Digital Transformation and Business Model Innovation of the Dominant Academic Publishers: Dynamic Business Strategy in a Context of University Inertia

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Résumé :

The academic publishing landscape is dominated by a small group of major publishers who have successfully adapted to the digital era by employing vertical integration strategies and leveraging dynamic capabilities. This article examines how publishers have capitalized on digital transformation to consolidate their control over the academic publishing market. In contrast, academic institutions remain hindered by institutional inertia. Using a critical qualitative approach, we explore how vertical integration has strengthened publisher power and highlight the slow response of academia to their business model innovation. Our findings demonstrate that publishers have mobilized dynamic capabilities and advanced digital technologies to sustain their market dominance, notably their capability to reframe the ethos of the institution of scientific publishing in order to reconfigure it in their own interest, while academic institutions struggle with socio-cognitive, technological, economic, psychological and political factors. This highlights an urgent need for academia to address these disparities and adapt effectively to the ongoing digital evolution in scholarly communication.

Mots-clés : Digital Transformation, Vertical Integration, Big Five, University Inertia, (Re)framing.

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INTRODUCTION

Academic publishing operates on a business model[1] where researchers simultaneously act as producers and consumers (Peek & Newby, 1996). The dominant publishers exploit this dual role by selling back to researchers the very content they create and review. This industry is highly lucrative and resilient to economic fluctuations (De Bellaigue, 2004, p. 222). On the emergence of the Internet, Forbes predicted in 1995 the imminent downfall of Elsevier, a giant of scientific publishing, labeling it the "first victim of the internet"[2] (Cookson, 2015). At the time, the Internet was seen as a disruptive force poised to challenge the traditional foundations of scientific publishing (Okerson & O'Donnell, 1995). Librarians were expected to reduce costs by shifting to digital alternatives, while researchers, empowered by new technologies, were anticipated to bypass paid scientific journals altogether (Abramson, 2000; McGuigan & Russell, 2008). The existing paradigm of scientific publishing appeared destined for obsolescence, paving the way for more open and accessible models (Buranyi, 2017). But, contrary to these expectations, 30 years after the Internet revolution, the predicted decline of major academic publishers has not materialized. Instead, they have not only weathered technological upheaval but leveraged it to transform their business models. The academic

[1] In this paper, we adopt the concept of a business model as outlined in the Business Model Canvas (Osterwalder et al., 2005), which encompasses key partners, suppliers, and customers, as well as key activities and resources. This approach goes beyond the sole cost structure and revenues streams

[2] https://www.ft.com/content/93138f3e-87d6-11e5-90de-f44762bf9896

publishing market is now characterized by the highly concentrated power of a small group: Elsevier, Springer Nature, Wiley, Sage, and Taylor & Francis, often referred to as the "Big Five." These companies exert significant control over the global scientific publishing landscape by capitalizing on digital advancements to continually renew and reinforce their business models to maximize profits and their market power (Avital, 2024). Today, Elsevier, Springer, and Wiley collectively account for over 50% of all journal articles published (Kim & Park, 2020). In 2018, Elsevier reported profits exceeding 1 billion GBP, with an impressive profit margin of nearly 40%, surpassing tech giants like Google, Amazon, and Apple. This growth continued: in 2023, Elsevier reported net profits of 1.165 billion GBP, representing 38.1% of total revenue (RELX, 2024, p. 23). This digital transformation signals a strategic shift from a product-focused model to a service-oriented one (Phillips, 2021). The unfolding dynamic of digital transformation in academic publishing is a paradox. On the one hand, universities and researchers, who should be drivers of change, exhibit institutional inertia, clinging to outdated practices and rigid structures. The scientific publishing process remains highly centralized and controlled by powerful industry players, who have used the genre of journals to establish a highly lucrative revenue model. Researchers, constrained by a system that intensifies the "publish or perish" pressure, are compelled to publish in highly-ranked journals (Gonzales & Núñez, 2021; Welsh, 2021). Scientific publishers, by contrast, have demonstrated remarkable dynamism. While open access and decentralized knowledge are increasingly demanded, paid journals continue to dominate the market and control of scientific publishing. Often controlled by private equity firms, these companies adopt strategies focused on platformization and information analytics, supported by acquisitions, cost reduction, and profit maximization. Through acquisitions and the exploitation of new technologies (Nieborg & Poell, 2018; Ma, 2022; Lamdan, 2023), publishers have restructured their business models, emphasizing financial efficiency publishers have restructured their business models with a focus on financial

efficiency. This has allowed them to expand their market control through investments in digital research platforms and data analytics. They not only adapted to market changes but have exploited academia's weak response to reinforce their dominant position (Buranyi, 2017; Fyfe et al. 2017). As a result, while publishers evolve and adapt rapidly to new digital realities, academia remains entrenched in a publishing system that prioritizes private profit over the accessibility to knowledge. In this article, we draw on existing literature and an empirical study to analyze how academic publishers have gradually transformed their business models to strengthen their control over academic work and, more broadly, the landscape of scholarly publishing (Garvey & Griffith, 1972; Björk & Hedlund, 2009; Arvanitis et al., 2023). We use critical qualitative research methodology (Marcuse, 1964; Habermas, 1984) and two theoretical concepts, dynamic capabilities (Teece, 2007, 2018) and organizational inertia (Hannan & Freeman, 1984; Huff et al, 1992), to explore the following research questions:

- How have academic publishers transformed their business models to strengthen their control over academic work and scientific publishing?
- Why do academic institutions, despite their growing dependence on commercial publishers, demonstrate inertia in addressing their own exploitation?

The structure of the paper is as follows. We start by reviewing the theoretical foundations of Dynamic Capabilities, Business Model Transformation, and Organizational Inertia, followed by an explanation of our research methodology. Next, we analyze the dynamic capabilities demonstrated by academic publishers and the inertia prevalent in universities. Finally, we conclude with a discussion of the paper's main contributions.

1. THEORETICAL FRAMEWORK

1.1. DYNAMIC CAPABILITIES AND BUSINESS MODEL TRANSFORMATION

Dynamic capabilities, as outlined in the seminal work of Teece et al. (1997), refer to a firm's ability to integrate, develop, and reconfigure its internal and external resources to adapt swiftly to changing environments. These capabilities differ from operational or ordinary capabilities, which focus on day-to-day management. Dynamic capabilities, enable adaptation and innovation in turbulent environments by setting ambitious goals, forming strategic alliances, and investing in research and development (Eisenhardt & Martin, 2000; Oliver, 2015). These capabilities enable firms to continually adapt their business models to market changes, emerging technologies and opportunities, particularly in volatile contexts (Pettigrew et al., 2001). With advances in technology, new business models become feasible, as organizations equipped with such dynamic capabilities can design, test, and quickly deploy new business models or revise and renew old ones (Helfat & Campo-Rembado, 2016; Warner & Wäger, 2019). In these scenarios, strategic adaptation and resource reconfiguration are essential for achieving superior performance. As firms learn, adapt, and reconfigure their resources they can secure "temporary" competitive advantages (Zollo & Winter, 2002). Consequently, corporate strategies, traditionally focused on achieving sustainable competitive advantage, must prioritize rapid adaptation to environmental turbulence by leveraging "enhanced dynamic capabilities" (Hensmans et al., 2012, p.10). Sustainable competitive advantage requires organizations to continually identify new opportunities, and improve or replace core elements of existing business models (Achtenhagen et al., 2013; Gelhard et al., 2016). This process involves assessing their current business model architecture (Teece, 2007), focusing on value creation, delivery, and capture processes. In environments characterized by rapid technological advancements and significant market structure transformations (McAdam et al., 2017), dynamic capabilities are essential for ensuring survival and success amidst constant change. Clark's (2005) study demonstrates that perceived threats can trigger intense resource engagement. To mitigate risk, organizations may overcome inherent rigidity and unlock

resources for new investments. Strategic change literature suggests that threat-induced reactions free up resources to invest in new initiatives (Lant et al., 1992). Technological development plays a crucial role in creating new business models (Muzellec et al., 2015; Lecocq et al., 2018). Business models are considered "innovative" and "efficient" when they successfully integrate new technologies to deliver superior outcomes (Osterwalder & Pigneur, 2010; Zott et al., 2011). Technological innovation is shown to have a direct impact on performance (Bierly & Chakrabarti, 1996; Christensen & Bower, 1996; Zaheer & Bell, 2005; Evanschitzky et al., 2012) and drives business model innovation (Zott & Amit, 2007; Casadesus-Masanell & Ricart, 2010).

