

The Impact of Innovation Strategy on Business Performance in Public vs. Private Healthcare: A Systematic Literature Review

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Abstract. *Following the recent focus, innovation is crucial in changing and impacting the healthcare systems, resulting in improved patient outcomes, enhanced organizational performance and impacting society overall. The paper conduct a dual approach to investigate innovation in healthcare. First, it utilizes a bibliometric analysis to delineate the current research landscape, pinpointing significant trends, authors, and developing topics within the sector. Secondly, it offers a systematic literature review (SLR) that explores the influence of various innovation strategies on business performance in both public and private healthcare environments. The bibliometric analysis reveals an increasing scholarly focus on open innovation, digital transformation, and leadership in healthcare innovation. The systematic review consolidates findings from 34 studies, exploring topics such as leadership roles, cross-sector collaboration, and the financial consequences of implementing innovation strategies in healthcare. Research indicates that public healthcare organizations typically gain advantages from collaborative innovation networks, while private companies prefer more adaptable, market-oriented strategies. In both sectors, leadership, intersectoral collaborations, and financial investment are key elements in advance successful innovation. By integrate these findings, the study shows the impact of innovation strategies on healthcare outcomes and furnishes pragmatic guidance for healthcare leaders and policymakers aiming to enhance innovation initiatives and performance within their organizations.*

Keywords: healthcare innovation, bibliometric analysis, systematic literature review, innovation strategy, innovation performance, public versus private healthcare.

Introduction

Healthcare innovation has attracted increased attention due to its potential to enhance efficiency, elevate patient outcomes, reinforce organizational performance and impact our society overall. Healthcare business sector faces distinct challenges, including regulatory pressures, swift technological progress, and changing patient expectations, demanding an ongoing emphasis on innovation (Kim & Oh, 2017). Berry and Bendapudi (2007) assert that healthcare services are one of the most personal and essential experiences for individuals, obviously influencing their life quality and overall well-being.

Given this essential role, adopting innovative strategies is imperative to guarantee patient-centered care and the sustainable future viability of health business systems. Through strategic innovation, healthcare organizations can gain a deeper understanding of patient requirements, optimize service delivery, and increase overall return on investment (Mu et al., 2019). Synchronizing innovation strategies with market and societal needs allows providers to allocate resources more efficiently and offer services that are simultaneously higher quality, accessible and responsive. Despite growing recognition of its importance, understanding the impact of different

innovation strategies on performance in healthcare system remains limited (Lee, 2015). This study fills the gap by using a dual-method approach: initially, we conduct a bibliometric analysis to delineate significant research trends and themes; subsequently, a systematic review of the literature assesses the impact of innovation strategies on outcomes, in both public and private healthcare organizations.

The Bibliometric analysis provides a comprehensive overview of the academic landscape, showing frequently cited studies, prominent authors, and key topics in healthcare innovation (Perlich et al., 2018). The systematic literature review examines three fundamental dimensions: the influence of leadership on innovation (Cao & Chen, 2019), the effects of digital transformation and open innovation (Kumari et al., 2024), and the financial consequences of implementing innovation strategies in healthcare (Dąbrowski et al., 2025).

This study synthesizes awareness from 34 peer-reviewed articles to provide a comprehensive analysis of the influence of innovative strategies on healthcare business performance. The results aim to assist policymakers, healthcare business managers, and decision-makers in developing more effective and context-specific innovation frameworks for public and private organizations.

Theoretical background

The word "innovation" has become a buzzword in many fields, including healthcare. In an overarching literature review, there is no universally accepted definition, as various disciplines - such as economics, public health, geography and sociology - interpret the concept differently (Hauschildt et al., 2016).

While several attempts have been made to clearly define the innovation, Schumpeter was one of the pioneering economists who emphasized the essential function of innovation in economic environment, surround individual enterprises, entire economies, and the global market (Verspagen, 2005). He characterized innovation as any improvement in production techniques, creation of new products, changes in organizational structures, or entry into new markets. In addition, he introduced the notion of "creative destruction", emphasizing that inexhaustible innovation drives progress in capitalist economies (Schumpeter, 1934).

