, the organizational strategy focuses on resistance and visibility through collective action and shared governance. E11 explains that technology enabled the viability of niches: “*Digital technology allowed us to do smaller print runs... it greatly facilitated life for entrepreneurs*”. E12 summarizes that the long-term strategy requires the editor to have “*the courage to be open, diverse... and understand that above all they must speak to the reader*”. These processes corroborate Nielsen BookData (2025) and CBL & SNEL (2025), indicating 9% digital share of total sales in 2024, with POD and AI as vectors of incremental adjustment. They reinforce the IPA (2024), which highlights cooptation as a global resilience strategy in emerging markets (Table 10).

In synthesis, the How in the STP is characterized by platformization of services, production automation via AI, strategic dependence on metadata, incremental logistical and organizational adjustment, and collective responses marked by shared governance and institutional mediation. This dimension reveals a reactive but progressive operational transition that seeks to legitimate the editorial model in an increasingly digital and fragmented ecosystem.

4.5.5 The What dimension: outcomes, value, and revenue models

The What dimension reveals a drastic shift in revenue composition and in the very nature of the "product" delivered to the market. It examines the concrete outputs of transformation: new content formats, consolidated revenue models, market-perceived value, and asymmetries between digital growth and print decline. The most evident outcome is the transition of the book from primary profit source to reputational asset that leverages service models, B2B subscriptions, and integrated educational ecosystems. The principal first-order codes are “digital as transposition” and “incremental adjustment”, supporting the second-order themes “institutional limits” and “limited adaptive capacity” (Table 11).

The principal result was the displacement of the value axis. The physical book, though still valued, ceased to be the main growth engine. E4 is emphatic: “*Today I am no longer a publisher... if the company's revenue was once 65% editorial, today it is 15%*”. In this new scenario, editorial activity becomes, in his words, “*an ancillary activity... a by-product*”. The revenue model transitioned from unit sales to subscription and licensing models, with a focus on Higher Education Institutions (HEIs). The publisher consortium platform consolidated as the

principal tangible financial outcome: E2 confirms it is “*responsible for 40% of our revenue*”. E5 reinforces that, while in the general works market digital remains marginal, “*in the STP, digital has become essential to the revenue base of publishers*”.

E14 details the diversification of these models, citing the “infinite shelf” and “micropayment systems that pay not for unit consumption but for the user base that has access to content.” The analysis reveals an asymmetric digital transformation where digital growth still struggles to compensate for the historical decline in print. E5 presents an alarming figure: current STP results represent “*less than 20% of what they meant 15 years ago*”. E10 describes the STP as facing a constant annual decline, which he characterizes as a “downhill slide,” while formats such as audiobooks and e-books are the only vectors of organic growth. E14 confirms this trend, noting that audio specifically jumped from 1% to 11% in his distributor's revenue composition in just two years.

A critical qualitative outcome is the perception that the value of technical content has been fragmented to serve a new consumption profile. E8 observes: “*The student today wants to pass the exam; they don't want to acquire knowledge*”. This forced the creation of more “objective” and “pre-digested” products, such as LMS and multimodal platforms. E4 exemplifies the value through a service company that offers a system which “*scrambles educational objects into different formats*”, serving 3.5 million students who consume fragmented content rather than the complete book.

Economically, the What resulted in a leaner cost structure, yet with expensive technological barriers. E5 clarifies a common misconception: “*Digital is not cheaper... Only after you sell X quantity of books does digital pay for itself. And then you get a detachment in the curve, in the scale of margin*”. AI emerges as the next major leap in value and cost reduction: E14 reports that AI audiobook production costs “*15% of analog recording and 20% of the time*”, enabling a catalog scale previously unviable for small and medium publishers.

Quantitative results confirm Nielsen BookData (2025) and CBL and SNEL (2025), recording 366 million copies produced in 2024, with digital representing 9% of total revenue and nominal growth of 3.3% in the STP, although print declines in real terms. They align with WIPO (2022), where Brazil reported revenue of US\$1.113 billion and 146,575 titles, with strong emphasis on digital formats (72.4%), evidencing the recomposition of value toward subscription and service models (Table 10).

In conclusion, the What of digital transformation in the STP is not merely the conversion of the book into a digital file, but the replacement of the physical product by a service of access and authority, sustained by incremental adjustment in revenue diversification. The revenue model migrated from the physical bookstore to the platform ecosystem (Amazon and digital libraries), and the publisher's strategic value now resides in its capacity to act as curator of multiformat content integrated into educational processes. This dimension reveals a persistent asymmetry between print decline and still-insufficient digital growth, consolidating the STP as a sector in incomplete transition toward hybrid revenue and value models.

4.5.6 Convergences, tensions, and contradictions of digital transformation in the STP

Based on the data analyzed, digital transformation in the STP reveals a scenario of forced transition, where institutional survival depends on the capacity to convert the “book object” into a “service ecosystem”. Table 12 presents a summary of the convergences, tensions, and contradictions observed.

Convergences. There is absolute consensus that the business model based exclusively on the physical book and inventories is economically unviable. The greatest convergence is the success of the publisher consortium platform, which united competitors to meet MEC regulatory requirements and rescue sectoral revenue through university subscriptions. Publishers converge on the massive use of POD to eliminate inventories and reduce risk. Additionally, there is a race toward AI use in production (translation, revision, and neural audiobooks) to reduce costs drastically. In B2C retail, Amazon has become the near-monopolistic channel, representing up to 90% of direct sales for some publishers. Metadata management is recognized as the backbone of online discoverability, replacing the role of the physical bookseller.

Tensions. The tensions reveal conflict between the intellectual heritage of editors and the technological demands of the market. There is a clear tension between viewing Amazon as a democratic distribution partner or as a "dishonest threat" that uses books merely as a loss leader for other products, crushing the margins of traditional bookstores. The field lives the tension of using AI for productivity while fearing it will become a "piracy factory" that consumes curated content without remunerating copyrights, discouraging future scientific production. Editors face the tension of producing dense content (treatises) for a student audience suffering from attention

fragmentation, preferring short YouTube or TikTok summaries. There is also internal tension within publishers, where traditional managers are viewed by others as "resistant" to deep digital innovation.

Contradictions. Digital transformation in the STP is marked by contradictions between strategic intention and consumption reality. A central contradiction is that the book has ceased to be the financial engine (sometimes representing only 15% of revenue) yet remains essential as a "reputational hub" for selling more profitable courses and events. Access to technical content has never been greater (via the consortium platform and AI), yet reading indices and critical literacy are declining, with students seeking only the "bare minimum" to pass exams. Although common sense holds that digital is cheap, interviewees highlight the paradox that technology and cloud infrastructure are expensive and only generate margin at very high scale, often exceeding physical costs. There is also the contradiction of combating piracy judicially while admitting that piracy is the best indicator that the product is relevant and desired.

Table 12

Convergences, tensions, and contradictions of digital transformation in the STP

Category	Convergences (Consensus)	Tensions (Conflicts and Disputes)	Contradictions (Paradoxes)
Business Model	The physical inventory model is economically unviable, forcing migration to "Digital First" and POD. The consortium platform is the dominant financial asset. Amazon controls B2C retail.	The sector transitions from an intellectual/editorial identity to an EdTech orientation, generating internal managerial resistance. Amazon is viewed simultaneously as democratic partner and "dishonest" market dominator. Platform concentration creates power asymmetries.	The physical book becomes an essential reputational asset for the brand, even though its direct profitability is declining or marginal. The publisher claims to no longer be a publisher, yet editorial credibility anchors the entire service ecosystem.
Technology and AI	AI is indispensable for production scale (audiobooks at 15% of analog cost, translation acceleration). Metadata is the backbone of digital discoverability.	Ethical fear that AI becomes a "piracy factory," consuming curated data without author remuneration. Uncertainty about whether print will survive or disappear within a decade.	Digital is perceived as "cheap" by the public, but requires cloud and technology infrastructure of very high cost. The same technology that reduces production costs threatens the authorial basis that sustains quality

Category	Convergences (Consensus)	Tensions (Conflicts and Disputes)	Contradictions (Paradoxes)
			content.
Consumption and Education	Metadata replaces the physical bookseller as the "virtual salesperson." Digital platforms are essential for the higher education market.	Publishers face the "attention economy," competing with TikTok and shallow YouTube summaries for students' time. Digital natives do not read the way previous generations did.	Access to technical content has never been so broad, yet critical literacy and deep reading habits are in steep decline. Only 12% of Brazilians are fully literate; 53% are non-readers.
Intellectual Property	Digital piracy is a chronic vulnerability that traditional legal enforcement cannot stanch ("drying ice").	Generative AI challenges traditional copyright concepts by appropriating knowledge to generate derivative products without author compensation.	Piracy is combated institutionally, yet some managers view it as the best indicator of real demand for a product.

Note. Authors' elaboration based on interview data (2026).

The comparative analysis reveals that the STP field is experiencing an asymmetric digital transformation: while B2B production and distribution processes (virtual libraries) are consolidated and converging toward efficiency, B2C revenue models and the protection of authorial value face growing tensions due to Big Tech power and the evolution of AI. The principal contradiction lies in the sector being more technologically accessible than ever, yet embedded in an educational ecosystem that privileges information fragmentation over dense technical knowledge.

4.6 DISCUSSION

The findings of this study enable a theoretically grounded discussion that goes beyond merely describing the dimensions of digital transformation in the STP subsector, advancing toward an explanation of why transformation takes the specific pattern observed and what implications this pattern holds for broader theory. The discussion is organized around three integrative arguments: platform-based cooptation as a mechanism for reconciling conflicting institutional logics; asymmetric digital transformation as a structural condition rather than a

transitional stage; and the repositioning of the book from commodity to institutional anchor as a new form of value reconfiguration in knowledge-intensive ecosystems.

4.6.1 Platform-based coopetition as institutional reconciliation

The most distinctive finding of this study is the emergence of platform-based coopetition as the dominant structural response to the prolonged crisis in the STP. Rather than pursuing vertical integration, individual platform development, or market exit, which represent the strategic alternatives typically available to firms facing disruption (Adner, 2017; Jacobides et al., 2018), competing publishers created and shared collective access infrastructure while preserving rivalry over catalogs, authors, and complementary services. This raises a central question: why did coopetition, rather than alternative responses, prevail?

Complementary mechanisms, grounded in the empirical data, help explain this outcome. The regulatory mechanism: the MEC's elimination of physical library requirements created a simultaneous and symmetric threat to all STP publishers. Because no single publisher possessed a catalog comprehensive enough to serve as a standalone virtual library for universities, cooperation became a precondition for meeting institutional demand. This finding extends Bengtsson and Kock's (2000) framework by specifying a boundary condition: coopetition is most likely to emerge as the dominant strategy when regulatory change simultaneously threatens all competitors and when the individual resources of any single firm are insufficient to meet the new institutional requirements.

The legitimacy mechanism: the consortium platform was not merely a commercial arrangement but a device for reconciling conflicting institutional logics. By pooling content under shared governance, publishers simultaneously satisfied the market logic (revenue recomposition through subscriptions), the academic/professional logic (maintaining curated, peer-reviewed content as the access standard), the state logic (complying with new evaluation norms), and the technological logic (delivering content through digital infrastructure at scale). This multi-logic reconciliation goes beyond the coopetition literature's typical emphasis on balancing competition and cooperation along a single dimension (Gnyawali & Ryan Charleton, 2018) and connects coopetition theory to institutional complexity theory (Greenwood et al., 2011). The STP case suggests that, in fields governed by multiple institutional logics, coopetition can function as an

institutional reconciliation mechanism, not merely a competitive strategy. This represents a theoretical extension: cooptation is not only about managing the tension between collaboration and rivalry, but also about managing the tension between multiple legitimacy demands that no single firm can satisfy alone.

The path-dependence mechanism: the STP subsector's historical organization around a small number of large publishing groups with established inter-firm relationships (through industry associations, book fairs, and professional networks) provided the relational infrastructure necessary for cooptation to emerge. This aligns with McGrath et al. (2025) and Dagnino and Ritala (2025) on the processual nature of cooptation, where actors “enter and exit” cooperative arrangements as conditions shift, but adds that pre-existing relational density lowers the threshold for cooperative responses to disruptive events.

Comparatively, this pattern resonates with findings in other knowledge-intensive sectors facing platform-mediated disruption. In academic journal publishing, similar consortial arrangements (e.g., Project MUSE, JSTOR) emerged when digital distribution threatened individual publishers' viability, though in that context the driving logics were primarily academic rather than market-based (Lariviere et al., 2015). In the legal information sector, competing publishers (Thomson Reuters, LexisNexis) pursued vertical integration rather than cooptation, enabled by the absence of regulatory mandates requiring comprehensive access. The STP case thus occupies a distinctive position: the combination of regulatory pressure, institutional complexity, and insufficient individual scale created conditions uniquely favorable to platform-based cooptation rather than to the integration or fragmentation pathways observed in adjacent sectors.

4.6.2 Asymmetric digital transformation as structural condition

The findings reveal that asymmetry in the STP is not a transitional phase on the path to full digital transformation, but a structural condition embedded in the institutional architecture of the field. The data consistently indicate that technological advances (platform adoption, AI integration, POD implementation, metadata professionalization) coexist with incomplete strategic reconfigurations: publishers that derive 85% of their revenue from non-editorial activities still define their identity through the editorial function; digital content grows while print revenue

declines in real terms without full compensation; AI reduces production costs while threatening the authorial basis that sustains content quality.

This finding challenges linear models of digital transformation that posit progression from digitization to digital transformation to digital maturity (Verhoef et al., 2021; Vial, 2019). In the STP, the field does not appear to be “in transit” toward a mature digital state; rather, the asymmetry is self-reinforcing because the institutional logics that generate it are themselves persistent. The academic/professional logic demands maintenance of curatorial standards and authorial legitimacy that resist full platformization. The state logic operates through procurement cycles and regulatory frameworks that lag behind technological change. The market logic pushes toward scale and efficiency that the academic and state logics constrain. The technological logic enables new forms of value creation while simultaneously threatening the knowledge production system through AI-driven content appropriation.

This interpretation extends the concept of asymmetric digital transformation beyond its original formulation (Aguiar et al., 2023; Peukert and Reimers, 2022) by specifying its institutional roots. In fields characterized by persistent institutional complexity (Greenwood et al., 2011), asymmetric transformation is not a failure of implementation but a structural outcome of the co-presence of logics that simultaneously demand and resist change. This also connects to the dynamic capabilities literature, where the STP case suggests that in such fields, the relevant unit of analysis for sensing, seizing, and reconfiguring (Teece, 2007; Teece, 2018) is not the individual firm but the inter-organizational ecosystem, as the consortium platform itself represents a collective dynamic capability that no single publisher could have developed or deployed alone.

4.6.3 The book as institutional anchor: a novel value reconfiguration

A further theoretical insight concerns the book's transformation from core revenue product to what informants consistently described as a “reputational hub”. This finding is more theoretically significant than a simple narrative of declining print. In the STP, the book does not merely lose economic centrality; it acquires a new institutional function as an anchor of legitimacy that enables publishers to operate across educational services, graduate programs, and

certification markets. The editorial asset (brand, authorial network, peer-reviewed catalog) provides the credibility that validates non-editorial revenue streams.

This pattern suggests a form of value reconfiguration distinct from those typically described in the platform and ecosystem literatures. Rather than “pivoting” from one value proposition to another (Teece, 2018), STP publishers maintain the original asset (the book) while instrumentalizing its symbolic capital to access adjacent markets. The book becomes what might be termed an “institutional anchor asset”: a product whose economic contribution is declining but whose institutional function (conferring legitimacy, attracting authors, signaling quality) is essential for the viability of the broader ecosystem. This concept extends Chesbrough’s (2010) work on business model innovation by identifying a specific mechanism through which firms in knowledge-intensive sectors reconfigure value: not by abandoning legacy assets but by converting their institutional function from economic to symbolic while building new revenue streams around the legitimacy they confer.

This pattern also appears in other knowledge-intensive contexts, though it has not been theorized as such. In healthcare, prestigious hospital brands similarly anchor broader service ecosystems (telemedicine, health plans, corporate wellness) while the core clinical activity may generate diminishing margins. In legal publishing, established law review brands anchor digital subscription services. The STP case makes this mechanism explicit and names it, offering a transferable concept for understanding value reconfiguration in institutionally complex fields.

4.6.4 Integrating the dimensions: the five-dimension framework revisited

The Who-Why-Where-How-What framework, originally developed in Study 2 as an analytical device, proved effective in organizing the empirical complexity of the STP. However, the findings also reveal important inter-dimensional dynamics that the framework’s sequential presentation may obscure. The Who (actor repositioning) is not independent of the Where (platform infrastructure); rather, the consortium platform reshapes actor identities by positioning publishers as ecosystem orchestrators rather than product manufacturers. The Why (institutional pressures) operates recursively with the How (coopetition as response), since the very success of the cooperative platform generates new pressures (dependence on a single infrastructure, power

asymmetries between founding and partner publishers). The What (value reconfiguration) feeds back into the Why by creating new vulnerabilities (AI threatening even the platform model).