1.2. ORGANIZATIONAL INERTIA

The concept of inertia originates from Newtonian physics, comparing an organizational system to a body inclined to maintain its current state, whether stationary or moving in a specific direction (Gersick, 1988). Some researchers define organizational inertia as the propensity to maintain the status quo and the inability to implement internal changes in response to major external shifts (Miller & Friesen, 1980; Tushman & Anderson, 1986). Unlike other approaches, organizational inertia theory emphasizes that routines contributing to past and present success become sources of rigidity, jeopardizing the organization when transformation is necessary (Hannan & Freeman, 1984). When organizational processes align with a specific environment, their adaptability to change is hindered as these processes mutually reinforce each other. Moreover, they are not designed to handle discontinuities (Miller & Friesen, 1980 ; Siggelkow, 2002). Over time, these routines grow increasingly complex and rigid (Rumelt, 1995), inhibiting the exploration or development of new capabilities (Benner & Tushman, 2003; Gilbert, 2005). This results in organizational inertia, obstructing change efforts (Rowe et al., 2017), as there is a systemic tendency for the organization to continue along a historical trajectory (Hannan & Freeman, 1984; Tushman & Romanelli, 1985; Besson & Rowe, 2012).

While inertia was once seen as a strength ensuring survival in uncertain environments, it is now considered a threat given the rapid pace of technological change and the challenges of adapting to it (Hannan & Freeman, 1984).

Numerous studies have explored the dimensions of inertia. Hannan and Freeman's (1977) foundational work identifies multiple dimensions of inertia, collectively referred to as structural inertia, at the population level of organizations. Other streams of literature have developed multidimensional conceptualizations at the organizational level (Tushman & Romanelli, 1985), within organizational subunits (Rumelt, 1995; Audzeyeva & Hudson, 2016), and at the individual level (Polites & Karahanna, 2012). Structural inertia has been classified into two types: resource rigidity, referring to the inability to alter resource allocation patterns (Henderson, 1993; Christensen & Bower, 1996), and routine rigidity, denoting the inability to change organizational processes based on these resource investments (Nelson & Winter, 1982; Leonard-Barton, 1992). The most comprehensive categorization identifies five dimensions of inertia (Besson & Rowe, 2012): psychological, socio-cognitive, socio-technical, economic, and political. Universities and academic institutions are characterized by a significant degree of structural inertia, marked by tensions between stability and change. The neo-liberal ideology has led to a rankings-based competition between universities and internally the rise of managerialism and the surrender of faculty (Alvesson & Spicer, 2016). Clark (2004) emphasizes that their future depends on embracing autonomy and fostering transformative habits. However, this vision faces significant systemic challenges. The lack of a competitive environment hampers their adaptability. Universities tend to favor reactive strategies and short-term planning horizons, limiting incentives for structural innovation (Heimonen, 2011). This situation is further exacerbated by rigid governance and a preference for "satisficing" solutions over optimal ones (Simon, 1957). Additionally, university inertia stems from complex interdependencies and political conflicts regarding resource allocation between high-

performing and less-performing units. These tensions hinder reorganization efforts, while reinforcing resistance to change (Hannan & Freeman, 1984).

2. RESEARCH METHODOLOGY

We adopted a research methodology grounded in critical social theory (CST) to promote an emancipatory understanding of the phenomena under study, in line with the visions developed by Marcuse (1964) and Habermas (1984). This methodological approach aims to reveal the tensions and contradictions within contemporary socio-economic systems. It also seeks to offer a critical alternative to traditional perspectives by aligning with the frameworks of critical qualitative research in information systems (Cecez-Kecmanovic et al., 2020). CST research is particularly well-suited to analyze the socio-material structures underlying these digital ecosystems, shedding light on the interactions between software technologies, institutional practices, and societal issues (Introna, 2016). It allows for an examination of not only the mechanisms of power embedded within these platforms but also their impact on decision-making processes within universities and on equitable access to knowledge (Ngwenyama et al., 2023). We focus our analysis on the emerging digital ecosystems developed by the Big Five (Elsevier, Springer Nature, Wiley, Taylor & Francis, and Sage), with a particular emphasis on Elsevier. These dominant players hold a strategic position in the global scientific knowledge production system, and are transforming not only research institutions and academic practices, but the dissemination and access to knowledge. Our study is based on a dual foundation: first, an analysis of the existing scientific literature that addresses the transformation of publishers' business models and the various stages of their digital transformation (Arvanitis et al., 2023). Second, our empirical analysis of the digital transformation of the dominant academic publishers from 1995 to present. We have analyzed a wide array of complementary sources, including documents from Elsevier and RELX, newspaper articles, online forums and blogs (e.g., *The Scholarly Kitchen*, Björn Brembs), and reports from the European Union, the National

Science Foundation, and various professional associations. The goal is to explore the concrete implications of business model innovation and digitalization, while considering their interactions with the dimensions of institutional inertia within universities. We are specifically interested in understanding how the Big Five make sense of and (re)frame the ethos of the institution of scientific publishing in order to continually reconfigure it in their own interest using advanced digital technologies and business model innovations to create new opportunities for value creation (Steininger et al., 2022). Our empirical analysis does not seek to provide an exhaustive overview of the dynamic capabilities of these academic publishers, as it is limited to what can be observed externally. It also excludes capabilities tied to routinizing strategic experience, such as those stemming from acquisitions. Instead, we focus on the capabilities of sensing, (re)framing and reconfiguring identifiable through secondary data and websites, that help them conduct their digital transformation. We apply critical hermeneutic analysis (Stahl et al., 2012) to examine our empirical material. Rooted in Critical Social Theory, this approach aims to surface theoretical insights from empirical observations by revealing the underlying structures of academic publishing practices. Our critical stance seeks to denaturalize dominant discourses and uncover the mechanisms of power and institutional reproduction at play in the transformation of the publishing sector. The analysis followed a three-step iterative process: (1) an exploratory reading of the data was conducted to identify initial patterns, drawing on existing literature and a diverse set of complementary sources, including documents from Elsevier and RELX, newspaper articles, online forums and blogs, as well as industry reports; (2) the development of a thematic coding framework, combining concepts from the literature with emergent themes; and (3) the progressive refinement of this framework through constant comparison, allowing us to deepen our understanding of the strategic logics of academic publishers and how they deploy their dynamic capabilities and engage in business model innovation.

3. ANALYSIS RESULTS

3.1. OVERVIEW OF THE PUBLISHING MODEL: MARKET TRANSFORMATION AND VERTICAL INTEGRATION

The established revenue model of major scientific journal publishers primarily relies on a subscription system, specifically subscriptions to digital mega bundles, with revenues mainly generated by academic institutions (Phillips, 2021). Scientific research is produced by researchers, usually funded through public grants or research scholarships. However, once the research is completed, it is often submitted to journals owned by these publishers and validated through a peer review process (Baldwin, 2018), which is also carried out by researchers without direct compensation by publishers. This validation is thus ensured by the scientific community but does not directly benefit the researchers themselves (Aczel et al., 2021). Once the research is validated, it is sold by the publishers to institutions in the form of subscriptions. This model creates a revenue stream for publishers, who capture the content generated by researchers for free. Institutions must pay to access this content, at prices that increase regularly, resulting in significant profits for publishers (McGuigan & Russell, 2008). *Figure 1* illustrates the role of researchers in both the submission and subscription processes.

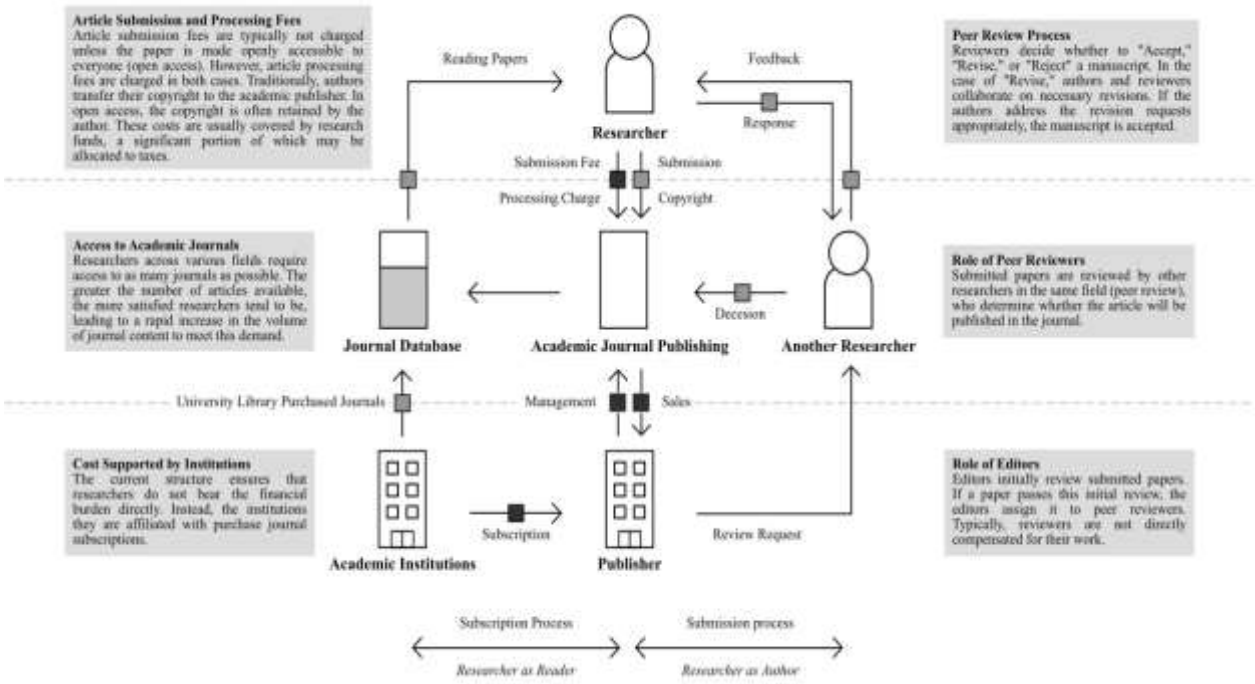

Figure 1. Researcher as producer and customer[3]

This model is highly profitable because, the input (content) and validation (peer reviews) are provided to publishers for free[4]. Publishers justify their high margins by exaggerating the expertise of their staff, responsible for pre-screening submitted articles before peer review, as well as the support they provide to editorial committees, including modest allocations. They also emphasize the complex activities related to typesetting, printing, and distribution, including publishing and web hosting (McGuigan & Russell, 2008). Moreover, the demand for these journals remains relatively inelastic[5], meaning that institutions are willing to accept price increases, even if publishers cannot always justify them relative to actual costs (Morgan Stanley Equity Research, 2002)[6]. The separation between the beneficiaries (researchers) and the cost-bearers (research organizations such as university libraries) also facilitates the exploitation of scientific publishing. Researchers, who do not bear the costs, demand more journals, while

[3] Adapted from the following model: https://t46.github.io/blogs/business_model.html
[4]http://openscience.ens.fr/MARIE_FARGE/INTERVIEWS/2020_06_13_Interview_pour_le_journal_Le_Figaro_sur_le_business_des_revues_scientifiques.pdf
[5] Faculty and students expect research universities to subscribe to the mega bundles of the Big Five as essential research infrastructure.
[6] https://www.annualreports.com/HostedData/AnnualReportArchive/m/NYSE_MS_2002.pdf

libraries strive to meet their needs despite budget constraints. Furthermore, research funding, often provided by public funds, reinforces this exploitation. Taxpayers and students, though indirectly affected, have little influence over costs, which supports the profitability of publishers. The academic publishing landscape is characterized by a high concentration of power, dominated by the Big Five, who use vertical integration and digitalization of scientific publishing as a strategic mechanism to control the entire value chain of research and education. These publishing giants have diversified their services through acquisitions and expansions their services far beyond the mere publication of scientific journals by incorporating digital infrastructures and services related to data management, academic evaluation, and online education (Chen et al., 2019). Elsevier, a division of the multinational RELX Group (formerly known as Reed Elsevier), epitomizes this strategy. This global conglomerate, active in sectors such as professional information, data analytics, and risk management, has progressively established itself at every stage of the academic research lifecycle. By acquiring Pure, Plum Analytics, Mendeley, and other platforms and integrating them with Scopus, ScienceDirect and SciVal, Elsevier controls critical infrastructures for data management, publication impact evaluation, and information sharing, while influencing institutional and researcher decision-making. Vertical integration of the Big Five exacerbates inequalities, particularly between institutions in the Global South and those in more affluent countries. For example, Elsevier is able to increasingly monetize academic knowledge production processes by leveraging its disproportionate ownership of content and data. This dynamic fosters growing dependence of researchers and universities while solidifying its dominance over the global research market. A key element of this vertical integration lies in the emphasis placed on acquisition, ownership and exploitation of data. This newer and more innovative revenue stream for publishers, relies on data exploitation for the creation and commercialization of novel data products and services. Elsevier, in particular, has repositioned itself as a data analytics company (Lamdan, 2023). By

controlling the infrastructures that collect, analyze, and monetize data from researchers and institutions, Elsevier strengthens its grip on the entire academic process. For instance, bibliometric data extracted from Scopus feeds influential university rankings, creating a dependency loop for universities aiming to improve their visibility. This situation fuels rent-seeking behavior, where publishers monetize access to their content and data while reinforcing their dominant position (Andreucci et al., 2017; Birch, 2017). By creating digital mega-bundles of journals (Edlin & Rubinfeld, 2004) and aggregating data from various sources to develop new services and products, they ensure steady profits. To shield themselves from disruptions, the Big Five actively acquire emerging products and solutions in their early stages of development, integrating them into their own offerings (Gatti, 2020).

3.2. DIGITAL TRANSFORMATION, DYNAMIC CAPABILITIES AND BUSINESS MODEL INNOVATION

The digital transformation of the Big Five represents a key development accompanying the vertical integration strategies in scientific knowledge production and academic publishing. This transformation has systematically reinforced the control of these dominant actors over academic work, profoundly reshaping publication processes and the management of intellectual property. Three significant phases can be identified in this transformation process, each shaping the academic publishing ecosystem while promoting the commercialization of knowledge and centralizing control over its production and dissemination (Arvanitis et al., 2023). The three phases have overlapped and accumulated since 1995, continuing to the present.