These recursive dynamics suggest that, in fields characterized by institutional complexity, digital transformation is better understood as a cyclical process of pressure, response, reconfiguration, and renewed pressure, rather than as a linear progression from one state to another. The five-dimension framework captures this complexity when applied iteratively rather than sequentially, and future research may benefit from theorizing these inter-dimensional feedback loops more explicitly.

4.6.5 Contextual validation with secondary data

The empirical findings align with macro-level data. The WIPO (2022) report positions Brazil with 72.4% of titles in digital format (the highest rate in its global sample), and Cerlalc (2020) recorded 41.22% digital share in Brazil during the pandemic, confirming the asymmetry between technological advance and real print decline observed in the interviews. The IPA (2024) and the World Intellectual Property Report (WIPO, 2026) highlight the acceleration of digital diffusion in emerging economies, but with persistent institutional and infrastructural barriers in Latin America, aligning with the reactive and hybrid nature of transformation in the Brazilian STP.

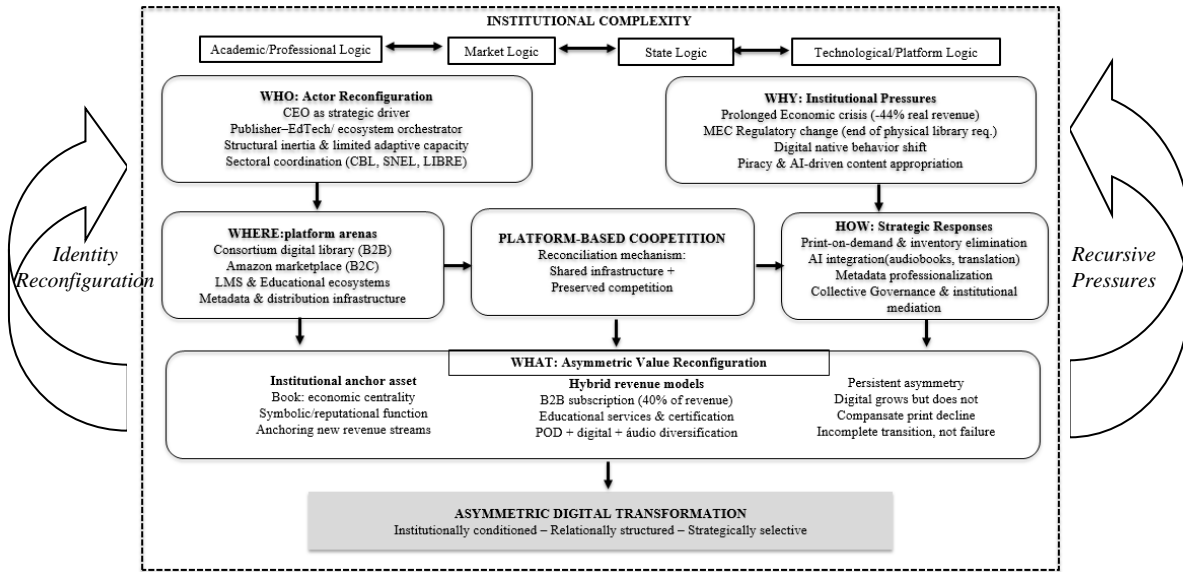
Figure 8 synthesizes the integrating framework that emerges from the empirical findings. The model is organized in layers that reflect the analytical structure of the study. At the top, institutional complexity frames the entire transformation process, with academic/professional, market, state, and technological logics operating in persistent tension. The Who and Why dimensions occupy the upper level as inputs: the actors undergoing identity reconfiguration and the institutional pressures driving transformation. At the center, the Where and How dimensions converge around platform-based cooptation, the study's most distinctive finding, which operates as the reconciliation mechanism linking the arenas where transformation materializes to the strategies through which organizations respond.

The What dimension captures the asymmetric outcomes: the book's repositioning as an institutional anchor asset, the emergence of hybrid revenue models, and the persistent gap between digital growth and print decline. Recursive feedback loops (dashed arrows) indicate that

outcomes generate new pressures and identity reconfigurations, reinforcing the argument that asymmetric transformation in institutionally complex fields is cyclical rather than linear.

Figure 8

Asymmetric Digital Transformation in the STP: An Integrating Framework



Note. Authors' elaboration based on empirical findings (2026).

4.6.6 Contributions

The contributions of this study are structured as follows.

Theoretical contributions. The study advances the understanding of digital transformation in knowledge-intensive sectors by demonstrating the analytical fertility of the multidimensional framework (Who–Why–Where–How–What) in capturing the complexity of the phenomenon. It contributes to institutional logics theory by showing how platform-based cooperation emerges as a mechanism for reconciling academic, market, and technological logics in highly institutionalized fields, extending the framework of Bengtsson and Kock (2000) to contexts of prolonged crisis and regulatory disruption. It further enriches ecosystem and relational dynamic capabilities theory by demonstrating that, under conditions of sustained disruption, capability reconfiguration occurs predominantly at the interorganizational and collective levels rather than solely within individual firms (Teece, 2007; Teece, 2018). The study also introduces the concept of the “institutional anchor asset” to explain how the symbolic

function of the book sustains new revenue streams even as its direct economic contribution declines.

Empirical and contextual contributions. This study provides the first integrated and multidimensional analysis of digital transformation in the Brazilian STP publishing subsector, addressing a gap in both national and international scholarship. The detailed mapping of platform-based cooperation offers rare empirical evidence of collective strategies among competing publishers in emerging markets.

Practical contributions. For publishing executives, the study offers a repertoire of validated practices: (1) consortium-based models as a strategy for achieving digital scale; (2) the repositioning of the book as a reputational asset within educational ecosystems; and (3) investment priorities in metadata infrastructure, AI-assisted production, and hybrid workforce development. For policymakers and sectoral associations, the findings highlight the need for policies that promote bibliodiversity and regulate the ethical use of AI, thereby preventing the erosion of original knowledge production.

4.6.7 Limitations

This study presents limitations inherent to its methodological design. As a qualitative investigation with an abductive approach focused on industry leaders and platform executives, the findings are not directly generalizable to medium-sized, small, or university presses, which operate under distinct resource constraints and institutional pressures. The temporal scope of the research (interviews conducted between November and December 2025) captures a specific moment characterized by post-pandemic acceleration and the expansion of generative artificial intelligence, and may therefore not fully reflect longer-term dynamics.

The reliance on self-reported data from CEOs and key actors introduces the potential for social desirability bias and a predominantly “top-down” perspective on the phenomenon, although this limitation was mitigated through triangulation with documentary sources and digital observation. Furthermore, the exclusive focus on the supply side (publishers and platforms) did not systematically incorporate the demand perspective (students, faculty members, and educational institutions), thereby limiting the understanding of adoption and resistance dynamics at the end-user level.

4.6.8 Future research agenda

The forward-looking perspectives expressed by the interviewees indicate a horizon marked by increasing asymmetries and new disruptions, offering fertile ground for subsequent research agendas.

The impacts of generative artificial intelligence on the CTP value chain warrant sustained attention. Several interviewees (E8, E9, E14) anticipate that AI may render current platform models obsolete and directly threaten editorial curation, particularly in technical fields such as Law and Medicine. Longitudinal and experimental studies are needed to examine how AI will affect authorship, copyright, the training of models on pirated datasets, and incentives for the production of new, high-quality knowledge.

The evolution of platform-based cooperation requires quantitative investigation. The consortium platform was mentioned as accounting for up to 40% of the revenue of large publishing groups. Studies examining the performance, governance, and stability of this cooperative arrangement over the next five years may reveal whether it will consolidate as a dominant model or fragment in response to the entry of Big Tech firms and open-access solutions.

User consumption patterns and experiences require direct examination. Interviewees highlighted the “digital native” student who seeks “pre-digested,” rapid, and multimodal content (e.g., TikTok, YouTube, ChatGPT) rather than in-depth knowledge. Ethnographic studies and surveys with undergraduate and graduate students, as well as faculty members, are essential to understand engagement patterns, learning effectiveness, and resistance to digital formats.

Smaller, university, and independent publishers warrant comparative attention. Given that future outlooks emphasize the need for bibliodiversity and collective action (E11, E12), comparative studies involving smaller publishers may reveal alternative survival strategies or niche approaches in response to platform hegemony.

Finally, the political and regulatory dimension calls for policy-oriented research. Interviews point to the urgency of policies aimed at reader development, AI regulation, and anti-piracy measures. Research that integrates public policy analysis with foresight methods may contribute to the design of regulatory frameworks better suited to the Brazilian context.

4.7 CONCLUDING REMARKS

This study sought to examine how publishers in the Scientific-Technical-Professional (CTP) subsector operationalize the dimensions of digital transformation to reconfigure strategies, processes, and relationships in the Brazilian market. The results reveal that digital transformation in this subsector does not constitute a linear technological substitution, but rather an asymmetric sociotechnical, institutional, and relational process, marked by the hybrid coexistence of print and digital formats, the centrality of platforms, and intense institutional mediation.

The most robust finding is the emergence of platform-based coopetition as a structural response of the field to a prolonged crisis, in which direct competitors share technological and data infrastructure to ensure scale and survival, while simultaneously preserving competition over catalogs and authors. CTP publishers are not simply “digitizing books”; they are redefining their role from producers of physical objects to orchestrators of hybrid educational ecosystems, within a context of institutional complexity and platform dependence.

The transformation is gradual, asymmetric, and defensive, yet it has already consolidated new revenue models, new capabilities, and new forms of legitimation that signal the subsector’s sustainability in the medium term. The future of the subsector will depend on publishers’ ability to sustain strategic cooperation without losing competitive differentiation, as well as on their capacity to balance technological innovation with the preservation of academic legitimacy.

5 INTEGRATION OF FINDINGS AND CONTRIBUTIONS

5.1 INTEGRATIVE SYNTHESIS OF THE THREE STUDIES

This thesis examined how digital transformation is conceptually structured, theoretically integrated, and empirically materialized in the Scientific-Technical-Professional subsector of the Brazilian publishing market, and what its implications are for organizational performance. To address this question, the research was structured into three studies articulated through a cumulative logic: field structure (Study 1), integration of its core dimensions (Study 2), and empirical investigation of the unfolding of transformation (Study 3).

Study 1 revealed the thematic structure of empirical research on Digital Transformation (DT) and organizational performance through a structuring bibliometric review of 63 articles, employing bibliographic coupling, principal component analysis, and network analysis. The analysis identified four thematic components: (1) Strategic and Organizational Dimensions; (2) Organizational Capabilities, Leadership, and Strategies; (3) Business Model Innovation; and (4) Data-Driven Decision-Making and Analytics.

The central finding reformulated the prevailing diagnosis of the field: rather than being fragmented, as prior reviews frequently suggest (Reis et al., 2018; Verhoef et al., 2021), the literature on DT and performance converges around a shared orientation that treats digitalization as an organizational imperative and frames performance within optimization logics. The four components form a mutually reinforcing relational cycle in which negative outcomes are absorbed as implementation deficits rather than prompting alternative explanations. The framework also identified three underexplored theoretical gaps shaped by this convergence: the politics of DT, a theory of failure beyond implementation deficiency, and the distributive consequences of transformation.

Study 2 developed an integrative theoretical framework through a qualitative meta-synthesis of 45 articles encompassing 206 organizational cases, employing the five-dimension analytical model (Who, Why, Where, How, What) combined with grounded theory techniques. The findings revealed DT as a complex ecosystem in which five dimensions interact dynamically: (1) multilevel actors, including internal hierarchies and external stakeholder networks; (2) dual motivational forces combining strategic transformation imperatives with

external pressures; (3) contextual factors that actively mediate transformation trajectories; (4) synergistic processes of adaptive governance and dynamic capability development; and (5) multidimensional outcomes generating operational, strategic, and institutional impacts. The framework's primary contribution lies in conceptualizing DT as a feedback-oriented system in which transformation outcomes reconfigure motivational structures, creating self-reinforcing cycles that distinguish successful digital transformations from superficial technology adoption.

Study 3 investigated how publishers in the Scientific-Technical-Professional (STP) subsector operationalize the dimensions of digital transformation in the Brazilian market through abductive qualitative research applying the Gioia methodology, based on 15 semi-structured interviews triangulated with documentary sources. The results showed that DT in the STP subsector is asymmetric, hybrid, and predominantly reactive. The most distinctive finding is the emergence of platform-based coopetition as the dominant structural strategy: competing publishers have created and shared collective access infrastructure while preserving rivalry over catalogs and authors. The study introduced the concept of the "institutional anchor asset" to explain how the book shifts from being merely a core product to functioning as a symbolic and reputational asset that supports B2B subscription models, educational services, and hybrid ecosystems. Conflicting institutional logics (academic, governmental, market-driven, and technological) coexist in tension, generating hybrid governance arrangements and selective capability reconfiguration through AI, print-on-demand, and metadata management.

5.2 ARTICULATION AMONG THE STUDIES

The three studies operate in a cumulative sequence, with each one building upon and extending the previous. This articulation is not merely thematic; it is epistemological, as each study addresses a qualitatively distinct type of question that the findings of the preceding study simultaneously render visible and tractable.

From Study 1 to Study 2: from structural diagnosis to dimensional integration. Study 1 established that the field of DT and performance is not fragmented but theoretically convergent, organized around an optimization logic that treats strategy, capabilities, business model innovation, and analytics as components of a self-reinforcing cycle. This convergence implies that the field's dimensions (the constructs through which DT is examined) are not merely

underexplored in isolation; they are studied within a shared framing that constrains how their interrelationships can be theorized.

Study 2 occupied precisely this space. By synthesizing qualitative evidence from 206 organizational cases across different sectors and geographies, it produced the integrative framework whose endogenous emergence had been constrained by the field's paradigmatic convergence. The Who–Why–Where–How–What model theorizes not only the dimensions themselves but also their dynamic interrelationships and feedback cycles, providing the systemic understanding that Study 1 identified as lacking.

Crucially, the finding in Study 2 that context operates as an active mediating force—rather than as a background variable—directly responds to Study 1's identification of distributive consequences as underexplored theoretical gaps. Distinct contexts generate distinct transformation trajectories, rendering empirically untenable the implicit assumption of universal applicability embedded in the dominant optimization logic.

From Studies 1 and 2 to Study 3: from theoretical framework to empirical investigation in an underexplored theoretical gap. Study 1 identified three theoretical gaps not addressed by the field's convergence: the politics of DT, a theory of failure beyond implementation deficiency, and the distributive consequences of transformation. Study 2 provided the analytical framework (Who–Why–Where–How–What) to investigate these gaps but did so based on secondary evidence.

Study 3 entered the empirical space where these three underexplored theoretical gaps converge. The Scientific-Technical-Professional (STP) publishing subsector constitutes a field in which the politics of DT is visible (regulatory changes by the Ministry of Education restructured competitive dynamics), where failure cannot be explained solely as an implementation deficiency (the asymmetry between technological advancement and strategic reconfiguration is structural rather than transitional), and where distributive consequences are tangible (platform-based coopetition concentrates infrastructure within consortium arrangements while distributing costs and benefits unevenly among founding members, partners, and excluded publishers).

Thus, Study 3 simultaneously tested the Who–Why–Where–How–What model in a new empirical context, extended it through the discovery of recursive interdimensional dynamics, and addressed the theoretical gaps that Study 1 had identified as lacunae.

Convergence across the studies: feedback cycles as an organizing principle. A finding that emerges from the convergence of the three studies—and that none of them could have produced in isolation—is the centrality of feedback cycles as an organizing principle of DT dynamics.

Study 1 identified a self-reinforcing relational cycle among four thematic components, in which the field absorbs negative outcomes as implementation deficits. Study 2 theorized feedback mechanisms through which transformation outcomes reconfigure motivations and subsequent cycles. Study 3 provided empirical evidence of recursive dynamics in which the success of platform-based competition generates new institutional pressures (dependency, power asymmetries, AI-driven obsolescence threats), which in turn require new adaptive responses.

This convergence across a bibliometric study, a meta-synthesis, and an empirical qualitative investigation suggests that feedback-oriented cyclicity is not an incidental feature of digital transformation but a constitutive one, with direct implications for how the field should model, investigate, and manage transformation processes.

5.3 CONTRIBUTION MATRIX

Table 13 presents the Contribution Matrix that synthesizes how each study addresses the gaps identified in Chapter 1, the main findings, and the contributions organized by type.