3.2.1. Digitalization of Publishing, Bibliometrics and Open Access [1995 to Present]

The digitalization of scientific publishing marks a major turning point in the production and dissemination of knowledge. This digital shift has profoundly altered editorial processes, redefining business models and strategies to meet the demands of the digital marketplace (Bocksted et al., 2006; Tian & Martin, 2010; Lichtenberg, 2011; Carolan & Evain, 2013).

Publishers have had to adapt to challenges posed by technological innovations, particularly those linked to the Internet, which have radically transformed how products are created, distributed, and consumed (Tian et al., 2008). A key step in the transformation of scholarly publishing was the conversion of journals and books into digital repositories, illustrated by ScienceDirect[7]. This model, known as the "mega bundle" of journal licenses or "Big Deal" package, altered publication contracts by replacing individual (print) journal subscriptions with a license to Science Direct, a bibliographic database of Elsevier publications and full-text access. This change also affected pricing, which is now based on institutions' number of researchers. Additionally, it implies a new division of work between publisher and subscriber (libraries), whereby the subscribers play a crucial role in digital rights management (DRM) and access control but loose influence over search/ discovery and recommendations. The implementation and adaptation of the technical infrastructure were fundamental elements in this transition to digital scientific publishing. This change goes beyond the creation of platforms capable of handling vast amounts of data. It also includes the development of interfaces that allow users—whether researchers, academic institutions, or libraries—to interact effectively with the platform. This means also that the platform providers are now responsible for search/ discovery and recommendations Alongside platformization, the rise of rankings has not only become a major driver of transformation, but also highlights a clear conflict of interest, as Elsevier plays a key role by supplying data to ranking organizations through Scopus. This trend is reinforced by the introduction of bibliometric indicators such as the Journal Impact Factor (JIF) and the h-index, which have redefined the criteria for success for both publishers and researchers (Müller & de Rijcke, 2017. While often criticized for their biases, these metrics have shaped editorial processes, prioritizing the publication of high-impact potential articles (Bockstedt et al., 2006; Magadán-Díaz & Rivas-García, 2018; Sugimoto & Larivière, 2018).

[7] https://www.elsevier.com/products/sciencedirect/25-years-of-discovery

Bibliometrics are increasingly used as tools for research evaluation (Togia & Tsigilis, 2006) and are often considered as objective measures of academic productivity, though they do not necessarily reflect research quality. While rankings are often framed as tools of transparency for evaluating researchers, publications, funding applications, journals, university presses, departments, universities, or scientific subfields (Gerring et al., 2020), their deep entrenchment in academic assessment practices can foster organizational inertia by reinforcing established norms and routines.

The growing reliance on bibliometric indicators has substantially expanded the academic publishing market by pushing researchers to prioritize journals with high Impact Factors. Publishing houses were keen on presenting these journals using such perform metrics. This dynamic has intensified competition within academia, reinforcing performance-driven publishing practices. In this "publish-or-perish" environment (Lee, 2014; Gonzales & Núñez, 2021; Welsh, 2021), where career advancement increasingly depends on the prestige of journals, these publications have become "brands" directly influencing researchers' recognition and visibility (Baccini et al., 2020). Universities compete to improve their global rankings, journals vie for the prestige associated with their impact, and individual researchers strive for tenure-track positions based on scientific productivity measured by these indicators. In France, for example, the HCERES[8] relies on these rankings for its analyses. During the Sarkozy administration, this ranking systems were used as a political tool to justify major university system reforms in 2007 (Gingras, 2016; Barats et al., 2018; Harari-Kermadec, 2019). This practice has led to well-documented unintended consequences, including distortions in academic and scientific priorities (Gingras, 2016). Numerous studies highlight the unintended and sometimes harmful effects of this obsession with publication- and citation-based indicators, as well as university rankings (Espeland & Sauder, 2007; Müller & de Rijcke, 2017; Ma, 2021).

[8] High Council for Evaluation of Research and Higher Education (https://www.hceres.fr/fr)

This phenomenon has given rise to a "race for metrics," where the quantity and visibility of publications often take precedence over their intrinsic quality. Commercial publishers have co-opted the principles of Open Access—particularly green and diamond models—transforming them into profit-driven mechanisms (Butler et al., 2023). "Gold Open Access," promoted by dominant actors like Elsevier, has been positioned as an alternative to the traditional subscription model. However, it typically requires authors to transfer copyright to the publisher and pay article processing charges (APCs), thereby reinforcing commercial control over scholarly dissemination (Russell, 2019). By labeling these publications as the "gold standard" in scholarly dissemination, publishers influence the narrative surrounding their role in enhancing research accessibility, all while downplaying the commercial motives behind these practices. To reinforce its role in shaping how open science is understood and evaluated, Elsevier strategically positioned itself by becoming a subcontractor for the EU-funded Open Science Monitor (Tennant, 2018). This allowed Elsevier to not only gain deep insights into the Open Science community but also to play a significant role in the reporting process using its own Scopus data. By contributing to these reports, Elsevier influenced the way open science progress is measured and evaluated, ensuring its platform remained central to the evolving open research landscape. Today, paid Open Access has become a key strategy for commercial publishers to diversify their pricing models. By supplementing traditional big deal license fees with APCs for Open Access articles, they aim to secure and expand their revenue streams. which represents a major risk for the future of academic publishing. This model threatens to significantly increase the costs associated with academic publishing, exacerbating the financial accessibility issues for many researchers, institutions, and countries, especially those without the resources to cover these fees[9]. According to the Couperin consortium, fees per article

[9]https://scholarlykitchen.sspnet.org/2023/12/07/where-did-the-open-access-movement-go-wrong-an-interview-with-richard-poynder/

requested by publishers increased by 12% in France between 2015 and 2017, from 1,500 to 1,700 euros. These fees can rise up to $10,000[10] for certain journals, amounts often disconnected from the actual publication costs (Le Figaro, 2020)[11]. The following table summarizes Elsevier's dynamic capabilities during the digitization phase (Table 1).

Table 1. Elsevier's dynamic capabilities during the digitization phase

Strategic Move	Dynamic Capabilities	Explanation	References
Digitalization	**Sensing**	• Recognizing researchers' growing need for fast and seamless access to reference collections, and the potential of digital repositories and search technologies to provide direct electronic access to journal articles and books from their desks. • Recognizing the potential to transform the roles and the responsibilities of publisher and libraries. • Recognizing that publishers can influence policy making by lobbying[12] and voluntary participation in government committees and workgroups on Open Science.	ScienceDirect 25 years of discovery[13], (Tennant, 2018)
	(Re)framing	• The role of university libraries is reframed as digital rights management (DRM) and access control, marking a new division of labor between publishers and subscribers (libraries). • Support for discovery and recommendation is increasingly reframed as a computational challenge, addressed more efficiently through the search algorithms of digital content repositories. • The role of publishers is reframed as managers of digital documents and providers of digital tools and information services to researchers and university libraries. • Elsevier reframes itself as subject matter expert to the EU Open Science Monitor group to gain insights into how its repositories and analytics tools (Scopus, SciVal) could contribute to evaluation and reporting on Open Science.	
	Reconfiguring	• Publishers reconfigure their business model of publishing journals and books to digital content (collections) services accessible via 'mega bundles' (or Big Deals) epitomized by ScienceDirect, introduced in 1999. • Legacy journal collections (pre-1999) are digitalized and integrated with existing digital publications into comprehensive digital platforms • Publishers reconfigure their revenue models based on individual journal subscriptions to bundled subscriptions of ScienceDirect, and pricing determined by journal reputation and academic discipline.	