Table 13

Contribution Matrix: Gaps, Findings, and Contributions

Study	Gap Addressed	Key Findings	Contributions
<p>Study 1 Structuring Bibliometric Review (Chapter 2)</p>	<p>Gap 1: The internal structure of DT-performance research remains empirically unmapped. The fragmentation diagnosis has not been empirically tested.</p>	<p>Four thematic factors composing a mutually reinforcing relational cycle. The field exhibits paradigmatic convergence, not fragmentation. The cycle absorbs negative outcomes as implementation deficits. Three underexplored territories: politics of DT, theory of failure, distributional consequences.</p>	<p>Theoretical: Reframes the field from fragmented to convergent; identifies the boundaries that paradigmatic convergence imposes on theoretical development. Methodological: Integrates bibliometric mapping with critical interpretation to generate theory-driven research programs. Practical: Clarifies the scope and limits of dominant DT prescriptions for practitioners.</p>

<p>Study 2 Qualitative Meta-Synthesis (Chapter 3)</p>	<p>Gap 2: The core dimensions of DT and their dynamic interrelationships have not been theorized as an integrated system with feedback mechanisms.</p>	<p>Five dynamically interacting dimensions: actors, motivations, context, processes, outcomes. DT as a feedback-driven system where outcomes reshape motivations. Adaptive governance as central transformation process. Context as active mediating force, not background variable. Institutional outcomes (legitimacy, reputation) as feedback into motivational structures.</p>	<p>Theoretical: Integrative framework combining dynamic capabilities, RBV, and institutional theory to explain continuous reconfiguration. Methodological: Meta-synthesis of 206 cases producing empirically grounded dimensional integration. Practical: Diagnostic map for aligning stakeholders, governance, and capabilities over time.</p>
<p>Study 3 Empirical Qualitative Research (Chapter 4)</p>	<p>Gap 3: The mechanisms through which institutional complexity shapes asymmetric transformation trajectories and collective strategic responses remain undertheorized.</p>	<p>Asymmetric, hybrid, and predominantly reactive DT in the STP subsector. Platform-based coemption as institutional reconciliation mechanism. Book repositioned as "institutional anchor asset" in hybrid ecosystems. Recursive inter-dimensional dynamics (Who-Why-Where-How-What operate cyclically). Four competing institutional logics generating hybrid governance.</p>	<p>Theoretical: Extends coemption theory to institutional complexity; introduces "institutional anchor asset" concept; positions capability reconfiguration at inter-organizational level. Empirical: Inaugural multidimensional analysis of DT in Brazilian STP publishing. Practical: Validated practices for consortium models, metadata investment, and AI-applied production.</p>

Note. Research data.

5.4 INTEGRATED CONTRIBUTIONS OF THE THESIS

Beyond the individual contributions of each study, the thesis produces integrated contributions that emerge from the articulation among the three investigations. These contributions are organized below by type.

5.4.1 Theoretical contributions

The first integrated contribution is the reframing of the DT-performance field from fragmented to convergent, and the specification of what this convergence means for theoretical development. Previous reviews treated fragmentation as the field's central problem and prescribed integration as the remedy (Reis et al., 2018; Verhoef et al., 2021). The thesis inverts

this diagnosis. Study 1 revealed that the field already converges around optimization logics; Study 2 provided the integrative framework that the field's own convergence prevented from emerging; and Study 3 entered the theoretical territories that this convergence left empty. The implication is that the field's next phase of development requires not more integration of existing constructs, but alternative theoretical orientations capable of questioning the assumptions that the current paradigm shares. The thesis identifies and begins to populate three such alternatives: the politics of transformation, structural failure beyond implementation, and distributional consequences.

The second integrated contribution is the conceptualization of digital transformation as a feedback-driven cyclical process rather than a linear progression. This finding emerges across all three studies with increasing empirical specificity. Study 1 identified the self-reinforcing cycle at the field level (four factors that absorb failures as implementation deficits). Study 2 theorized the feedback mechanisms at the dimensional level (outcomes reshaping motivations and subsequent cycles). Study 3 provided empirical evidence at the sectoral level (platform success generating new institutional pressures that demand new responses). The convergence of these findings across bibliometric, meta-synthetic, and empirical evidence suggests that cyclicity is constitutive of DT dynamics, not incidental. This has implications for how the field models transformation: linear maturity models (Matt et al., 2015; Westerman et al., 2014) may capture progression along known dimensions but cannot explain the recursive dynamics through which transformation generates the conditions for its own continuation, redirection, or pathological escalation.

The third integrated contribution is the extension of DT theory to contexts of institutional complexity, connecting digital transformation scholarship to institutional logics theory and competition theory. Study 1 identified that the DT-performance literature operates predominantly within an intra-organizational, firm-level frame. Study 2 established context as an active mediating force. Study 3 showed what happens when DT unfolds in a field governed by four competing institutional logics simultaneously. The result is a theoretical account of asymmetric transformation: a condition in which technological advancement is structurally decoupled from strategic and organizational reconfiguration, not because implementation is deficient, but because conflicting institutional demands produce hybrid governance arrangements that selectively enable some dimensions of transformation while constraining others. The concept of "institutional

anchor asset," introduced in Study 3, specifies how value reconfiguration operates under these conditions: knowledge-intensive products shift from commodity to symbolic and reputational function, underpinning new revenue models while preserving institutional legitimacy across competing logics.

5.4.2 Empirical contributions

The thesis contributes empirically by providing a multi-method, multi-level investigation that connects field-level patterns, cross-case dimensional dynamics, and sector-specific transformation trajectories. This layered empirical architecture is itself a contribution: most DT research operates at a single level of analysis, producing findings that are either structural (field-level reviews) or granular (case studies) but rarely both. The cumulative design allows each level to inform the others: the field-level structure reveals what is studied and what is not; the cross-case synthesis produces the framework for understanding dimensions and interactions; the sector study tests whether the framework holds, and how it must be adapted, in a context that the field's own structure has systematically overlooked.

The empirical investigation of the Brazilian STP publishing subsector constitutes the first integrated multidimensional analysis of digital transformation in this field, addressing a gap in both national and international literatures. The detailed mapping of platform-based coopetition provides rare empirical evidence of collective strategies among competing firms in emerging markets, and the identification of asymmetric transformation as a structural condition (rather than a transitional stage) challenges the implicit progressivism of dominant DT frameworks. The Brazilian context enriches this evidence because it combines characteristics that dominant frameworks do not anticipate: high digital connectivity coexisting with persistent physical format preferences, regulatory disruption catalyzing collective rather than individual strategic responses, and institutional mediation producing hybrid governance arrangements that linear models cannot capture.

5.4.3 Practical contributions

For managers in knowledge-intensive sectors, the thesis offers three actionable insights derived from the integration of findings across studies. First, practitioners should distinguish between transformation prescriptions that operate within the dominant optimization logic and strategic decisions that require questioning that logic. Study 1 revealed that the dominant literature provides a coherent prescription cycle (alignment, capability building, business model innovation, analytics) that captures real organizational requirements. However, Study 3 showed that in institutionally complex contexts, following this cycle without attending to competing institutional demands, power redistribution, and distributional consequences leads to asymmetric outcomes. The practical implication is that organizations should conduct structural feasibility assessments before launching DT initiatives, asking not only how to transform but whether and for whom the proposed transformation creates value, and at what institutional cost.

Second, the Who-Why-Where-How-What framework from Study 2, validated and extended by Study 3, provides a diagnostic instrument that managers can use to map their organization's transformation position across all five dimensions simultaneously. Rather than treating strategy, capabilities, governance, and performance as sequential stages, the framework enables organizations to identify which dimensional interactions are enabling transformation and which are constraining it, and to design interventions that address feedback loops rather than isolated gaps.

Third, for the publishing industry specifically, the findings from Study 3 provide validated strategic models: the consortium platform as a collective infrastructure for digital scaling; the transition from product-centered to ecosystem-centered business models; investment priorities in metadata management, AI-applied production, and hybrid team development; and the strategic preservation of institutional legitimacy (through curated, peer-reviewed content) as a competitive differentiator against unmediated digital content. For policymakers and industry associations, the thesis signals the need for policies that incentivize bibliodiversity, regulate the ethical use of AI in knowledge production, and support collective platform arrangements that prevent market concentration while enabling digital scaling.

5.5 LIMITATIONS OF THE THESIS

The limitations of this thesis operate at two levels: those specific to each study and those that apply to the thesis as an integrated whole.

Study-specific limitations. Study 1, as a bibliometric analysis, relies on the Web of Science and Scopus databases, which may not capture studies published in regional journals, conference proceedings, or emerging outlets. The four-component solution explained 57.8% of the total variance, and 22 of the 85 articles did not load saliently on any component; these articles may contain perspectives not represented in the identified component structure. Bibliographic coupling captures relationships based on shared references at the time of publication and does not track the dynamic evolution of thematic connections over time.

Study 2, as a meta-synthesis, depends on available published studies, which tend to emphasize large organizations in technologically intensive sectors, predominantly within European contexts. This may limit the applicability of the framework to small firms, traditional industries, and non-Western institutional environments. The temporal scope of the analyzed articles (2019–2024) may not fully capture the most recent developments in digital transformation, particularly the rapid expansion of generative artificial intelligence.

Study 3, as a qualitative investigation focused on industry leaders and platform executives, generates findings that are not directly generalizable to medium-sized, small, or university presses. The temporal scope (interviews conducted between November and December 2025) reflects a specific moment of post-pandemic acceleration and generative AI expansion. The exclusive focus on the supply side (publishers and platforms) did not systematically incorporate the demand perspective (students, faculty, and educational institutions).

5.5.1 Limitations at the thesis level

Two limitations apply to the thesis as an integrated whole.

First, although the cumulative logic ensures that each study builds upon the previous one, the three studies employ distinct epistemological approaches (quantitative bibliometrics, qualitative meta-synthesis, and qualitative abduction). This means that integration occurs at the level of theoretical articulation rather than methodological continuity. The findings are

convergent and complementary, but the strength of integration depends on interpretive coherence rather than on a single methodological thread.

Second, the empirical investigation (Study 3) focused on a single subsector (Scientific-Technical-Professional publishing) and a single country (Brazil). While this focus provides depth and contextual richness, it raises questions about whether the identified mechanisms—particularly platform-based cooptation as a mechanism of institutional reconciliation and the concept of the institutional anchor asset—operate in other knowledge-intensive sectors (such as healthcare, legal services, and education) or in other national contexts, where different regulatory regimes, competitive structures, and institutional logics prevail.

The thesis's theoretical propositions regarding asymmetric transformation and institutional complexity are grounded in a specific empirical setting and should be tested in additional contexts before being generalized.

5.6 FUTURE RESEARCH AGENDA

The integration of findings from the three studies generates a research agenda organized around five directions that no single study could have identified independently.

First, the underexplored theoretical gaps identified in Study 1 require continued theoretical and empirical development. The politics of digital transformation (DT), a theory of failure beyond implementation deficiency, and the distributive consequences of transformation were identified as structurally absent from the field's current theoretical architecture. Study 3 provided initial empirical evidence of these three gaps within the publishing context. Future research should examine these themes across different sectors and institutional environments, developing specific theoretical frameworks and measurement instruments for each. The concept of "legitimate non-adoption," introduced in the practical implications of Study 1, warrants particular attention: under what conditions does selective non-adoption or partial adoption constitute a rational organizational strategy rather than an indicator of resistance or incapacity?

Second, the feedback mechanisms theorized in Study 2 and empirically observed in Study 3 require longitudinal investigation. The integrative framework proposes that transformation outcomes reshape motivations and subsequent cycles, yet the temporal dynamics of these cycles—including their speed, intensity, and conditions for positive or negative reinforcement—

remain insufficiently specified. Longitudinal studies tracking organizations across multiple transformation cycles may provide insights into how the framework's dynamics evolve as organizational maturity increases and environmental conditions shift. Advanced modeling techniques could further explore these temporal dynamics, offering evidence on transformation velocity, optimal cycle duration, and the appropriate timing for strategic interventions.

Third, the impacts of generative artificial intelligence on knowledge-intensive ecosystems constitute an urgent research priority. Interviewees in Study 3 consistently identified generative AI as the primary short-term threat to the CTP value chain, anticipating that it may challenge editorial curation, destabilize authorship models, raise copyright concerns related to model training, and potentially render current platform arrangements obsolete. Longitudinal and experimental studies are needed to track how AI reconfigures the Who–Why–Where–How–What dimensions of transformation in knowledge-intensive fields and to assess whether the institutional anchor function of curated content can be sustained under conditions of automated knowledge production.

Fourth, the evolution and stability of platform-based cooperation require quantitative and comparative investigation. Study 3 identified the consortium platform as responsible for up to 40% of the revenue of major publishing groups, characterizing it as a structurally significant arrangement. Research on the performance, governance, and long-term stability of cooperative platforms may reveal whether they consolidate as dominant models, fragment in response to the entry of Big Tech and open-access solutions, or evolve into new hybrid configurations. Comparative studies involving smaller, university, and independent publishers may uncover alternative survival strategies or niche approaches in response to platform hegemony.

Fifth, the demand-side perspective requires direct investigation. This thesis focused on the supply side of the publishing ecosystem. Unexplored areas remain, including the consumption patterns of “digital-native” students who prefer rapid and multimodal content over in-depth knowledge, the dynamics of adoption and resistance among faculty and educational institutions, and the effectiveness of digital formats in learning outcomes. Ethnographic studies and surveys involving end users are essential to complete the understanding of digital transformation in knowledge-intensive ecosystems and to test whether the asymmetric transformation identified on the supply side corresponds to asymmetries on the demand side.

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APPENDIX A – ARTICLES USED AS THE BASIS FOR THE BIBLIOMETRIC STUDY (STUDY 1)

Authors	Article Title	Year	Journal	Research Approach
Deist, Maximilian K.; McDowell, William C.; Bouncken, Ricarda B.	Digital units and digital innovation: Balancing fluidity and stability for the Creation, Conversion, and Dissemination of sticky knowledge	2023	Journal of Business Research	Qualitative
Liu, Yueyue; Zhang, Xu; Xi, Meng; Liu, Siqi; Meng, Xin	Organizational environments, work characteristics and employee innovative behavior in the digital age: an fsQCA approach	2024	Chinese Management Studies	Qualitative and Quantitative
Trischler, Matthias Fabian Gregersen; Li-Ying, Jason	Exploring the relationship between multi- dimensional digital readiness and digital transformation outcomes	2022	International Journal of Innovation Management	Quantitative
Ates, Aylin; Acur, Nuran	Making obsolescence obsolete: Execution of digital transformation in a high-tech manufacturing SME	2022	Journal of Business Research	Qualitative
Peter, Marc K.; Kraft, Corin; Lindeque, Johan	Strategic action fields of digital transformation: An exploration of the strategic action fields of Swiss SMEs and large enterprises	2020	Journal of Strategy and Management	Qualitative and Quantitative
Piepponen, Amanda; Ritala, Paavo; Kernanen, Joonas; Maijanen, Paivi	Digital transformation of the value proposition: A single case study in the media industry	2022	Journal of Business Research	Qualitative
Reuschl, Andreas J.; Deist, Maximilian K.; Maalaoui, Adnane	Digital transformation during a pandemic: Stretching the organizational elasticity	2022	Journal of Business Research	Qualitative
Vuchkovski, Davor; Zalaznik, Maja; Mitrega, Maciej; Pfajfar, Gregor	A look at the future of work: The digital transformation of teams from conventional to virtual	2023	Journal of Business Research	Qualitative
	SMEs and digital transformation during	2022	Journal of	Qualitative

Khurana, Indu; Dutta, Dev K.; Ghura, Amarpreet Singh	a crisis: The emergence of resilience as a second-order dynamic capability in an entrepreneurial ecosystem		Business Research	
Firk, Sebastian; Gehrke, Yannik; Hanelt, Andre; Wolff, Michael	Top management team characteristics and digital innovation: Exploring digital knowledge and TMT interfaces	2022	Long Range Planning	Quantitative
Kraft, Corin; Lindeque, Johan P.; Peter, Marc K	The digital transformation of Swiss small and medium-sized enterprises: insights from digital tool adoption	2022	Journal of Strategy and Management	Qualitative
Lei, Hui; Tang, Shiyi; Zhao, Yuxin; Chen, Shou	Enterprise digitalization, employee digital literacy and R&D cooperation: the moderating role of organizational inertia	2024	Chinese Management Studies	Quantitative
Schildt, Henri; Lahdenranta, Kristiina; Demir, Robert; Turunen, Taija	Waking up to digital innovation: how organisational secrecy hampers top management focus on strategic renewal	2024	Innovation Organization & Management	Qualitative and Quantitative
Jafari-Sadeghi, Vahid; Mahdiraji, Hannan Amoozad; Alam, Gazi Mahabubul; Mazzoleni, Alberto	Entrepreneurs as strategic transformation managers: Exploring micro-foundations of digital transformation in small and medium internationalisers	2023	Journal of Business Research	Qualitative and Quantitative
Mattos, Claudia A.; Novais Filho, Marivaldo Jose	Mechanisms to develop a business model through the Internet of things: a multiple case study in manufacturing companies	2024	Technology Analysis & Strategic Management	Qualitative
Firk, Sebastian; Hanelt, Andre; Oehmichen, Jana; Wolff, Michael	Chief Digital Officers: An Analysis of the Presence of a Centralized Digital Transformation Role	2021	Journal of Management Studies	Quantitative
Tsou, Hung-Tai; Chen, Ja-Shen	How does digital technology usage benefit firm performance? Digital transformation strategy and organisational innovation as mediators	2023	Technology Analysis & Strategic Management	Quantitative