[10] https://www.elsevier.com/about/policies-and-standards/pricing
[11]http://openscience.ens.fr/MARIE_FARGE/INTERVIEWS/2020_06_13_Interview_pour_le_journal_Le_Figaro_sur_le_business_des_revues_scientifiques.pdf
[12] RELX in Europe : https://www.lobbyfacts.eu/datacard/relx?rid=338398611148-62 and in the US: https://www.opensecrets.org/orgs/relx-group/lobbying?id=D000067394
[13] https://www.elsevier.com/products/sciencedirect/25-years-of-discovery

		• Publishers reconfigure the notion of scholarly contribution into the rank of the publication outlet and get involved in supporting rankings. • Responding to the potentially disruptive competition from (green) open access journals, the publishers introduced gold open access with APCs based on the reputation of the targeted journal.	

3.2.2. Platformization of Scientific Research and Publishing [2010 to Present]

A second major phase in the digital transformation of academic publishers, which shapes the business model of scientific publishers, is the platformization of scientific research and publishing (Ma, 2023; Plantin & Thomer, 2025). Following an initial revolution marked by the shift from print to digital, in this second digital transformation many of the structures, workflows, incentives, and outputs that characterized the print era are being revamped in favor of new approaches (Bergstrom et al., 2024). Platformization of research and publishing refers to a phenomenon where the research and publication workflow and research data management increasing rely on digital tools provided by platforms (Bosman & Kramer, 2015; Nieborg & Poell, 2018). As a result, the business model of many publishers has diversified to cover various platforms involved in each stage of the research lifecycle. For example, Elsevier has acquired innovative start-ups and built an extensive platform (digital research infrastructure) to support the entire research workflow and – increasingly – career life cycle of researchers. By centralizing these processes within private platforms, academic actors are marginalized from strategic decisions shaping their own domain (Lamdan, 2023). These trends raise crucial questions about scientific autonomy and power dynamics within the research ecosystem (Ma, 2022). The dominant publishers in the market, including Elsevier, enhance their control by acquiring and integrating platform services, such as single sign-on systems, which simplify user authentication and facilitate access to digital resources (Zuboff, 2019). Additionally, they work toward establishing a system of standardized guidelines for "good research" practices (e.g. Elsevier 2024), akin to the PMBOK® framework in project management. This approach not

only consolidates their influence over the processes of data utilization and research governance but also positions these platforms as gatekeepers of academic standards and norms.

Platformization of scientific information relies on the datafication and commercialization of content produced by users, such as scientific publications, uploads to platform services and the associated personal data (Chen et al., 2019). Just as the digital giants (GAFAM) have redefined economic models based on the exploitation of personal data, the Big Five have managed to follow the trend of informational capitalism and adopt similar practices, transforming their platforms into ecosystems where every interaction becomes a source of data. Indeed, these publishers collect and exploit massive amounts of data from their digital platforms. When researchers interact with these platforms, each action – whether submitting an article, viewing a publication, or sharing comments – becomes a piece of data that can be collected, analyzed, and exploited. The Big Five closely monitor researchers' behavioral data (Hanson, 2019; Remenyi, 2021), such as reading preferences, searched keywords, and academic collaborations identified in their articles. This information is systematically tracked and analyzed to maximize its use (Lamdan, 2022; Pooley, 2022, 2024). The real issue lies in the opacity of the mechanisms used by large platforms to collect and exploit researchers' data (Deutsche Forschungsgemeinschaft (DFG), 2021)[14]. The algorithms that underlie their recommendation, tracking, or filtering systems are often protected by trade secrets and are not accessible to the public, nor even to the researchers themselves. This opacity prevents a clear understanding of how decisions are made, especially regarding publication visibility, reading suggestions, or potential biases in content dissemination (O'Neil, 2017; Noble, 2018). Publishers, such as Elsevier, frame user tracking and surveillance mechanisms as critical to protect their systems from misuse, fraud, or breaches that could undermine the academic quality of content. This

[14] https://www.dfg.de/resource/blob/174924/d99b797724796bc1a137fe3d6858f326/datentracking-papier-en-data.pdf

narrative positions surveillance not as an invasive measure but as a protective and precautionary step that guarantees the authenticity and integrity of academic work. By emphasizing the importance of preventing malicious activities, such as plagiarism, data manipulation, or fraudulent submissions, publishers can legitimize their data collection practices. Furthermore, the data gathered through tracking can be used to improve system performance, optimize user experience, and enhance the overall quality of the scholarly ecosystem. In doing so, publishers reinforce their role as custodians of academic integrity, while obscuring the more commercially-driven motivations behind their surveillance practices (Carpenter, 2020). The following table summarizes Elsevier's dynamic capabilities during the Platformization/ infrastructuring phase (Table 2).

Table 2. Elsevier's dynamic capabilities during the Platformization/ infrastructuring phase

Strategic Move	Dynamic Capabilities	Explanation	References
Platformization/ infrastructuring	**Sensing**	• Adoption of a Digital Giants' strategy: Followed the model of major digital firms aimed at acquiring innovative start-ups and creating significant lock-in effects for users.	(Chen et al., 2019)
	(Re)framing	• Portrayal of platform use as essential: Positioning its platform as indispensable for conducting effective and successful research. • Framing surveillance and tracking as necessary for maintaining systems integrity.	(Carpenter, 2020)
	Reconfiguring	• Continuous reconfiguring of infrastructure to capture more and more research workflow activities for management and control within the publisher's digital platform. • Acquisition of innovative start-ups and integration of new digital tools to realize a comprehensive Digital Research Infrastructure that covers the researcher's entire research workflow activities and career life cycle. • Defining and establishing research norms: a system of guidelines for "good research,". • Defining and configuring data surveillance mechanisms for tracking platform users to acquire data traces of their interactions for assetization	(Chen et al., 2019; Zuboff, 2019)

3.2.3. Data Analytics, Algorithmization and AI [2014 to Present]

We have seen that platformization has profoundly transformed the dynamics of scientific knowledge production and dissemination, but its influence does not stop there. It also triggers

a more subtle yet equally important phenomenon: Information Analytics Business. Elsevier has strategically repositioned itself as a provider of "bespoke data integration and applied analytics" to mitigate potential revenue losses from traditional publishing. By shifting its focus from content access to advanced analytics, the company provides data-driven insights and solutions. A key component of this transformation is integrating its extensive data pool across platforms like ScienceDirect, Scopus and Pure to harness data network effects. This integration enhances the value of its offerings through data sets, advanced analytics, supported by resources and expertise from its parent company, RELX. Additionally, Elsevier has diversified its customer base, targeting universities, accreditation bodies, research funders, government agencies, and commercial research organizations (RELX, 2024, p. 8). Elsevier have established strategic research collaborations with academic institutions to strengthen their positioning in the scientific ecosystem. A prominent example is the Humboldt-Elsevier Advanced Data and Text (HEADT) Centre, which focuses on research integrity and related areas. This initiative underscores the growing importance of addressing ethical challenges in the research landscape, particularly in relation to reproducibility, data transparency, and publication ethics. By collaborating with universities, Elsevier not only aligns itself with academic values but also secures access to cutting-edge research insights and emerging scholarly practices. The HEADT Centre serves as a platform for exploring critical topics like text and data mining, open science, and responsible research metrics, ensuring that Elsevier remains a thought leader in shaping the standards and practices of modern scientific publishing. In addition, Elsevier has further invested in creating specialized groups, such as its Research Group on Analytical Services, to leverage the power of big data and analytics. This group focuses on extracting actionable insights from the vast amount of data generated through its publishing platforms, collaborations, and user interactions. These insights are used to refine services, such as tailored recommendations for researchers, thematic trend analyses, and institutional benchmarking