Ghosh, Swapan; Hughes, Mat; Hodgkinson, Ian; Hughes, Paul	Digital transformation of industrial businesses: A dynamic capability approach	2022	Technovation	Qualitative
Chirumalla, Koteswar	Building digitally-enabled process innovation in the process industries: A dynamic capabilities approach	2021	Technovation	Qualitative
Chen, Hansong; Tian, Zhen	Environmental uncertainty, resource orchestration and digital transformation: A fuzzy-set QCA approach	2022	Journal of Business Research	Qualitative and Quantitative
Schuster, Tobias; Brunner, Timo J. J.; Schneider, Malte H. G.; Lehmann, Claudia; Kanbach, Dominik K.	Leading in the digital age: conceptualising digital leadership and its influence on service innovation performance	2023	International Journal of Innovation Management	Qualitative and Quantitative
Tortora, Debora; Chierici, Roberto; Briamonte, Massimiliano Farina; Tiscini, Riccardo	'I digitize so I exist'. Searching for critical capabilities affecting firms' digital innovation	2021	Journal of Business Research	Quantitative
Matarazzo, Michela; Penco, Lara; Profumo, Giorgia; Quaglia, Roberto	Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective	2021	Journal of Business Research	Qualitative
Scuotto, V; Nicotra, M; Del Giudice, M; Krueger, N; Gregori, G.L	A microfoundational perspective on SMEs' growth in the digital transformation era	2021	Journal of Business Research	Quantitative
Fernandez-Vidal, Jorge; Perotti, Francesco Antonio; Gonzalez, Reyes; Gasco, Jose	Managing digital transformation: The view from the top	2022	Journal of Business Research	Qualitative
Lei, Hui; Tang, Shiyi; Zan, Ao	Enterprise digital transformation under process constraints: investigation of the combinative effects of different constraints	2023	Business Process Management Journal	Quantitative
Weber, Alicia Neva;	Investment ability: a catalyst for omni-	2024	Cogent Business	Qualitative

Cilliers, Jacoba Orpha	channel supply chain integration		& Management	
Fang, Mingjie; Liu, Feng; Xiao, Shufeng (Simon); Park, Kwangtae	Hedging the bet on digital transformation in strategic supply chain management: a theoretical integration and an empirical test	2023	International Journal of Physical Distribution & Logistics Management	Quantitative
Nasiri, Mina; Ukko, Juhani; Saunila, Minna; Rantala, Tero	Managing the digital supply chain: The role of smart technologies	2020	Technovation	Quantitative
AlNuaimi, Bader K; Singh, Sanjay Kumar; Ren, Shuang; Budhwar, Pawan	Mastering digital transformation: The nexus between leadership, agility, and digital strategy	2022	Journal of Business Research	Quantitative
Luu, Tien Dung	Digital transformation and export performance: a process mechanism of firm digital capabilities	2023	Business Process Management Journal	Quantitative
Luu, Tien Dung	Leveraging digital transformation and agile slack to integrate team-level I-deals with strategic agility for enhancing international performance	2024	Thunderbird International Business Review	Qualitative and Quantitative
Malodia, Suresh; Mishra, Mahima; Fait, Monica; Papa, Armando; Dezi, Luca	To digit or to head? Designing digital transformation journey of SMEs among digital self-efficacy and professional leadership	2023	Journal of Business Research	Qualitative and Quantitative
Chatterjee, Sheshadri; Chaudhuri, Ranjan; Vrontis, Demetris; Basile, Gianpaolo	Digital transformation and entrepreneurship process in SMEs of India: a moderating role of adoption of AI-CRM capability and strategic planning	2022	Journal of Strategy and Management	Quantitative
Marino-Romero, Jorge Alberto; Palos-Sanchez,	Improving KIBS performance using digital transformation: study based		Journal of Service Theory and	Qualitative and

Pedro R.; Velicia-Martin, Félix	on the theory of resources and capabilities	2023	Practice	Quantitative
Kargas, Antonios; Gialeris, Emmanouil; Komisopoulos, Faidon; Lymperiou, Anastasios; Salmon, Ioannis	Digital Maturity and Digital Transformation Strategy among Greek Small and Medium Enterprises	2023	Administrative Sciences	Quantitative
AL-Khatib, Ayman Wael	The determinants of export performance in the digital transformation era: empirical evidence from manufacturing firms	2024	International Journal of Emerging Markets	Quantitative
Ramadan, Muhieddine; Bou Zakhem, Najib; Baydoun, Hala; Daouk, Amira; Youssef, Samia; El Fawal, Abir; Elia, Jean; Ashaal, Ahmad	Toward Digital Transformation and Business Model Innovation: The Nexus between Leadership, Organizational Agility, and Knowledge Transfer	2023	Administrative Sciences	Quantitative
Zahoor, Nadia; Zopiatis, Anastasios; Adomako, Samuel; Lamprinakos, Grigorios	The micro-foundations of digitally transforming SMEs: How digital literacy and technology interact with managerial attributes	2023	Journal of Business Research	Quantitative
Li, Liang; Du, Kui; Zhang, Wei; Mao, Ji-Ye	Empowering digital transformation: The roles of platforms	2024	Journal of Information Technology	Qualitative
Chatterjee, Sheshadri; Chaudhuri, Ranjan; Vrontis, Demetris; Jabeen, Fauzia	Digital transformation of organization using AI-CRM: From microfoundational perspective with leadership support	2022	Journal of Business Research	Quantitative
Zhang, Wenkun; Chu, Jinhua; Zhang, Tao; Wang, Yanan	Identifying the factors influencing enterprise digital transformation intention: an empirical study based on net effects and joint effects	2023	Business Process Management Journal	Qualitative and Quantitative
Nguyen, Thi Anh Van;	Quality 4.0 practices toward sustainable		Total Quality	

Tucek, David; Pham, Nhat Tan; Nguyen, Khac Hieu	excellence in the manufacturing sector	2023	Management & Business Excellence	Quantitative
Valdez-Juarez, Luis Enrique; Ramos-Escobar, Elva Alicia; Hernandez-Ponce, Oscar Ernesto; Ruiz-Zamora, Jose Alonso	Digital transformation and innovation, dynamic capabilities to strengthen the financial performance of Mexican SMEs: a sustainable approach	2023	Cogent Business & Management	Quantitative
Haftor, Darek. M.; Costa, Ricardo Climent	Five dimensions of business model innovation: A multi-case exploration of industrial incumbent firm's business model transformations	2023	Journal of Business Research	Qualitative and Quantitative
Sund, Kristian J.; Bogers, Marcel L.A.M.; Sahramaa, Meri	Managing business model exploration in incumbent firms: A case study of innovation labs in European banks	2021	Journal of Business Research	Qualitative
Karami, Masoud; Baber, William W.; Ojala, Arto	The effectual process of business model innovation for seizing opportunities in frontier markets	2022	Technovation	Qualitative
Latilla, Vito Manfredi; Simone Franzo, Federico Frattini; Chiesa, Vittorio	Organisational Change And Business Model Innovation: An Exploratory Study Of An Energy Utility	2020	International Journal of Innovation Management	Qualitative
Thomson, Linus; Sjodin, David; Parida, Vinit; Jovanovic, Marin	Conceptualizing business model piloting: An experiential learning process for autonomous solutions	2023	Technovation	Qualitative
Cozzolino, Alessio; Verona, Gianmario; Rothaermel, Frank T.	Unpacking the Disruption Process: New Technology, Business Models, and Incumbent Adaptation	2018	Journal of Management Studies	Qualitative
Burstrom, Thommie; Parida, Vinit; Lahti, Tom; Wincent, Joakim	AI-enabled business-model innovation and transformation in industrial ecosystems: A framework, model and outline for further research	2021	Journal of Business Research	Qualitative

Correani, Alessia; De Massis, Alfredo; Frattini, Federico; Petruzzelli, Antonio Messeni; Natalicchio, Angelo	Implementing a Digital Strategy: Learning from the experience of three Digital transformation projects	2020	California Management Review	Qualitative
Sjodin, David; Parida, Vinit; Palmie, Maximilian; Wincent, Joakim	How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops	2021	Journal of Business Research	Qualitative
Remané, Gerrit; Schneider, Sabrina; Hanelt, André	Digital Business Model Types: Understanding Their Mechanisms As Recipes To Commercialise Digital Technologies	2022	International Journal of Innovation Management	Qualitative
AlMulhim, Abdullah Fahad	Smart supply chain and firm performance: the role of digital technologies	2021	Business Process Management Journal	Qualitative
Gehde, Karla Margarete; Rausch, Florian; Leker, Jens	Business model configurations in digital healthcare-a german case study about digital transformation	2022	International Journal Of Innovation Management	Qualitative
Warner, Karl S.R.; Wäger, Maximilian	Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal	2019	Long Range Planning	Qualitative
Coreynen, Wim; Matthyssens, Paul; Struyf, Bieke; Vanhaverbeke, Wim	Spiraling between learning and alignment toward digital service innovation	2024	Journal of Service Management	Qualitative
Heubeck, Tim	Managerial capabilities as facilitators of digital transformation? Dynamic managerial capabilities as antecedents to digital business model transformation and firm performance	2023	Digital Business	Quantitative
Geurts, Amber; Cepa, Katharina	Transforming the music industry: How platformization drives business	2023	Long Range Planning	Quantitative

	ecosystem envelopment			
Chen, Yantai; Luo, Haibei; Chen, Jin; Guo, Yanlin	Building data-driven dynamic capabilities to arrest knowledge hiding: A knowledge management perspective	2022	Journal of Business Research	Qualitative
Garmaki, Mahda; Gharib, Rebwar Kamal; Boughzala, Imed	Big data analytics capability and contribution to firm performance: the mediating effect of organizational learning on firm performance	2023	Journal of Enterprise Information Management	Qualitative
Korherr, Philipp; Kanbach, Dominik K.; Kraus, Sascha; Mikalef, Patrick	From intuitive to data-driven decision-making in digital transformation: A framework of prevalent managerial archetypes	2022	Digital Business	Qualitative

APPENDIX B – ARTICLES USED AS THE BASIS FOR THE META-SYNTHESIS STUDY (STUDY 2)

Authors	Article Title	Year	Journal	Research Approach
Ambos, Tina C.; Tatarinov, Katherine	Building Responsible Innovation In International Organizations Through Intrapreneurship	2022	Journal Of Management Studies	Qualitative
Ates, Aylin; Acur, Nuran	Making Obsolescence Obsolete: Execution Of Digital Transformation In A High-Tech Manufacturing SME	2022	Journal Of Business Research	Qualitative
Baptista, J., Wilson, A.D., Galliers, R.D.	Instantiation: Reconceptualising The Role Of Technology As A Carrier Of Organisational Strategising	2021	Journal Of Information Technology	Qualitative
Beretta, Michela; Smith, Pernille	Embarking On A Business Agility Journey: Balancing Autonomy Versus Control	2023	California Management Review	Qualitative
Biancone, Paolo; Secinaro, Silvana; Marseglia, Roberto; Calandra, Davide	E-Health For The Future. Managerial Perspectives Using A Multiple Case Study Approach	2023	Technovation	Qualitative

Browder, Russell E.; Koch, Hope; Long, Anna; Hernandez, James M.	Learning To Innovate With Big Data Analytics In Interorganizational Relationships	2022	Academy Of Management Discoveries	Qualitative
Bruenker, Felix; Marx, Julian; Mirbabaie, Milad; Stieglitz, Stefan	Proactive Digital Workplace Transformation: Unpacking Identity Change Mechanisms In Remote-First Organisations	2024	Journal Of Information Technology	Qualitative
Burstrom, Thommie; Parida, Vinit; Lahti, Tom; Wincent, Joakim	AI-Enabled Business-Model Innovation And Transformation In Industrial Ecosystems: A Framework, Model And Outline For Further Research	2021	Journal Of Business Research	Qualitative
Butt, Aurangzeab; Imran, Faisal; Helo, Petri; Kantola, Jussi	Strategic Design Of Culture For Digital Transformation	2024	Long Range Planning	Qualitative
Chaudhuri, Atanu; Naseraldin, Hussein; Narayanamurthy, Gopalakrishnan	Healthcare 3D Printing Service Innovation: Resources And Capabilities For Value Co-Creation	2023	Technovation	Qualitative
Chirumalla, Koteswar	Building Digitally-Enabled Process Innovation In The Process Industries: A Dynamic Capabilities Approach	2021	Technovation	Qualitative
Deist, Maximilian K.; McDowell, William C.; Bouncken, Ricarda B.	Digital Units And Digital Innovation: Balancing Fluidity And Stability For The Creation, Conversion, And Dissemination Of Sticky Knowledge	2023	Journal Of Business Research	Qualitative

Essen, Anna; Frishammar, Johan; Cenamor, Javier	Entering Non-Platformized Sectors: The Co-Evolution Of Legitimacy Debates And Platform Business Models In Digital Health Care	2023	Technovation	Qualitative
Geurts, Amber; Cepa, Katharina	Transforming The Music Industry: How Platformization Drives Business Ecosystem Envelopment	2023	Long Range Planning	Qualitative
Ghosh, Swapan; Hughes, Mat; Hodgkinson, Ian; Hughes, Paul	Digital Transformation Of Industrial Businesses: A Dynamic Capability Approach	2022	Technovation	Qualitative
Gkinko, Lorentsa; Elbanna, Amany	Designing Trust: The Formation Of Employees? Trust In Conversational AI In The Digital Workplace	2023	Journal Of Business Research	Qualitative
Haaker, Timber; Pham Thi Minh Ly; Nhan Nguyen-Thanh; Hanh Thi Hong Nguyen	Business Model Innovation Through The Application Of The Internet-Of-Things: A Comparative Analysis	2021	Journal Of Business Research	Qualitative
Hadjielias, Elias; Dada, Olufunmilola (Lola); Cruz, Allan Discua; Zekas, Stavros; Christofi, Michael; Sakka, Georgia	How Do Digital Innovation Teams Function? Understanding The Team Cognition-Process Nexus Within The Context Of Digital Transformation	2021	Journal Of Business Research	Qualitative
Hoblos, Nizar; Sandeep, M. S.; Pan, Shan L.	Achieving Stakeholder Alignment In Digital Transformation: A Frame Transformation Perspective	2024	Journal Of Information Technology	Qualitative

Ji, Yu; Du, Wenyu (Derek); Pan, Shan L.	Vendor Capabilities Development In Blockchain Sourcing: A Parallel Play Approach	2024	Journal Of Information Technology	Qualitative
Kateb, S., Ruehle, R.C., Kroon, D.P., van Burg, E., Huber, M	Innovating Under Pressure: Adopting Digital Technologies In Social Care Organizations During The COVID-19 Crisis	2022	Technovation	Qualitative
Kazantsev, Nikolai; Batolas, Dimitrios; White, Leroy	Managing Asymmetries For Data Mobilization Under Digital Transformation	2024	British Journal Of Management	Qualitative
Khanagha, Saeed; Ansari, Shahzad (Shaz); Paroutis, Sotirios; Oviedo, Luciano	Mutualism And The Dynamics Of New Platform Creation: A Study Of Cisco And Fog Computing	2022	Strategic Management Journal	Qualitative
Khurana, Indu; Dutta, Dev K.; Ghura, Amarpreet Singh	Smes And Digital Transformation During A Crisis: The Emergence Of Resilience As A Second-Order Dynamic Capability In An Entrepreneurial Ecosystem	2022	Journal Of Business Research	Qualitative
Koponen, Jonna; Julkunen, Saara; Laajalahti, Anne; Turunen, Marianna; Spitzberg, Brian	Work Characteristics Needed By Middle Managers When Leading AI-Integrated Service Teams	2023	Journal Of Service Research	Qualitative