reports. In the current context of rapid evolution of artificial intelligence (AI) and generative AI (GAI), the Big Five are beginning to integrate these technologies into their digital platforms to optimize processes, improve access to scientific information, and meet the growing needs of researchers. The integration of AI and GAI into these platforms represents a major shift in how research is disseminated, analyzed, and evaluated. Elsevier leverages advanced analytics, including machine learning and AI, to enhance existing platforms like ScienceDirect and Scopus through intelligent recommendation systems and research tracking tools. It also develops new services such as Pure, a research management platform, and SciVal[15], an analytics tool for benchmarking and performance evaluation. Elsevier strategically frames its data analytics tools as indispensable for improving research intelligence, positioning itself as a critical enabler of informed decision-making in academia. By emphasizing the value of these tools in guiding research strategies and fostering collaborations, Elsevier constructs a narrative that portrays its services as essential for institutional and individual success in an increasingly data-driven academic environment. This framing capitalizes on the rising importance of metrics and data in evaluating research performance and impact. By aligning its offerings with these demands, Elsevier not only reinforces its relevance but also establishes its platforms as central to the academic decision-making process. Institutions are framed as needing these analytics to remain competitive, while researchers are encouraged to view these tools as vital for advancing their careers and securing funding. Additionally, by integrating these tools into the broader research workflow, Elsevier creates a perception of seamless support, offering insights that are not merely helpful but transformative. This framing also subtly shifts attention away from the potential ethical concerns of data collection and assetization, focusing instead on the benefits of leveraging Elsevier's platforms for strategic gains. In this perspective, Elsevier launched Scopus AI (Elsevier, 2024), a tool designed for research. Scopus AI is designed to provide

[15] https://www.scival.com/landing

quick and reliable summaries of research articles and help researchers navigate the existing literature using the Scopus database, which includes 27,000 journals, 1.8 billion citations, and 17 million author profiles. This tool helps researchers discover new research directions, including underexplored areas, by analyzing researcher profiles and identifying references in each field. However, concerns remain about the technological biases of generative AIs, which can generate errors, false positives, or discrimination. To mitigate these risks, Elsevier placed Scopus AI under the supervision of an oversight board, though it has been criticized for its lack of diversity, with only 5 women among its 17 members[16]. The following table summarizes Elsevier's dynamic capabilities during the algorithmization and data analytics phase (Table 3).

Table 3. Elsevier's dynamic capabilities during the algorithmization and data analytics phase

Strategic Move	Dynamic Capabilities	Explanation	References
Algorithmization and data analytics	**Sensing**	• Recognizing the potential of new and emerging digital technologies for generating novel information services • Identifying potential of new and diverse customer/business segments: university administration, accreditation organizations, research funders, government bodies, and commercial research organizations.	(Chen & Chan, 2021 ; Demeter et al., 2022)
	(Re)framing	• Reframing bibliometrics and data analytics services as essential to university strategic planning and the achievement global ranking. • Reframing academic evaluations as a bibliometrics problem and decision-making as data driven activities. • Reframing tools like SciVal and Pure as decision support systems for strategic research and performance planning. • Reframing the role of publishers of scientific papers as originators of new knowledge.	
	Reconfiguring	• Integrating the extensive data pool to reap data network effects. • Leveraging data assets for building new business models and services (for instance: Pure, SciVal) • Using advanced analytics techniques (e.g., machine learning) to extend existing platform services (Recommender for ScienceDirect, Scopus AI, etc.) • Using existing repository data (collections) and digital tools to develop bespoke information and consultancy services	(RELX, 2024)

[16] https://actualitte.com/article/115270/edition/elsevier-veut-mettre-l-ia-au-service-de-la-recherche-scientifique

3.3. THE INERTIA OF UNIVERSITIES IN THE FACE OF THE DYNAMISM OF PUBLISHERS

University institutions are an example of organizations facing the challenges of organizational inertia (Heimonen, 2011). Organizational inertia in universities is characterized by rigid structures, deeply ingrained routines, and slow evolution of practices. This rigidity is confronted with the dynamism and rapid adaptability of major academic publishers. These large publishers have significant technological and financial resources, enabling them to develop their platforms and strategically adjust their offerings to maximize profitability. This flexibility gives them a strategic advantage over university institutions, which, due to their organizational inertia, struggle to keep up with industry changes. Since the advent of digital technologies, universities have gradually lost control over the management of collections, now centralized by commercial publishers. These publishers' practices, marked by monopolistic profit margins, have been strongly criticized. However, institutional and public policies struggle to remedy this imbalance (Gagliardi et al., 2015). Indeed, the metrics proposed by scientific publishers have become tools for measuring academic performance, influencing funding and careers. Universities are caught in a frantic race to improve their position in international rankings, which have become dominant references for evaluating their performance. Researchers, in turn, are compelled to adopt productivity-oriented approaches, focused on accumulating publications in prestigious journals in hopes of securing permanent positions or promotions. Their scientific productivity, often reduced to quantitative measures, becomes a determining factor in advancing their careers (Espeland & Sauder, 2007; Müller & de Rijcke, 2017; Ma, 2021). This system forces universities and researchers to rely solely on standardized indicators, without seeking to develop or adopt alternative measures capable of better representing the diversity of academic contributions. This dependence creates a vicious cycle where the priority given to institutional recognition eclipses deeper reflection on the objectives of research and its real impact on

society. Regarding the evaluation process, editors of academic journals often spend a lot of time on their work without financial compensation, sacrificing income opportunities. Although paid by their institutions, their work sometimes encroaches on their professional hours, creating a form of exploitation. However, publishers benefit from this situation, as the academic system has long not considered this contribution as an economic value. Editors derive immaterial benefits, such as academic prestige, but these advantages come from the institutions and their community, not the publishers. Publishers have cleverly integrated the university recognition system, making it difficult to challenge the publication process, which mainly benefits the publishers (Smith, 2006). Moreover, this strategy has led to the normalization of the idea that editors are volunteer actors, contributing to the scientific community without seeking direct monetary compensation.

The shift to an open science model was motivated to enhance accessibility and equity in scientific communication. These efforts have been the main catalysts for transformative agreements and ongoing protests and resistance. Diamond Open Access is widely regarded as a key goal by many universities that fund research.

Faced with contradictory demands—such as the obligation to publish openly while still valuing traditional journal publications—researchers may hesitate to adopt Open Access, as it challenges well-established publication practices and norms. On one hand, institutions and funding bodies increasingly mandate OA, often through institutional repositories or preprint platforms. On the other hand, in a reputation-driven economy, researchers find themselves caught in a value paradox: while scientific publications are theoretically considered public knowledge goods, they are, in practice, treated as private assets essential for career advancement. This dynamic is pushing researchers to prioritize publishing in prestigious journals in order to gain recognition within the academic community (Martín-Martín, 2018). However, this demand faces a stark professional reality: career progression is still largely

determined by evaluation committees that prioritize publications in high-impact, traditional journals, further entrenching a reputation economy where journal visibility and prestige are key (Boukacem-Zegmouri et al., 2018; Heinemann et al., 2018; Martín-Martín, 2018). The tension between collective interests and individual goals places researchers in a difficult position, navigating between institutional obligations and personal ambitions that often do not align. Thus, the growing pressure to adopt OA, while beneficial for knowledge dissemination, conflicts with the existing academic reward systems. In response to the low voluntary engagement of researchers, some institutions have implemented mandates, accompanied by strict rules, sanctions, and complex reporting tools to enforce compliance with these obligations (Else, 2018; Poynder, 2018). Institutions strongly encourage—or even mandate—open access publishing, yet they fail to adjust their academic performance evaluation criteria, which continue to favor prestigious, subscription-based journals. If universities and research funders were to collectively stop covering APCs, few authors would be willing to pay them self. This paradox is further reinforced by the coexistence of subscription and open access models maintained by publishers, making it all the more necessary to revise evaluation and academic recognition frameworks. This situation highlights the urgent need for coordinated, systemic solutions across the academic sector, rather than fragmented efforts by individual institutions (Kingsley, 2018).

Another factor contributing to universities' inertia lies in the stagnation or even reduction of public funding allocated to them in many countries (Marginson, 2016). This financial pressure, which has been significantly exacerbated by the increasing costs for journal subscriptions and OA fees, limits their ability to invest in innovative initiatives, recruit qualified staff, or improve infrastructure. As a result, universities struggle to adapt to the rapid changes in the academic and technological environment. At the European level, the Council of the European Union has proposed a €400 million reduction in 2025 from the budget initially allocated by the European

Commission to the Horizon Europe research and innovation program[17]. In the UK, universities anticipate substantial cuts in research funding. Some officials estimate that up to £1 billion could be cut from the funds allocated to research and scientific projects. In France, the situation is particularly severe. On December 3, 2024, a national mobilization day took place for French universities, facing growing difficulties in drafting their 2025 budgets[18]. Many institutions are denouncing the chronic insufficiency of their financial resources, exacerbated by rising costs. In this context, most universities have to allocate a significant portion of their resources to acquiring scientific content or funding the publication of their researchers, at the expense of other strategic investments. Publishers then exploit this inertia to further consolidate their power. On the legislative front, the lack of clear regulation between authors and publishers has allowed the latter to exploit gaps in the scientific publishing system. This lack of regulation fosters a model where publishers dominate, monetize scientific results, and impose conditions that are not necessarily aligned with the interests of researchers or society. Researchers' dependence on this model is reinforced by the attrition of public funding, which forces them to accommodate publishers' practices, as there are no alternative resources to independently disseminate their research. Various initiatives have been put in place to promote the dissemination of scientific results in open access and attempt to rebalance the dynamics of the publishing system. Among these are the "Law for a Digital Republic" in France[19], Directive (EU) 2019/1024[20], the Canadian government's Open Science Roadmap[21], and U.S. measures such as the directive from the Office of Science and Technology Policy (OSTP) entitled "Ensuring Free, Immediate, and Equitable Access to Federally Funded Research" (Queniart et

[17] https://fr.euronews.com/my-europe/2024/10/22/vers-une-baisse-des-fonds-alloues-a-la-recherche-et-a-erasmus
[18] https://franceuniversites.fr/actualite/plf-2025-vers-une-mobilisation-inedite-des-universites-en-danger/
[19] https://www.legifrance.gouv.fr/dossierlegislatif/JORFDOLE000031589829/
[20] https://openscience.lib.cas.cz/en/support/law/
[21] https://science.gc.ca/site/science/fr/bureau-conseillere-scientifique-chef/science-ouverte/feuille-route-pour-science-ouverte

al., 2023) and the Biden administration's proclamation of 2023 as the "Year of Open Science"[22]. However, these measures remain insufficient in the face of the complexity of the challenges

Digital technologies offer the academic community an opportunity for low-cost global knowledge dissemination. However, academic engagement with these new possibilities has been constrained in two ways. Firstly, the culture within academic institutions continues to prioritize prestige, rewarding academics who publish in traditional outlets often dominated by profit-driven commercial publishers. Secondly, there is a lack of credible, high-prestige alternatives to these commercial publishers. Even non-profit scholarly publishers have focused on online publishing as a means of generating revenue, rather than utilizing the full potential of the internet to promote open access to knowledge (Fyfe et al., 2017). Current efforts are too limited to challenge the dominant position of publishers in the commercialization of scientific knowledge. Although collective action and community-driven efforts show potential to drive change, academic reputation remains largely shaped by the perceptions of an academic community within its institutional context. As a result, a diverse and fragmented academic community, lacking strong cohesion, finds itself overpowered by a well-organized system that is driven by powerful economic incentives.

4. DISCUSSION OF RESULTS

Through the lens of dynamic capabilities and organizational inertia (Teece et al., 1997, 2018; Besson & Rowe, 2012), we examined the evolution of the business model of scientific publishers and their digital transformation strategy. We also analyzed how dynamic capabilities such as framing allowed the evolution of their business models (Hargrave & Van de Ven, 2006) and contribute to reinforcing the inertia of academic institutions in the face of their dependence on publishers. Our approach stands out for its holistic perspective on the transformation of the

[22]https://www.whitehouse.gov/ostp/news-updates/2023/01/11/fact-sheet-biden-harris-administration-announces-new-actions-to-advance-open-and-equitable-research

academic publishing sector's business model, highlighting the strategies adopted by major players and the central role of digitalization in consolidating their oligopoly. Furthermore, while the inertia of academic institutions has been widely studied in the literature (Clark, 2004 ; Heimonen, 2011; Aksom, 2022), our primary contribution lies in examining this inertia within the context of power concentration in the hands of the dominant publishers in the sector. Additionally, we adopted a critical perspective, inspired by critical social theory, to question the power dynamics and ideological narratives behind the digital transformation of publishers' business models (Marx, 1976; Marcuse, 1964; Horkheimer, 1973; Habermas, 1984).

4.1. THE STRATEGY OF A MULTI-SIDED MARKET SUPPORTED BY DIGITALIZATION

Within the framework of the digital transformation of the business model of scientific publishers, dynamic capabilities play a central role in adapting and remaining competitive in an environment where technological developments and business models are in constant flux (Teece et al., 1997). Traditionally, business strategies were focused on competitive advantage. However, in the current context, the advantage now lies in the ability to adapt more quickly than competitors, highlighting the importance of mobilizing "amplified dynamic capabilities" (Hensmans et al., 2012, p. 10). Dominant academic publishers have integrated these dynamic capabilities to reorganize their business models and thus consolidate their dominant position. Firstly, they sensed opportunities within the ecosystem to develop their business models and strengthen their market control. This sensing capability refers to an activity of scanning, creation, learning, and interpretation (Teece, 2007). For academic publishers, this involves sensing the opportunities created by the digitalization of scientific publishing, such as creating mega bundles, making acquisitions to control the entire research workflow and researchers' career life cycle (Chen et al., 2019), and positioning themselves in the data analytics sector to offset potential revenue losses in publishing (RELX, 2024). A key aspect of this process is

"mimetic isomorphism" (DiMaggio & Powell, 1983), where academic publishers mimic the strategies and models of tech giants. Just as GAFAM have redefined economic models based on exploiting personal data, the Big Five publishers have successfully followed the trend of informational capitalism and adopted similar practices. Secondly, the Big Five adopt framing as a "collective action scheme" (Hargrave & Van De Ven, 2006, p. 868), to frame the narrative around their role in the academic ecosystem and align stakeholders with their commercial objectives. By strategically framing their actions, academic publishers influence how their relationships with various actors (authors, institutions, researchers, etc.) are perceived and understood. This framing process, reinforced by 'smart marketing,' allows them to not only maintain but also intensify their control, while effectively rationalizing practices that would otherwise be seen as exploitative. They manage to create discursive closures, which suggest that the current situation is inevitable (Markham 2021, 392). Academic publishers frame their relationship with authors as symbiotic, portraying themselves as essential partners in the dissemination and validation of scientific knowledge. In reality, publishers profit from the intellectual work of researchers while providing little in return (Spicer, 2020). By framing it as a mutually beneficial arrangement, publishers ensure that researchers and institutions continue to engage with their business models, despite the exploitative dynamics at play. Furthermore, they frame surveillance and user tracking as necessary measures to ensure the integrity of their systems and protect the quality of academic work (Lamdan, 2022; Pooley, 2022, 2024). By positioning these practices as essential for maintaining security and preventing misuse, publishers can legitimize the extensive data collection they conduct on user behavior (Carpenter, 2020). Similarly, they employ strategic framing by labeling APC-funded open access publications, particularly in hybrid journals, as "gold Open Access" (Russell, 2019). This framing presents APC-funded open access as a pivotal mechanism for promoting accessibility and transparency in research dissemination, while subtly obscuring the

commercial motivations driving this model (Butler et al.; 2023). Thirdly, the Big Five reconfigured and transformed their existing strategies, including the configuration of their products, services, revenue models, and contracts. For instance, in response to the rise of digitalization, they implemented subscription-based models that bundled large volumes of digital content, like ScienceDirect, thus consolidating their influence over the distribution of scientific knowledge. Furthermore, they transformed their relationship with libraries, moving beyond being simple distributors to becoming key players in managing digital rights and controlling access (Chen et al., 2019). They also restructured their digital platforms, evolving from basic content repositories into centers for data collection, user tracking, and surveillance. By gathering extensive data on user interactions and behavior, publishers can gain valuable insights into research trends, allowing them to offer customized recommendations and services (Lamdan, 2022).