Kronblad, Charlotta	How Digitalization Changes Our Understanding Of Professional Service Firms	2020	Academy Of Management Discoveries	Qualitative
Leone, Daniele; Schiavone, Francesco; Appio, Francesco Paolo; Chiao, Benjamin	How Does Artificial Intelligence Enable And Enhance Value Co-Creation In Industrial Markets? An Exploratory Case Study In The Healthcare Ecosystem	2021	Journal Of Business Research	Qualitative
Li, Liang; Du, Kui; Zhang, Wei; Mao, Ji-Ye	Empowering Digital Transformation: The Roles Of Platforms	2024	Journal Of Information Technology	Qualitative
Loska, Gergely; Uotila, Juha	Digital Transformation In Corporate Banking: Toward A Blended Service Model	2024	California Management Review	Qualitative
Marinelli, Luca; Crupi, Antonio; Del Sarto, Nicola; Lepore, Dominique	Unveiling Knowledge Ecosystem Dimensions For Msmes' Digital Transformation, Toward A Location-Based Brokerage	2024	Technovation	Qualitative
Matarazzo, Michela; Penco, Lara; Profumo, Giorgia; Quaglia, Roberto	Digital Transformation And Customer Value Creation In Made In Italy Smes: A Dynamic Capabilities Perspective	2021	Journal Of Business Research	Qualitative

Mathiassen, L., Jonsson, K., Holmstrom, J.	Tensions In Transfer, Translation, And Transformation Of Information: A Sociomaterial Perspective On Heterogeneous Work Arrangements	2023	Journal Of Information Technology	Qualitative
Ovrelid, Egil; Bygstad, Bendik	The Role Of Discourse In Transforming Digital Infrastructures	2019	Journal Of Information Technology	Qualitative
Piepponen, Amanda; Ritala, Paavo; Kernanen, Joonas; Maijanen, Paivi	Digital Transformation Of The Value Proposition: A Single Case Study In The Media Industry	2022	Journal Of Business Research	Qualitative
Plattfaut, Ralf; Koch, Julian	Preserving The Legacy-Why Do Professional Soccer Clubs (Not) Adopt Innovative Process Technologies? A Grounded Theory Study	2021	Journal Of Business Research	Qualitative
Reuschl, Andreas J.; Deist, Maximilian K.; Maalaoui, Adnane	Digital Transformation During A Pandemic: Stretching The Organizational Elasticity	2022	Journal Of Business Research	Qualitative
Saad, Elie Abi; Tremblay, Nathalie; Agogue, Marine	A Multi-Level Perspective On Innovation Intermediaries: The Case Of The Diffusion Of Digital Technologies In Healthcare	2024	Technovation	Qualitative

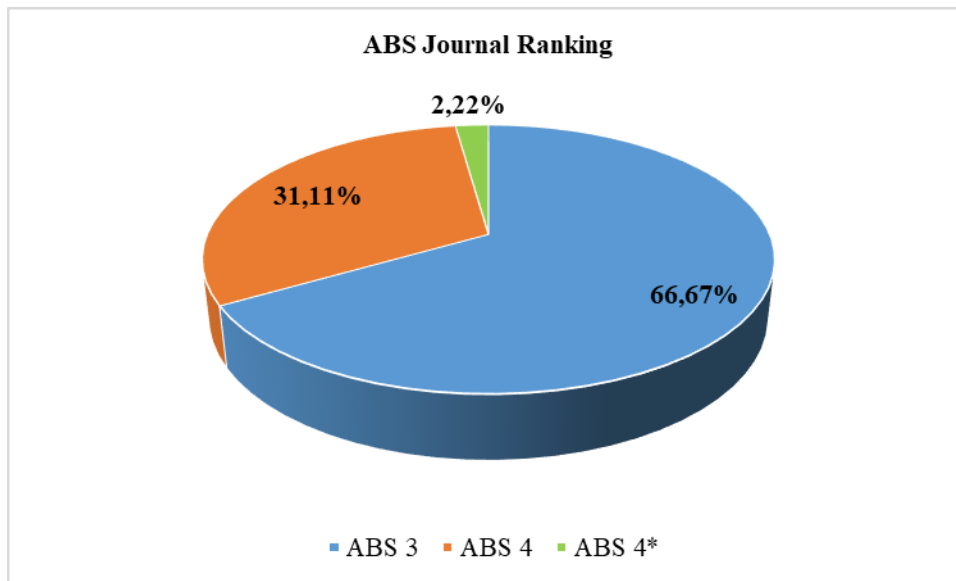
Santarsiero, Francesco; Schiuma, Giovanni; Carlucci, Daniela; Helander, Nina	Digital Transformation In Healthcare Organisations: The Role Of Innovation Labs	2023	Technovation	Qualitative
Selander, Lisen; Jarvenpaa, Sirkka L.	Xenografting In Political Activism: Coexisting Logics Powered By Resource Injections	2020	Academy Of Management Discoveries	Qualitative
Simmonds, Hamish; Gazley, Aaron; Kaartemo, Valtteri; Renton, Michelle; Hooper, Val	Mechanisms Of Service Ecosystem Emergence: Exploring The Case Of Public Sector Digital Transformation	2021	Journal Of Business Research	Qualitative
Singh, Anna; Klarner, Patricia; Hess, Thomas	How Do Chief Digital Officers Pursue Digital Transformation Activities? The Role Of Organization Design Parameters	2020	Long Range Planning	Qualitative
Sjodin, David; Parida, Vinit; Palmie, Maximilian; Wincent, Joakim	How AI Capabilities Enable Business Model Innovation: Scaling AI Through Co- Evolutionary Processes And Feedback Loops	2021	Journal Of Business Research	Qualitative

Sund, Kristian J.; Bogers, Marcel L. A. M.; Sahramaa, Meri	Managing Business Model Exploration In Incumbent Firms: A Case Study Of Innovation Labs In European Banks	2021	Journal Of Business Research	Qualitative
Warner, Karl S. R.; Waeger, Maximilian	Building Dynamic Capabilities For Digital Transformation: An Ongoing Process Of Strategic Renewal	2019	Long Range Planning	Qualitative
Zoppelletto, Alessia; Orlandi, Ludovico Bullini; Zardini, Alessandro; Rossignoli, Cecilia; Kraus, Sascha	Organizational Roles In The Context Of Digital Transformation: A Micro-Level Perspective	2023	Journal Of Business Research	Qualitative

APPENDIX C – QUANTITATIVE BREAKDOWN OF THE RANKING ABS, YEAR, JOURNALS, SECTORS, COUNTRIES, AND CONTINENTS OF THE ARTICLES THAT COMPRISE THE META-SYNTHESIS SAMPLE (STUDY 2)

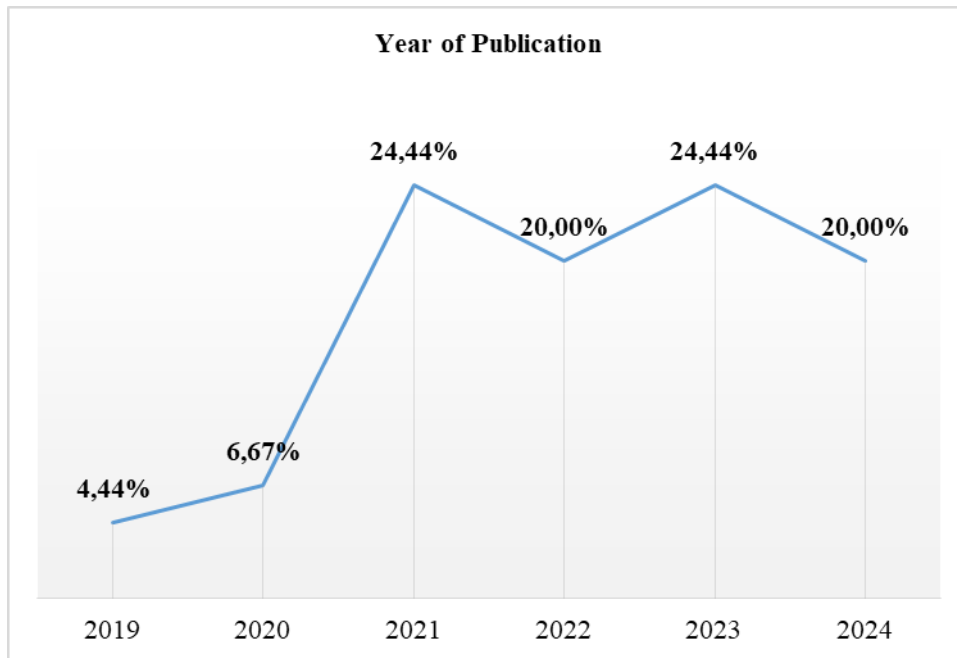
1 – Ranking ABS

<i>ABS Journal Ranking</i>	<i>Percentage</i>	<i>Quantity</i>
ABS 3	66,67%	30
ABS 4	31,11%	14
ABS 4*	2,22%	1
Total	100,00%	45



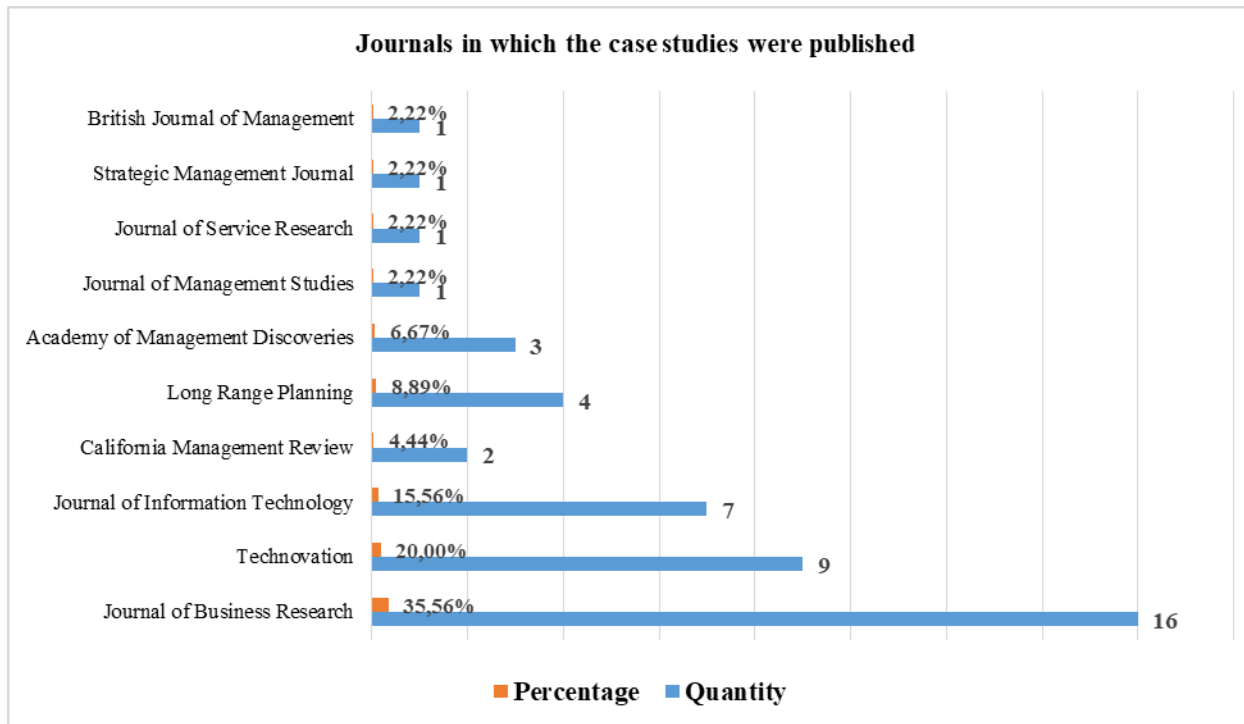
2 – Year

Year of Publication	Percentage	Quantity
2019	4,44%	2
2020	6,67%	3
2021	24,44%	11
2022	20,00%	9
2023	24,44%	11
2024	20,00%	9
Total	100,00%	45



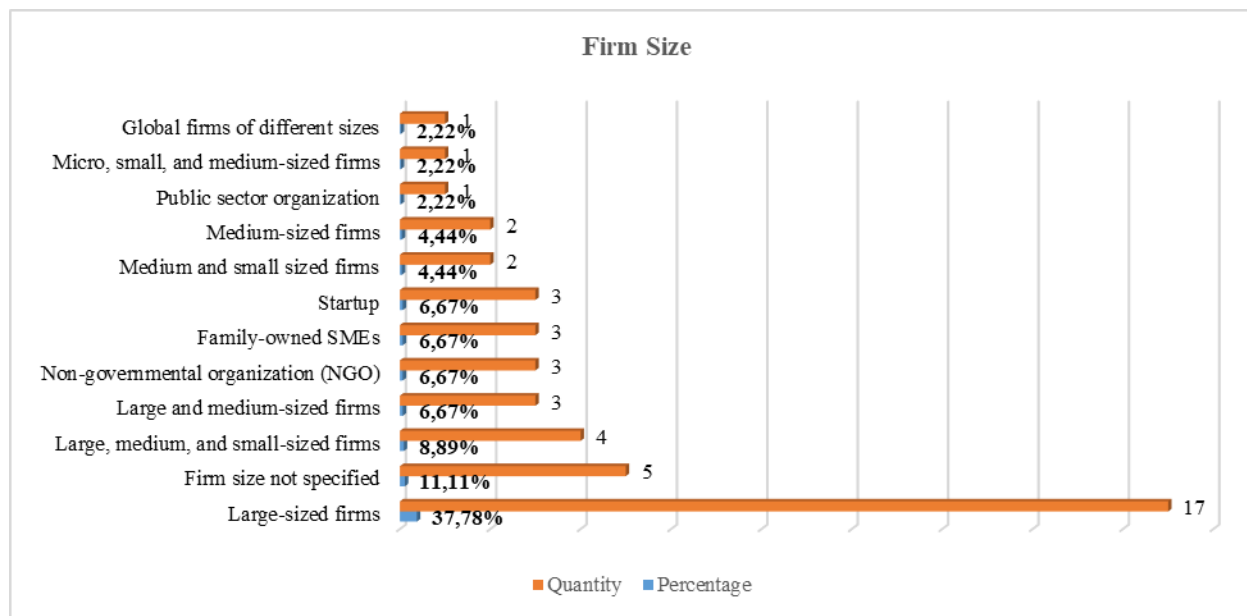
3 – Journals

Journals	Percentage	Quantity
Journal of Business Research	35,56%	16
Technovation	20,00%	9
Journal of Information Technology	15,56%	7
California Management Review	4,44%	2
Long Range Planning	8,89%	4
Academy of Management Discoveries	6,67%	3
Journal of Management Studies	2,22%	1
Journal of Service Research	2,22%	1
Strategic Management Journal	2,22%	1
British Journal of Management	2,22%	1
Total	100,00%	45



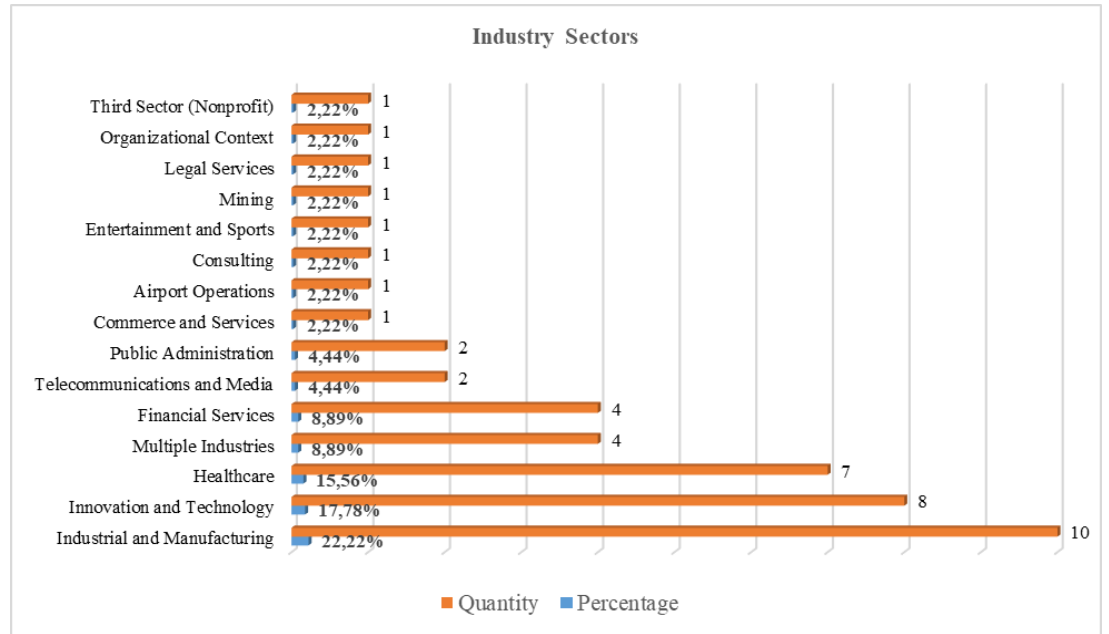
4 – Firm Size

Firm Size	Percentage	Quantity
Large-sized firms	37,78%	17
Firm size not specified	11,11%	5
Large, medium, and small-sized firms	8,89%	4
Large and medium-sized firms	6,67%	3
Non-governmental organization (NGO)	6,67%	3
Family-owned SMEs	6,67%	3
Startup	6,67%	3
Medium and small sized firms	4,44%	2
Medium-sized firms	4,44%	2
Public sector organization	2,22%	1
Micro, small, and medium-sized firms	2,22%	1
Global firms of different sizes	2,22%	1
Total	100,00%	45



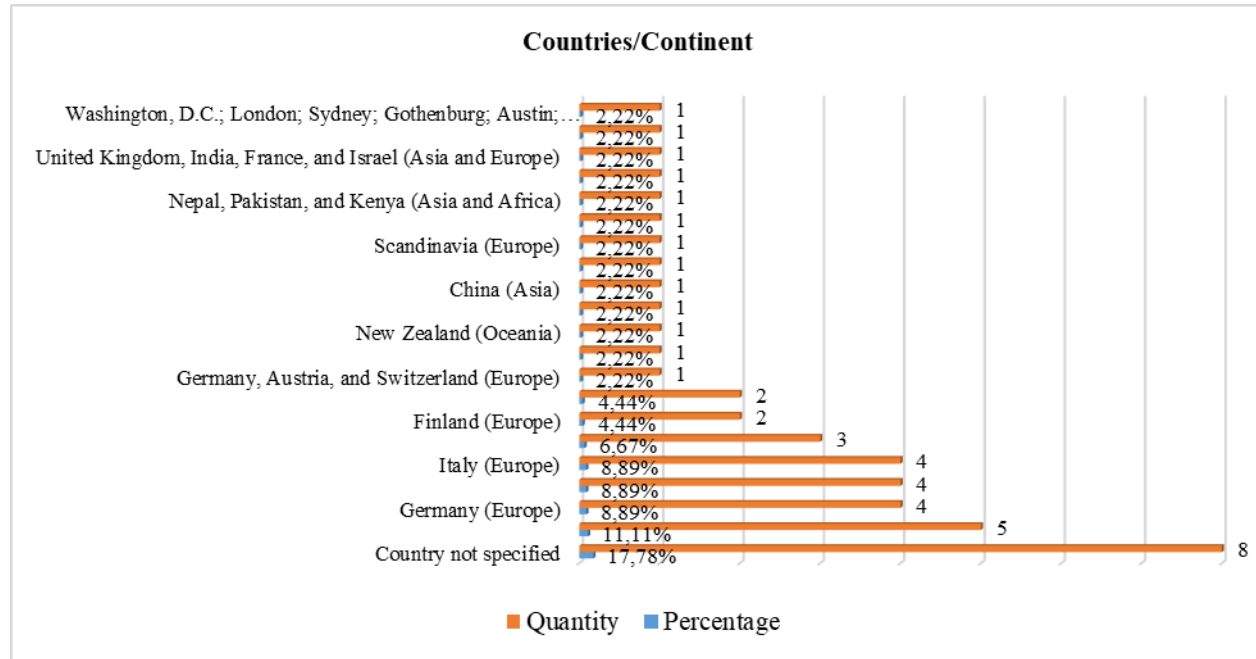
5 – Industry Sectors

Industry Sectors	Percentage	Quantity
Industrial and Manufacturing	22,22%	10
Innovation and Technology	17,78%	8
Healthcare	15,56%	7
Multiple Industries	8,89%	4
Financial Services	8,89%	4
Telecommunications and Media	4,44%	2
Public Administration	4,44%	2
Commerce and Services	2,22%	1
Airport Operations	2,22%	1
Consulting	2,22%	1
Entertainment and Sports	2,22%	1
Mining	2,22%	1
Legal Services	2,22%	1
Organizational Context	2,22%	1
Third Sector (Nonprofit)	2,22%	1
Total	100,00%	45



6 - Countries/Continent

Countries/Continent	Percentage	Quantity
Country not specified	17,78%	8
Sweden (Europe)	11,11%	5
Germany (Europe)	8,89%	4
Europe	8,89%	4
Italy (Europe)	8,89%	4
United Kingdom (Europe)	6,67%	3
Finland (Europe)	4,44%	2
Netherlands (Europe)	4,44%	2
Germany, Austria, and Switzerland (Europe)	2,22%	1
Australia (Oceania)	2,22%	1
New Zealand (Oceania)	2,22%	1
Canada (North America)	2,22%	1
China (Asia)	2,22%	1
Denmark (Europe)	2,22%	1
Scandinavia (Europe)	2,22%	1
India (Asia)	2,22%	1
Nepal, Pakistan, and Kenya (Asia and Africa)	2,22%	1
Norway (Europe)	2,22%	1
United Kingdom, India, France, and Israel (Asia and Europe)	2,22%	1
Vietnam (Asia)	2,22%	1
Washington, D.C.; London; Sydney; Gothenburg; Austin; Stockholm (North America, Europe, and Oceania)	2,22%	1
Total	100,00%	45



APPENDIX D – EXCEL SPREADSHEET TEMPLATE FOR CODING GENERAL DATA OF EACH STUDY (STUDY 2)

Amostra Final_Metassintese_atualizada - Microsoft Excel

ARQUIVO PÁGINA INICIAL INSERIR LAYOUT DA PÁGINA FÓRMULAS DADOS REVISÃO EXIBIÇÃO ABBYY FineReader 12 Conta da Microsoft

Recortar Copiar Pincel de Formatação

Calibri 12

Quebrar Texto Automaticamente

Formato Geral

Formatação Condicional Formatar como Tabela Estilos de Célula

Inserir Excluir Formatar

AutoSoma Preencher Limpar

Classificar e Filtrar Localizar e Selecionar Edição

Área de Transferência Fonte Alinhamento Número

A1 : ORD

	A	B	C	D	E	F	G	H	I	J	
1	ORD	Nº da lista da base original	Download Article	ID	Autores	Título	Journal	Classificação Journal ABS 2024	Ano	País/Cidade/Local da Pesquisa	Área d
	1	107	SIM	Marinelli, L; Crupi, A; Del Sarto, N; Lepore, D	Marinelli, Luca; Crupi, Antonio; Del Sarto, Nicola; Lepore, Dominique	Unveiling knowledge ecosystem dimensions for MSMEs' digital transformation, toward a location-based brokerage	TECHNOVATION	3	2024	Itália	Setor de In
2	2	260	SIM	Lóska, G; Uotila, J	Loska, Gergely; Uotila, Juha	Digital Transformation in Corporate Bankings: Toward a Blended Service Model	CALIFORNIA MANAGEMENT REVIEW	3	2024	Europa	Set
3	3	302	SIM	Saad, EA; Tremblay, N; Agogue, M	Saad, Elie Abi; Tremblay, Nathalie; Agogue, Marine	A multi-level perspective on innovation intermediaries: The case of the diffusion of digital technologies in healthcare	TECHNOVATION	3	2024	Canadá	Se

Amostra_Final_Metassintese_atualizada - Microsoft Excel

ARQUIVO PÁGINA INICIAL INSERIR LAYOUT DA PÁGINA FÓRMULAS DADOS REVISÃO EXIBIÇÃO ABBYY FineReader 12

Recortar Copiar Pincel de Formatação

Calibri 12 Quebrar Texto Automaticamente Geral

Formatoção Condicional Tabela Estilos de Célula Inserir Excluir Formatar

AutoSoma Preencher Limpar Classificar Localizar e Filtrar Selecionar

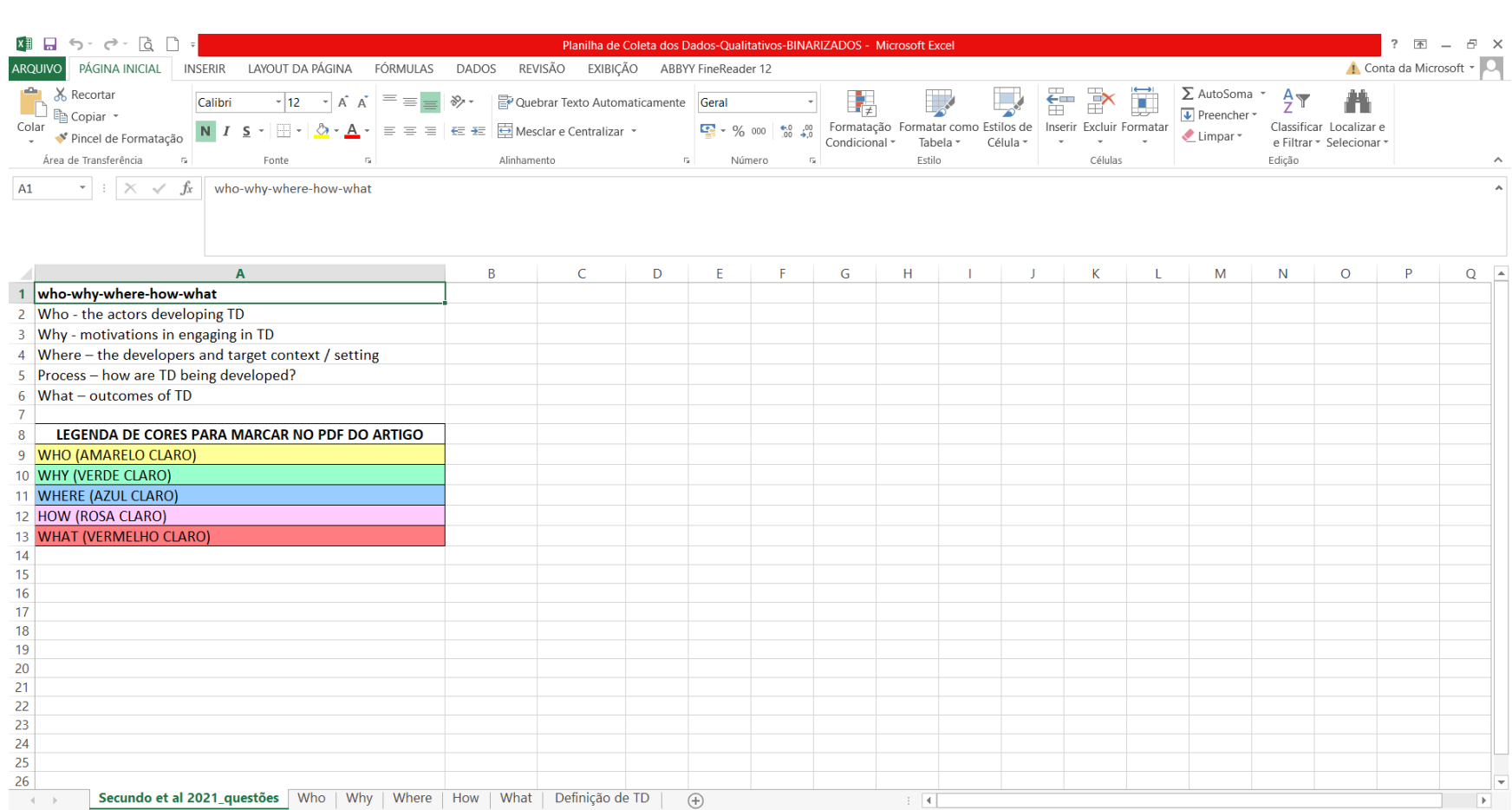
A1 ORD

	K	L	M	N	O	P
1	Área de Inovação/Setor	Tipo e Porte da Empresa	Resumo	Keywords	Objetivo	Definição de TD adotada n
	Setor de Inovação e Tecnologia	Micro, pequeno e médio porte	Este estudo explora como os ecossistemas de conhecimento (KEs) liderados por um broker de conhecimento (KB) podem apoiar a transformação digital de Micro, Pequenas e Médias Empresas (MPMEs). Empregando um design de pesquisa exploratória e metodologia de pesquisa-ação, o artigo propõe e aplica um quadro analítico para investigar as características dos KEs e o conhecimento gerenciado pelo KB como o intermediário de inovação atuando como líder do KE. O caso de estudo selecionado revela as dimensões de um KE regional guiado por um polo de inovação digital (DIH) que apoia as MPMEs na adoção da "plataforma Digital Artisan" derivada de um projeto Indústria 4.0. As conclusões destacam a importância da confiança, do alinhamento estratégico e das capacidades dinâmicas dos KBs no aprimoramento da jornada digital das MPMEs e enfatizam a dimensão da localização do KE regional como um meio para fornecer suporte personalizado. Esta pesquisa contribui para a compreensão teórica e prática dos KEs regionais que possibilitam a transformação digital por meio de KBs que são os intermediários de inovação cobrindo o papel de líderes do ecossistema.	Ecossistema de conhecimento, Brokers de conhecimento, Transformação digital, MPMEs.	Investigar como ecossistemas de conhecimento (KEs), liderados por intermediários do conhecimento (KBs), podem apoiar a transformação digital das MSMEs através de um hub de inovação digital regional.	Segundo Verhoef et al. (2021, p. 889), a transfe como "uma empresa emprega tecnologias dig um novo modelo de negócios digital que ajud valor para a empresa. - Página 13. Kane (20 transformação digital das MSMEs através de pri negócios para ajudar as organizações a comp mundo cada vez mais digital. - Página 13.
2	Setor Financeiro	Grande porte	As tecnologias digitais desafiam as empresas estabelecidas a repensarem suas abordagens consolidadas de relacionamento com o cliente. Este artigo examina como um banco corporativo reconfigurou seu modelo de negócios orientado para o relacionamento para se beneficiar da transformação digital. A análise de caso revela uma transição gradual para um modelo de serviço híbrido que primeiro substitui, depois complementa e, finalmente, aumenta o físico com o digital em interações de clientes cada vez mais complexas. Embora substituir e complementar serviços habilitados por humanos com ofertas digitais sejam passos necessários da transição digital, as vantagens competitivas associadas são percebidas como improváveis de durar. Em contraste, aumentar os serviços habilitados por humanos com tecnologias digitais sofisticadas tem o potencial para uma vantagem competitiva sustentável.	Desenvolvimento de modelo de negócios, inovação de serviços, gestão de relacionamento com o cliente, bancos, vantagem competitiva, criação de valor, tecnologia da informação.	Investigar como a transformação digital impacta os modelos de negócios e as vantagens competitivas dos bancos corporativos.	"A transformação digital é um processo de mu meio da adoção de "combinações de tecnologi computação, comunicação e conectividade". É atribuída a Vial (2018) - Página 95.
3	Setor de Saúde	Não especificou o porte das organizações	Este artigo explora o papel dos intermediários de inovação (IIs) no apoio a mudanças tecnológicas e na condução de transições sociotécnicas. Através de um estudo de caso aprofundado de uma organização intermediária criada especificamente para enfrentar desafios relacionados à inovação e estimular a transformação digital no setor de saúde em Montreal, Canadá, o artigo analisa dados de 95 entrevistas com atores importantes do ecossistema de saúde, juntamente com material suplementar. A análise revela dois processos interligados: (1) "intermediação focada na tecnologia" para ajudar a cocriar a tecnologia de acordo com as demandas existentes; e (2) "intermediação focada no ecossistema" para ajudar a reforçar os componentes do ecossistema para permitir uma	Intermediários de inovação, Tecnologias digitais, Difusão de inovação, Transição digital e Inovação em saúde.	Investigar o papel dos intermediários de inovação na difusão das tecnologias digitais na saúde	O estudo não adota uma definição formal e co Digital (TD) citando outro

Amostra_Final_Metassintese_atualizada - Microsoft Excel

	P	Q	R	S	T
1	Definição de TD adotada no artigo	Dimensões de TD adotadas no estudo e suas inter-relações	Tipo de estudo	Método	Teoria
	Segundo Verhoef et al. (2021, p. 869), a transformação digital é a forma como "uma empresa emprega tecnologias digitais para desenvolver um novo modelo de negócios digital que ajuda a criar e apropriar mais valor para a empresa. - Página 13 . Kane (2017) destacou que a transformação digital envolve "a adoção de processos e práticas de negócios para ajudar as organizações a competir eficazmente num mundo cada vez mais digital. - Página 13 .	Dimensões do ecossistema de conhecimento: confiança, alinhamento estratégico e capacidades dinâmicas do KB. Inter-relações: O KB atua como um intermediário da inovação, liderando o KE e promovendo a adoção de tecnologias digitais.	Qualitativo	Pesquisa exploratória e metodologia de pesquisa-ação. A coleta de dados envolveu dados primários, obtidos através de doze entrevistas semiestruturadas realizadas em três etapas críticas do desenvolvimento do ecossistema, e dados secundários, incluindo materiais informativos, proposta de projeto e edital.	Perspectiva da inteligência coletiva (Malone et al., 2010). Capacidades dinâmicas (Teece et al., 2023). Intermediação do conhecimento (Cruje et al., 2020).
2	"A transformação digital é um processo de mudança que surge por meio da adoção de "combinações de tecnologias de informação, computação, comunicação e conectividade". Esta definição é atribuída a Vial (2019) - Página 95 .	O estudo identifica três níveis de transformação digital: digital substituindo humanos, digital complementando humanos e digital ampliando humanos, formando um modelo híbrido de serviços.	Qualitativo	Estudo de caso exploratório com entrevistas semiestruturadas, observações em campo e análise de documentos institucionais	Teoria da Vantagem Competitiva, Modelo de Ciclo Reverso de Inovação, Digital Ecossistemas de Negócios
3	O estudo não adota uma definição formal e concisa de Transformação Digital (TD) citando outro autor.	O estudo identifica dois processos inter-relacionados: intermediação focada em tecnologia (criação de tecnologias digitais) e intermediação focada no ecossistema (reforço da infraestrutura digital e adaptação do ecossistema).	Qualitativo	Estudo de caso qualitativo, baseado em 85 entrevistas com atores do ecossistema de saúde, análise de documentos institucionais e observações	Teoria da Difusão da Inovação, Intermediação da Inovação e Ecossistemas de

APPENDIX E – EXCEL SPREADSHEET TEMPLATE FOR CODING THE DIMENSIONS OF DIGITAL TRANSFORMATION BASED ON SECUNDO ET AL. (2021) (STUDY 2)



Planilha de Coleta dos Dados-Qualitativos-BINARIZADOS - Microsoft Excel

ARQUIVO PÁGINA INICIAL INSERIR LAYOUT DA PÁGINA FÓRMULAS DADOS REVISÃO EXIBIÇÃO ABBYY FineReader 12

Recortar Copiar Colar Pincel de Formatação Área de Transferência Fonte Alinhamento Número

Calibri 10 Quebrar Texto Automaticamente Geral Mesclar e Centralizar

Formatação Condicional Formatar como Tabela Estilos de Célula Inserir Excluir Formatar Células

AutoSoma Preencher Limpar Classificar Localizar e Filtrar Selecionar Edição

A1 Who - Quem são os atores desenvolvendo a transformação digital?