Finally, they execute and implement strategic changes by developing the necessary competencies and resources. They have adopted a vertical integration strategy to respond to the rapid upheavals in the sector and the new dynamics created by digital transformation. Vertical integration allows them to better manage costs, centralize processes, and increase their bargaining power while strengthening their dominant position in the market. With the advent of digital platforms, scientific publishers have engaged in a massive platformization of their services. These integrated ecosystems centralize publications, data, and analytical tools (Rieger & Schonfeld, 2023). Furthermore, they incorporate advanced technologies such as artificial intelligence, machine learning, and natural language processing (NLP) into their platforms and business strategies. Platforms like ScienceDirect and Scopus have been redesigned not only for content distribution but also to gather user data, monitor interactions, and provide tailored recommendations. Throughout the evolution of their business model, digital transformation is not merely a tool for modernization: it serves as a major strategic lever, enabling publishers to

centralize data, standardize publication processes, and leverage technological innovations to maximize their margins. Its scope encompasses all elements of the business model, and while evolutionary, it radically changes the activities of publishers (Rowe & Markus, 2023). In fast-evolving environments, such as scientific publishing, reconfiguring resources and capabilities is essential to address the challenges posed by new technologies (Oliver, 2015). This digital transformation can be seen as a strategic response to technological opportunities and perceived threats.

Dynamic capabilities, enacted through a strategy of vertical integration alongside digitalization and business model innovation, highlight the proactive ability of publishers to capitalize on market shifts and technological progress. This enables them to reshape the academic publishing landscape to their benefit (Teece et al., 1997; Holsapple & Oh, 2014). Indeed, scientific publishers have been able to effectively mobilize their dynamic capabilities, not only to overcome their organizational constraints but also to take advantage of the inertia of academic institutions for their own benefit.

4.2. ACADEMIC INSTITUTIONAL INERTIA IN THE FACE OF THE DYNAMISM OF ACADEMIC PUBLISHERS

Organizational inertia, defined as the rigidity of deeply ingrained institutional structures and processes, represents a significant obstacle to the adaptation of universities in a rapidly evolving academic environment. This multidimensional phenomenon reflects the inflexibility of structures, processes, and practices within organizations. The foundational work of Hannan and Freeman (1977) introduced the concept of structural inertia at the level of organizational populations, highlighting the difficulties institutions face in adapting to environmental changes (Rumelt, 1995; Audzeyeva & Hudson, 2016). In the academic context, this structural inertia manifests as institutional constraints that hinder innovation and transformation capacity. As complex organizations, universities illustrate several dimensions of organizational inertia

(Besson & Rowe, 2012). Resistance to change characterizes negative psychology inertia, particularly in response to evaluation and funding models based on indicators like publications in prestigious journals. Publishers have successfully promoted this idea, which has become the gold standard due to its simplicity and efficiency in application. This system, encouraged by commercial platforms, promotes increased competition among institutions, stimulating content production and enabling data collection (Ma, 2023). It also negatively impacts the academic world "by promoting easily publishable research topics and an almost narcissistic culture" (Koskinen et al., 2024, p. 26).

Moreover, the situation of editors and reviewers of academic journals can be seen as a form of socio-cognitive inertia, fueled by institutional dynamics and well-established practices within the academic world. This socio-cognitive inertia arises from the normalization of the idea that editors are volunteers, contributing to the scientific community without seeking direct compensation. Although detrimental in the long term, this model is accepted by a large part of the academic community, which continues to view the role of editor as a prestigious and career-boosting endeavor, without questioning the underlying economic balance (Besson & Rowe, 2012). From a sociotechnical perspective, the infrastructures and institutional processes of universities remain deeply rooted in historical systems, reducing their flexibility to adapt to digital advancements. Technological dependencies, particularly in the management of databases and electronic resources, are often controlled by commercial publishers, further reinforcing this inertia. The economic inertia of universities is exacerbated by the stagnation of public funding (Marginson, 2016) and the sunk costs associated with subscriptions and the infrastructure required to access scientific publications (Christensen & Bower, 1996; Henderson & Clark, 1990, 1993; Zhu et al., 2006). These financial constraints, combined with cross-subsidies favoring publishers, limit the ability of institutions to invest in innovative initiatives or improve their digital infrastructures. Political inertia stems from both internal

power struggles—such as conflicts between departments over data management—and external conflicts, particularly with publishers regarding publication rights. Institutional policies aimed at enforcing open access practices illustrate this political inertia. While these policies were designed to democratize access to research, their sometimes authoritarian implementation has created internal tensions. These tensions reveal an inability to align institutional objectives with the aspirations of researchers, exacerbating disengagement from open access initiatives. Researchers' careers remain largely influenced by evaluation committees that prioritize publications in traditional top-tier journals, perpetuating a reputation-based economy where visibility, journal prestige, and performance evaluations are crucial criteria (Heinemann et al., 2018; Martín-Martín, 2018; Boukacem-Zegmouri et al., 2018). Academics recognize the flaws in the system but continue to support and engage with it, often justifying their actions cognitively to reconcile these contradictions ("academic schizophrenia") (Alvesson & Spicer, 2016). Despite acknowledging the broken nature of academic structures, scholars tend to uphold the practices that perpetuate them, such as publishing in high-impact journals, because doing so aligns with their career aspirations. Academic reputation, largely shaped by external measures like citations and journal rankings, becomes a driving force for individual success, even though these markers can perpetuate systemic issues. While collective action within the academic community holds potential for change, individual incentives often prioritize personal advancement, making it difficult to challenge or reform the broader system.

5. CONCLUSION

This study examines the evolution of scientific publishers' business models and digital transformation through dynamic capabilities and organizational inertia. We highlight how publishers have leveraged capabilities like framing (Hargrave & Van de Ven, 2006) to consolidate their market power, while academic institutions remain hindered by inertia. Publishers have successfully adapted to the digital landscape by integrating advanced

technologies and data analytics, reinforcing their control over the market. Meanwhile, institutional inertia—shaped by cognitive, technological, economic, and political factors—limits the ability of universities to adapt. Although academics recognize the system's flaws, they continue to engage with and support it, often rationalizing their actions to reconcile these contradictions ("academic schizophrenia") (Alvesson & Spicer, 2016). Our study highlights the urgent need for academia to rethink its structures and strategies in the face of growing publisher power and the ongoing digital transformation in research publishing. The primary limitation of our study lies in the fact that we were unable to gain a comprehensive, high-level view of the dynamic capabilities of various academic publishers or explore in detail the mergers and acquisitions movements that enabled them to implement a vertical integration strategy. Instead, we focused on capabilities identifiable through secondary data and publicly available sources that illustrate how these publishers have conducted their digital transformation. Therefore, further research is necessary to explore these capabilities more closely, with the aim of analyzing them from within. Additionally, more studies are needed to explore the framing strategies employed by dominant publishers, particularly those linked to their discourse surrounding the digital transformation of research publishing and their role as supporters of academic institutions and researchers.

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