Numerical Sequence of the Study Sample (45 Articles)

	A	B	C	D	E	F	G	H	I	J	K
1	Who - Quem são os atores desenvolvendo a transformação digital?										
2	Onde buscamos as informações? Apenas na sessão de resultados (análise e resultados) - pode ser que esteja na discussão dos resultados										
3											
4		1	2	3	4	6	7	8	9	10	11
5	Empreendedores	1	0	0	0	0	0	0	0	0	0
6	Empresa CTF Automazioni (Fornecedor)	1	0	0	0	0	0	0	0	0	0
7	Pesquisador Universitário	1	0	0	0	0	0	0	0	0	0
8	Gerente de vendas	1	0	0	0	0	0	0	0	0	0
9	Líder do Ecossistema do Conhecimento (Líder)	1	0	0	0	0	0	0	0	0	0
10	Provedores de soluções de metaverso (Empresas Fornecedoras)	0	1	0	0	0	0	0	0	0	0
11	Bancos Corporativos	0	0	1	0	0	0	0	0	0	0
12	Especialistas em digitalização e fintech	0	0	1	0	0	0	0	0	0	0
13	Equipe de TI do banco	0	0	1	0	0	0	0	0	0	0
14	Alta Gestão (Equipe de gestão de topo e executivos do Case Bank)	0	0	1	0	0	0	0	0	0	0
15	Diretoria de Inovação do Banco Matriz	0	0	1	0	0	0	0	0	0	0
16	Laboratório Universitário (Institut TransMedTech - iTMT) - Empresa pública	0	0	0	1	0	0	0	0	0	0
17	Hospitais Locais (ex: CHUM, CHU Sainte-Justine, MUHC) - empresa pública	0	0	0	1	0	0	0	0	0	0
18	Pesquisadores universitários	0	0	0	1	0	0	0	0	0	0
19	Empreendedores e startups da área médica	0	0	0	1	0	0	0	0	0	0

Secundo et al 2021_questões Who Why Where How What Definição de TD

Article 1 - **Unveiling knowledge ecosystem dimensions for MSMEs' digital transformation, toward a location-based brokerage** (Revelando as dimensões do ecossistema de conhecimento para a transformação digital de MPMEs, rumo a uma intermediação baseada na localização)

Para este artigo, [os achados e discussões dos resultados](#) foram feitos nas [páginas 7 a 11](#) e pode ser usado porque é, de fato, a interpretação dos autores.

1 - WHO (Atores desenvolvendo a TD)

- **Empreendedores** - "... was managed by the founder of a spin-off of the Faculty of Engineering at the Universit'a Politecnica delle Marche (Italy)". (p.7) (foi gerido pelo fundador de uma spin-off da Faculdade de Engenharia da Universit'a Politecnica delle Marche (Itália).
- **Empresa CTF Automazioni (Fornecedor)** - "The platform was developed in collaboration with CTF Automazioni, an Italian company specializing in the planning and construction of special machinery..." (p.7). (A plataforma foi desenvolvida em colaboração com a CTF Automazioni, uma empresa italiana especializada no planejamento e construção de máquinas especiais...)
- **Pesquisador Universitário** - "The involvement of the first author as a researcher and an expert on MSMEs' digital transformation began in February 2017, when he was contacted by the sales manager of CTF Automazioni and asked to support both the sales manager and the founder in defining the business model for the DA platform." (p.8). (A participação do primeiro autor como pesquisador e especialista em transformação digital de MPMEs começou em fevereiro de 2017, quando ele foi contatado pelo gerente de vendas da CTF Automazioni e convidado a apoiar tanto o gerente de vendas quanto o fundador na definição do modelo de negócios para a plataforma DA).
- **Gerente de Vendas** - "During the first quarter of 2017, the founder, the sales manager, and their collaborators worked to develop the technology underlying the services facilitated by DA". (p.8) (Durante o primeiro trimestre de 2017, o fundador, o gerente de vendas e seus colaboradores trabalharam no desenvolvimento da tecnologia subjacente aos serviços oferecidos pela DA).
- **Líder do Ecossistema do Conhecimento** - "The DIH as a KB is the innovation intermediary acting as leader of the KE by managing the diffusion of knowledge related to digital transformation." (p. 9)". (O DIH, como um KB, é o intermediário de inovação que atua como líder da KE, gerenciando a difusão do conhecimento relacionado à transformação digital).

2 - WHY

- **Ampliar o acesso das MPMEs às tecnologias da Indústria 4.0** - "The intention was to create a tailored solution for a market segment that today seems to be excluded from digital transformation processes, but that plays a significant role in the economic landscape of the Country." (p.7) (A intenção era criar uma solução personalizada para um segmento de mercado que, atualmente, parece estar excluído dos processos de transformação digital, mas que desempenha um papel significativo no cenário econômico do país).

Word document containing the same information as the Excel spreadsheet on the dimensions of Digital Transformation that supported the ATLAS.ti analysis. The document includes the excerpts (citations) in which each dimension is identified.

- Conta da Microsoft Centro de Inovação Digital
- Conta da Microsoft Intermediário do Conhecimento
- Conta da Microsoft Ecossistema do Conhecimento.

to disseminate its business model..." (p.10). (A motivação inicial do fornecedor de tecnologia era testar suas soluções e construir casos de uso para disseminar seu modelo de negócios).

- **Adquirir conhecimento e apoio para superar barreiras financeiras e técnicas** - "The initial motivation of the MSMEs was to gain knowledge of digital transformation in order to address this process..." (p.10). (A motivação inicial das MPMEs era adquirir conhecimento sobre transformação digital para poderem enfrentar esse processo...)
- **Fomentar a transformação digital regional através de articulação local** - "The DIH played a proactive role in taking charge of the organization of the KE by fostering partnerships and identifying financial resources". (p.11). (O DIH desempenhou um papel proativo ao assumir a organização do ecossistema de conhecimento (KE), promovendo parcerias e identificando recursos financeiros).

3 - WHERE

- **As MPMEs são caracterizadas por baixa digitalização, fragmentação e escassez de recursos financeiros** - "They were aware that the MSMEs context was fragmented and that entrepreneurs were typically characterized by low levels of technology adoption and limited financial resources..." (p.8). (Eles estavam cientes de que o contexto das MPMEs era fragmentado e de que os empreendedores eram, em geral, caracterizados por baixos níveis de adoção de tecnologia e recursos financeiros limitados)
- **Falta de canais de comunicação estruturados entre os provedores de tecnologia e as MPMEs** - "Given the absence of structured communication channels between the DA team and the target companies..." (p.8). (Dada a ausência de canais de comunicação estruturados entre a equipe da plataforma DA e as empresas-alvo...)
- **Ausência de casos de uso anteriores e incerteza sobre os benefícios da tecnologia** - "It was difficult to see the benefits of investing in something unknown, for which there was no evidence at the time." (p.8). (Era difícil enxergar os benefícios de investir em algo desconhecido, para o qual não havia evidências na época).
- **Importância da localização regional para facilitar a confiança, a troca de conhecimento e o engajamento** - "... trustful relationships were ensured by the KB (in this case, the DIH)..." (p.10). (Relações de confiança foram asseguradas pelo intermediário de conhecimento (KB), no caso, o DIH).

4 - HOW

- **Através da criação de um ecossistema de conhecimento liderado por um Knowledge Broker (DIH)** - "The DIH as a KB is the innovation intermediary acting as leader of the KE by managing the diffusion of knowledge related to digital transformation". (p. 9). (O DIH, como um KB, é o intermediário de inovação que atua como líder da KE, gerenciando a difusão do conhecimento relacionado à transformação digital).

The screenshot displays the ATLAS.ti software interface. The main window shows a project titled "Estudo 2 - Metassíntese TD - WHO". The left sidebar contains a file explorer with a list of documents, including "D 99: Artigo 1_Unveiling knowledge ecosystem dimensi...", "D 100: Artigo 2_The metaverse: myths-and-creating value...", "D 101: Artigo 3_Digital transformation in corporate bus...", "D 102: Artigo 4_A multi-level perspective on innovation...", "D 104: Artigo 6_Embracing on-a-business-agility-journe...", "D 105: Artigo 7_A look at the future of work (7)", "D 106: Artigo 8_Digital transformation in healthcare org...", "D 107: Artigo 9_Digital units and digital innovation (4)", "D 108: Artigo 10_TripAbroad of healthcare (6)", "D 109: Artigo 11_Healthcare 3D printing service innova...", "D 110: Artigo 12_Innovation strategy and digital trans...", "D 111: Artigo 13_Entering non-platformized sectors (13)", "D 112: Artigo 14_Designing trust (5)", "D 113: Artigo 15_E-health for the future (8)", and "D 114: Artigo 16_Developing a theory of full democrati...".

The central workspace displays the document "Estudo 2 - Metassíntese TD - WHO". The right-hand pane shows the "Gerenciador de Códigos" (Code Manager) with a list of codes and their frequencies. The codes are grouped into categories, and a bar chart at the bottom shows the distribution of codes across documents.

Nome	Magnitude	Densidade	Grupos
1. Liderança Executiva e Alta Gestão	8	0	7
2. Gestão Intermediária	10	0	4
3. Gestão Operacional	4	0	4
4. Ecossistema Externo e Interorganizacional	13	0	9
Agências governamentais e reguladoras	0	0	1
CDOs	0	0	1
CEOs	0	0	1
CIOs	0	0	1
Consumidores e usuários finais	0	0	1
Diretores em geral	0	0	1
Empreendedores	0	0	1

The bar chart at the bottom shows the distribution of codes across documents. The x-axis lists documents from D 99 to D 114, and the y-axis shows the number of codes. The distribution is as follows:

Documento	Quantidade de Códigos
D 99: Artigo 1_Unveiling knowledge ecosystem dimensi...	5
D 100: Artigo 2_The metaverse: myths-and-creating value...	2
D 101: Artigo 3_Digital transformation in corporate bus...	10
D 102: Artigo 4_A multi-level perspective on innovation...	5
D 104: Artigo 6_Embracing on-a-business-agility-journe...	5
D 105: Artigo 7_A look at the future of work (7)	7
D 106: Artigo 8_Digital transformation in healthcare org...	4
D 107: Artigo 9_Digital units and digital innovation (4)	5
D 108: Artigo 10_TripAbroad of healthcare (6)	4
D 109: Artigo 11_Healthcare 3D printing service innova...	6
D 110: Artigo 12_Innovation strategy and digital trans...	4
D 111: Artigo 13_Entering non-platformized sectors (13)	13
D 112: Artigo 14_Designing trust (5)	5
D 113: Artigo 15_E-health for the future (8)	8
D 114: Artigo 16_Developing a theory of full democrati...	5

APPENDIX F – ATLAS.TI INITIAL INTERFACE WITH FIRST-ORDER CODING (INTERVIEW DATA EXCERPTS) (STUDY 3)

The screenshot displays the ATLAS.ti software interface for 'Estudo 3 - TESTE CODIGOS COM IA - ATLAS.ti'. The interface is divided into several panes:

- Explorer (Left):** Shows a tree structure of codes. The root is 'Códigos (265)', which is expanded to show various categories such as 'Acessibilidade (4-0)', 'Acesso à informação (111-0)', 'Acesso à informação (2) (9-0)', 'Acesso ao conhecimento (3-0)', 'Adaptação (3-0)', 'Adaptação à nova realidade (2-0)', 'Adaptação às novas tecnologias (1-0)', 'Administração (1-0)', 'Aglutinação geracional (1-0)', 'Ambiguidade (1-0)', 'Amizade (1-0)', 'Analfabetismo (1-0)', 'Análise crítica (3-0)', and 'Análise de dados (1-0)'. An arrow points to the 'Códigos (265)' root.
- Gerenciador de Códigos (Center):** Shows a table of codes and a bar chart titled 'Distribuição de código por documento'. The table has columns for 'Nome', 'Magnitude', and 'C'. The bar chart shows the distribution of codes across documents: D 2: E1, André Castro... (167), D 3: E2, Mauro Lorch... (125), D 4: E3, Aluisio Afonso... (141), D 5: E4, Trivelato, CEO... (107), D 6: E5, Dante, SNELE... (172), and D 7: E6, Renato, CEO... (66).
- Main Text View (Right):** Shows a citation with its context and associated codes. The citation is: '4:22 1 4 em E3, Aluisio Afonso, Editor GEN. Criar, que é o que eu estou pretendendo fazer. E algo barato, acessível e direto ao ponto, o mais enxuto possível, sem enrolação. Que seja como o livro do Fernando. Você aprendia administração estratégica sem aquela chalice do Porter. E eu acho que o Porter tinha mais nome que o Fernando. Hoje, ele não deve ser nada na vida, o Porter. O Fernando é mais importante que ele. Pelo menos no meu coração. Mas porque não é que fosse raso. É dif...'. The associated codes are: 'Acessibilidade', 'Acesso à informação: Criação', 'Acesso à...: Crítica ao uso de IA', and 'Acesso à inform...: Impacto da IA'.

Estudo 3 - TESTE CODIGOS COM IA - ATLAS.ti

Arquivo Início Pesquisar & Codificar Analisar Importar & Exportar Ferramentas Ajuda

Adicionar Documentos Novos Componentes Comentário do projeto Navegador Documentos Citações Códigos Memos Redes Links

Explorador Gerenciador de Códigos D 2: E1_André Castro_especialista do setor

Pesquisar Documentos (8) Citação Codificação In Vivo Rápido Comentário Renomear Excluir Pesquisar Editar Analisar Ferramentas Exportar Exibir

The first-order coding, comprising 265 initial codes, was based on the interviewees' statements. This refinement process occurred through repeated readings of the interviews, as well as the elimination of repetitive codes and those that represented the same underlying idea. After refining the first-order coding, the analysis proceeded to second-order coding. Once a manageable number was reached (63 first-order codes), second- and third-order coding were initiated, leading to a coding structure that addressed the research problem and the study's objective.

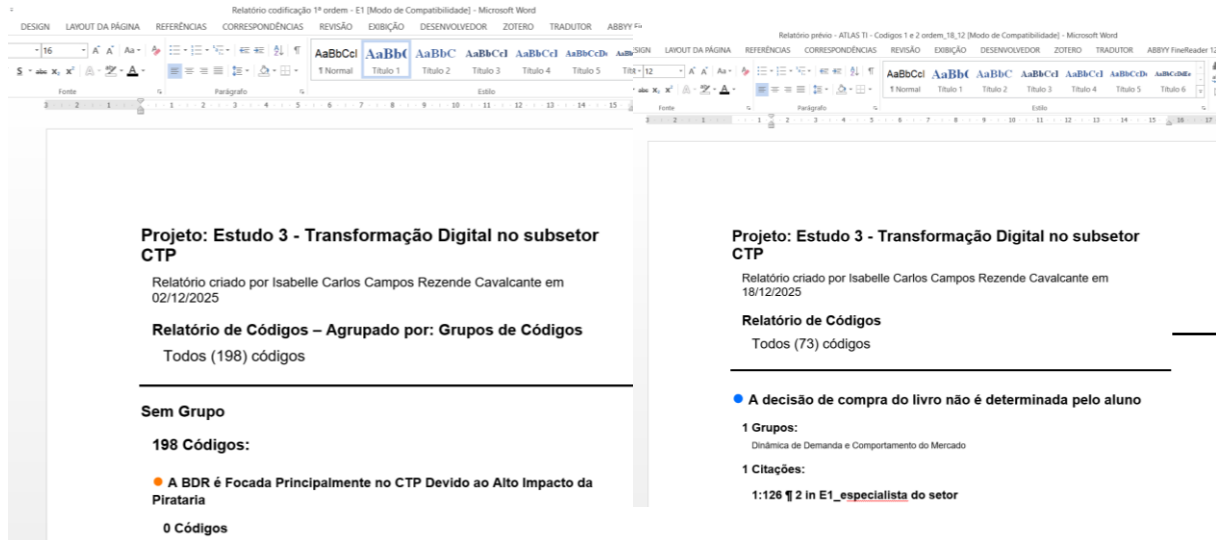
2:5 ¶ 2, Então, com certeza, quando você for falar com o Mauro, que o Mau...
 2:6 ¶ 2, Você dependia de agradar o comprador da Saraiva, Siciliano, La Sel...
 2:7 ¶ 2, Então, surgiram muitas editoras, no seu mesmo semestre, acho que...
 2:8 ¶ 2, Todo mês é um livro de poesia. Então, isso você faz o clube, ela já s...
 2:9 ¶ 2, Então, eu acho que a grande disrupção foi que isso era impossível a...
 2:10 ¶ 2, Então, ele consegue sozinho se jogar no mercado. E ele consegue.....
 2:11 ¶ 2, Eu não preciso de uma editora me dar a curadoria e dizer que eu s...
 2:12 ¶ 2, Porque é difícil o cara que dá uma boa aula não escrever um bom...
 2:13 ¶ 2, Deve ter, sei lá, eu ouvi falar de IA no mercado editorial, né? Deve...

Entendeu muito... Ai ela comprou... Quando vem... Pegar... O livro para virar filme... E... Ai ela ganhava... Um... Um livro é muito mais barato. O mercado de livro é muito grande e é muito subterrâneo também. Tem uma camada... Tem uma camada... Tem uma camada... Tem uma camada enorme que... Não transita em Amazon essas coisas. Ou até transita como self-publishing, assim. É muito extenso. Você vai para a parte de fanfiction, por exemplo, o cara pega um livro famoso, uma história famosa e cria uma história acima daquilo lá. Então, é tipo, versão erótica do Crepúsculo. Ai tem a continuação do... Daquele Tropa de Elite. E tem a origem do Tropa de Elite. Vai ver, tudo isso existe no submundo. O CTP é um ambiente muito mais organizado, estruturado, enquadrado. Porque você vai... Por exemplo, o segmento religioso é tipo ficção também. Tipo, segmento religioso, todo líder religioso faz um livro. E não passa em Amazon, não passa nada disso. O cara vende na igreja ali, vende no centro espírita. Isso ai é assim... Tanto que uma das coisas que eu trabalhei numa editora é que a gente atuava em tudo, qualquer coisa. Desde livro da Playboy até livro de evangélico. Que é meio parecido com o meu Rundle House, né? E um dos trabalhos que a gente tinha no nosso selo evangélico era de... Identificar líderes religiosos que estavam bombando no submundo pra lançar no mainstream, né? E ai nessa a gente capturou ali, que não era evangélico, mas era católico, o padre Fábio de Melo, que já vendia de montão, só na Canção Nova. De montão. Esse ai, Café

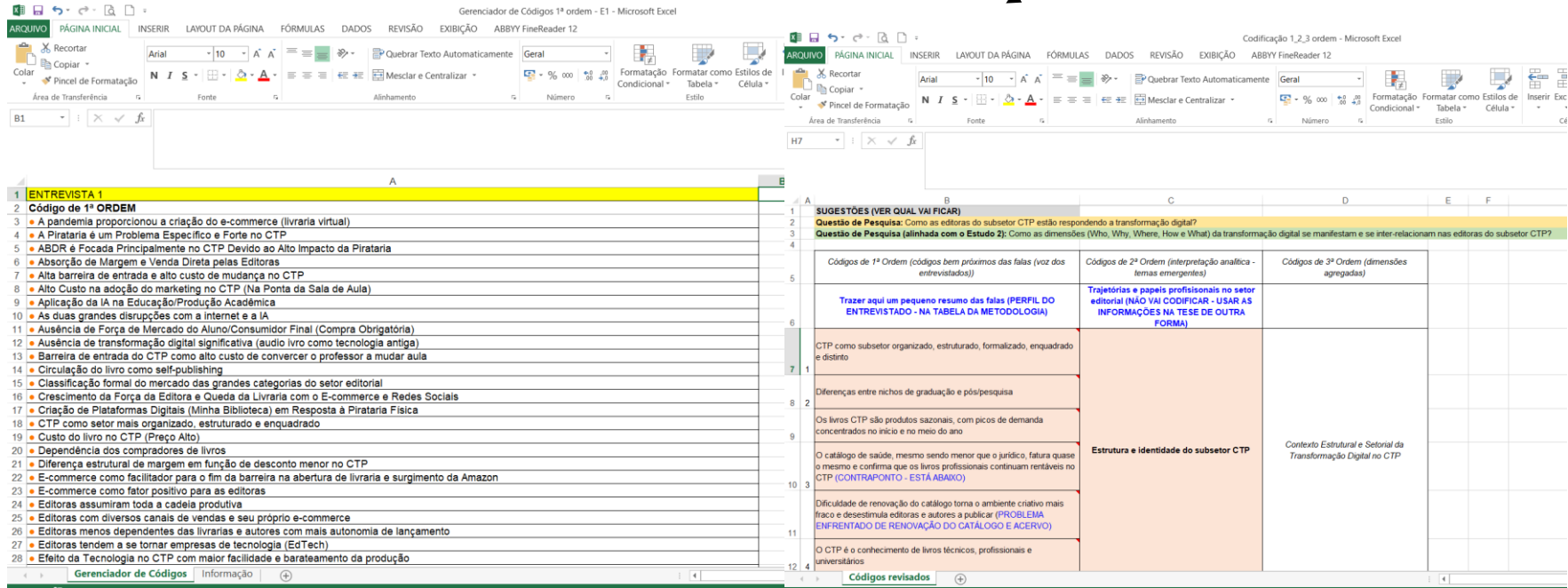
Análise de mercado: Economia de produção
 Indústria do livro
 Literatura: Influência da literatura
 Literatura: Mercado literário
 Pirataria: Cultura underground
 Pirataria: Fanfiction

Acesso à informação: Identificação de talentos
 Acesso à informação: Identificação de tendências
 Análise de mercado: Marketing e vendas
 Experiência profissional

Clique para editar o comentário



ATLAS.ti allows the generation of code reports. In each iteration, these reports were exported to Word, analyzed, and then transferred to Excel for further analysis and refinement. During this process, repetitive statements were excluded and similar statements were consolidated.



	A	B	C
1	Códigos de 1ª Ordem (códigos bem próximos das falas (voz dos entrevistados))	Códigos de 2ª Ordem (interpretação analítica - temas emergentes)	Códigos de 3ª Ordem
2	Códigos de 1ª Ordem	Códigos de 2ª Ordem	Dimensões agregadas da TD no CTP
3	CTP como subsetor organizado, estruturado, enquadrado, formalizado e distinto	Estrutura do Subsetor CTP	<i>Lógica Institucional</i>
4	Diferenças entre nichos de graduação e pós/pesquisa		
5	O CTP é o conhecimento de livros técnicos, profissionais e universitários		
6	Os livros CTP são produtos sazonais, com picos de demanda concentrados no início e no meio do ano		
7	O catálogo de livro no CTP envolve uma variedade de títulos, com destaques para área de saúde e jurídico		
8	Dificuldade de renovação do catálogo torna o ambiente criativo mais fraco e desestimula editoras e autores a publicar	Identidade do Subsetor CTP	
9	CTP resistente às atualizações, as modernizações e a tecnologia		
10	Mercado com uma produção riquíssima, porém pequeno quando comparado com o PIB de outros mercados		
11	A decisão de compra do livro não é determinada pelo aluno	Dinâmica Institucional de Demanda	
12	Dependência da adoção pedagógica		
13	Crescimento dos livros profissionais		
	Faixa de preço típica do livro profissional varia entre R\$ 100 e R\$ 150		

← Refinement

Códigos - ENTREVISTAS_02_02_2026 - Microsoft Excel

ARQUIVO PÁGINA INICIAL INSERIR LAYOUT DA PÁGINA FÓRMULAS DADOS REVISÃO EXIBIÇÃO ABBYY FineReader 12

Conta da Microsoft

Recortar Copiar Área de Transferência Pincel de Formatação

Arial 10 Quebrar Texto Automaticamente Geral

Formatar como Estilos de Tabela Célula

Inserir Excluir Formatar Células

AutoSoma Preencher Limpar Classificar e Filtrar Selecionar Edição

D6 Lógica Institucional

	A	B	C	D	E
67	Capacidade de selecionar e avaliar conteúdos relevantes para produção de livros CTP	Competências Internas		<i>Dinâmicas</i>	microorganismos or (B)usiness) emterprae performance. Strategic Management Journal, 28(13), 1319-1350. https://doi.org/10.1002/smj.640 . Teece, D. J. (2018). Business models and dynamic capabilities. Long Range Planning, 51(1), 40-49. https://doi.org/10.1016/j.lrp.2017.06.007 .
68	Mudança nas competências do editor				
69	Inteligência Artificial desafiando credibilidade e direitos autorais	Mudanças Sociotécnicas no Trabalho Editorial		<i>Redefinição das Bases de Legitimação Editorial</i>	Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. MIS Quarterly, 42(1), 52-81. https://doi.org/10.25300/MISQ/2018/13237 ; Scott, W. R. (2014). Institutions and organizations: Ideas, interests, and identities (4th ed.). Sage Publications: Greenwood, R., Raynard, M., Kodeih, F., Micheletta, E. R., & Lounsbury, M. (2011). Institutional complexity and organizational responses. Academy of Management Annals, 5(1), 317-371. https://doi.org/10.5465/19416520.2011.590299 .
70	Inteligência Artificial mediando a interação do aluno com o conteúdo dos livros				
71	Inteligência Artificial transformando processos editoriais e produtivos				
72	Inteligência Artificial impactando empregos no setor editorial	Redefinição Digital do Valor Editorial			
73	Inteligência Artificial redefinindo a proposta de valor editorial e a experiência do usuário				
74	Inteligência Artificial e redes sociais melhorando a lucratividade das editoras				
75					

Gerenciador de Códigos - ENTREVISTAS - 02_02_2026 - Microsoft Excel

	A	B	C
1	Códigos Empíricos (1º Ordem)	Tema de 2º Ordem	Dimensão agregada
	Subsetor organizado e formalizado · Identidade técnico-profissional · Diferenças graduação/pós · Sazonalidade · Catálogo especializado · Mercado pequeno · Resistência histórica à mudança	Estrutura e identidade do subsetor CTP	Configuração Institucional do CTP
2	Decisão de compra não determinada pelo aluno · Dependência da adoção pedagógica · Centralidade da universidade · Crescimento do livro profissional	Dinâmica institucional da demanda	
3	Fim da exigência do livro físico pelo MEC · Livro como ecologia cultural · Mediação institucional do consumo	Condicionantes regulatórios do consumo	
4	Atraso da TD · Digital como mudança de formato · Transformação cultural/tecnológica/institucional · Internet como inflexão · Pandemia como acelerador	Trajetória sociotécnica não disruptiva	TD incremental
5	Novos perfis tecnológicos · Ampliação do papel do editor · Continuidade da curadoria editorial	Reconfiguração do trabalho editorial	
6	Altos custos · Baixo poder aquisitivo para dispositivos · Baixo consumo de audiolivro	Limites estruturais da digitalização	Plataformização/Reorganização do valor
7	Bibliotecas digitais · Plataformas como centro de receita · Migração para EdTech	Centralidade das plataformas digitais	
8	E-commerce · Multicanalidade · Desintermediação das livrarias · Venda institucional	Reconfiguração dos canais	
9	Livro como atividade acessória · Reconfiguração do livro em cursos online · Declínio do livro-text	Redefinição do papel do livro	
10	Pirataria (xerox → PDF → IA) · Mercado subterrâneo · Pasta		

← Refinement

1	Entrev.	Código empírico (1ª ordem)	Tema (2ª ordem)	Dimensão
2	E6	Plataforma conjunta	Infraestrutura compartilhada	Coopetição
3	E4	Sociedade entre concorrentes		
4	E8	Ação coletiva		
5	E15	Separação acesso × conteúdo		
6	E9	Modelo coletivo de acesso		
7	E8	Resposta setorial à crise	Legitimação da cooperação	
8	E9	Legitimação do modelo		
9	E4	Governança compartilhada		
10	E5	Mediação institucional	Governança setorial	Coordenação institucional
11	E11	Proteção da diversidade		
12	E12	Mediação público-mercado	Coordenação por dados	
13	E7	Infraestrutura de dados		
14	E5	Monitoramento do ambiente	Transformação incremental	Transformação digital
15	E2	Mudança incremental		
16	E14	Plataformização do acesso	Limites institucionais	
17	E10	Infraestrutura comum		
18	E1	Inércia estrutural	Capacidade adaptativa limitada	Capacidades dinâmicas
19	E9	Digital como transposição		
20	E3	Ajuste incremental		
21	E3	Limites gerenciais		
22				

Final Coding

	A	B	C	D
1	Entrev.	Código empírico (1ª ordem)	Tema (2ª ordem)	Dimensão agregada
2	E6	Plataforma conjunta (Dimensão Where)	Infraestrutura compartilhada	Coopetição
3	E4	Sociedade entre concorrentes (Dimensão Where)		
4	E8	Ação coletiva (Dimensão Where / How)		
5	E15	Separação acesso x conteúdo (Dimensão Where)		
6	E9	Modelo coletivo de acesso (Dimensão Where)	Governança e legitimação da cooperação	
7	E8	Resposta setorial à crise (Dimensão Why)		
8	E9	Legitimação do modelo (Dimensão Why)		
9	E4	Governança compartilhada (Dimensão How)	Governança setorial	Coordenação institucional
10	E5	Mediação institucional (Dimensão How)		
11	E11	Proteção da diversidade (Dimensão How)		
12	E12	Mediação público-mercado (Dimensão How)	Coordenação por dados	
13	E7	Infraestrutura de dados (Dimensão Where)		
14	E5	Monitoramento do ambiente externo (Dimensão How)		

Códigos revisados

codes_Isabelle_reorganiz

codigo vanessa

B_codes_2_reducao

B_codes_4_tentativa

B_codes_ ...

APPENDIX G – DECLARATION OF THE USE OF ARTIFICIAL INTELLIGENCE TOOLS (AI)



UNIVERSITY NOVE DE JULHO PROGRAMA DE PÓS-GRADUAÇÃO EM ADMINISTRAÇÃO – PPGA

I, **Isabelle Carlos Campos Rezende Cavalcante**, RA: 622250095, in accordance with the PPGA/UNINOVE Policy for the Use of Artificial Intelligence (AI), approved in 2025, hereby declare transparently and ethically that I used generative AI tools in an ethical manner and exclusively within the uses permitted by the institutional guidelines.

In accordance with the policy, I fully maintain human responsibility, critical thinking, intellectual authorship, and the validation of all information produced, in alignment with the principles of academic integrity, responsibility, and transparency.

The purpose of using AI in this thesis was the following: orthographic, grammatical, and textual fluency revision (without substituting writing, analysis, or academic argumentation); translation of excerpts from Portuguese to English and vice versa (with subsequent manual review and validation); improvement of pre-existing sentences while preserving the original content developed by the author; paraphrasing with my own intervention; verification of formatting and reference checking (standardization according to APA 7, DOI verification with double manual checking, and consistency between in-text citations and the final reference list); and data collection for Study 2.

All conceptual, analytical, methodological, and conclusive sections of this thesis were developed exclusively by the author, who assumes full responsibility for the academic production. A validation process was conducted for the AI-assisted content, including verification of accuracy, checking of original references, analysis of potential biases, critical review and academic adequacy, as well as verification of conceptual fidelity and coherence with the objectives and theoretical foundations of the thesis.

I declare that the use of AI in this work does not compromise academic integrity, does not replace my intellectual authorship, fully complies with the institutional guidelines on ethics and responsibility, and was employed exclusively as an auxiliary tool within the permitted scope of technical-linguistic support, without any interference in the scientific construction of the thesis.

São Paulo, 05 de março de 2026.