It is absolutely necessary to recognize that regardless of the definition, innovation is a vital catalyst for sustainable competitive advantage and long-term growth for companies, enabling them to adapt and thrive in fast evolving markets. The ability to innovate is increasingly influenced by the interaction between internal strategies and external governance mechanisms, which collectively dictate the ability of companies to achieve transformative outcomes (Nathan and Rosso, 2022).

Beyond this, in the healthcare sector, innovation improves the quality of services with an impact on the well-being of patients, while presenting persistent challenges for established healthcare providers and systems. At the same time, medical progress depends on new technologies (e.g. pharmaceuticals, implants and medical devices), procedures (e.g. innovative surgical techniques) and organizational models (e.g. palliative care as a contemporary treatment approach) (Flessa and Huebner, 2021). Therefore, understanding the innovation adoption process and implementing a systematic approach to innovation management in healthcare is imperative. The management framework must bound the entire process, from initial concept to implementation of new standards in diagnosis and treatment.

In addition, "**innovation strategy**" is characterized as a collection of perspectives and actions through which the organization uses innovation to generate value, establishing priorities amid innovation perspectives (Pisano, 2015). Innovation strategy encompasses the intentional

design and implementation of initiatives to promote innovation within an organization. This includes setting goals, allocating resources, and detailing processes to promote the development and integration of new concepts. Analyzing the literature we can find that an effective healthcare innovation strategy may include investing in research and development, establishing partnerships with technology companies, or fostering a culture that supports continuous improvement (Flessa and Huebner, 2021).

In an overarching literature review of **“Innovation performance”** we found it as an indicator for the ability of an organization to generate and execute new ideas, products, services, or processes that result in improved outcomes, competitive advantages and long-term presence. In healthcare businesses, it involves the effective implementation of innovative medical technologies, care pathways, or organizational strategies that improve patient care and operational efficiency. The relationship between innovation strategy and innovation performance is mandatory in both the public and private healthcare sectors.

Of particular relevance in recent research is the work of Nassani et al. (2023) which states that innovation performance in healthcare is deeply affected by elements such as innovation networks and the implementation of artificial intelligence, which collectively enhance digital innovation and optimize service delivery. An effectively designed innovation strategy can improve innovation performance by providing clear guidance and support for innovation efforts. For example, implementing electronic health records requires a strategic approach to overseeing the adoption process, training staff, and embedding the system into routine operations.

Evaluating the organization's **"healthcare performance"** can be based on several indicators, because performance is a many-faceted concept (Rauch et al., 2009). These indicators are usually categorized into two areas: non-financial (e.g., patient loyalty or organizational brand image) and financial (e.g., incomes or profitability) (Rauch et al., 2009; Sainaghi et al., 2017). It is plausible to assume that the primary goal of a hospital is to provide medical care and treatment to individuals in need of medical services; therefore, the basis for evaluating a hospital is generally patient outcomes or the quality of patient care. Non-financial indicators, such as patient satisfaction and clinical outcomes, are frequently used for this evaluation (Donabedian, 1988). At the same time, the financial aspects of a hospital's operations are crucial because the quality of provided medical services depends on its financial condition. A financially strong hospital generally provides superior or high quality medical services, thereby effectively fulfilling its mission of protecting patient care and public health.

Therefore, the relationship between innovation and performance management should be clearly defined for successful implementation. These strategies can lead to improved patient outcomes, streamlined workflows, and reduced costs. Kelly and Young (2017) examine how promoting innovation in healthcare, through the adoption and dissemination of new concepts and technologies, can lead to substantial improvements in patient care and network efficiency.

Perhaps unsurprisingly, the influence of innovation strategy on innovation performance in public versus private healthcare systems may differ due to variations in funding, organizational structure, and policy constraints (Mason and Araujo, 2021). Public healthcare organizations may face obstacles such as constrained budgets and bureaucratic impediments, which can hinder innovation initiatives. In contrast, private healthcare providers may have greater flexibility and resources to invest in innovative solutions, and in the same time they may have the pressure to prioritize profit-oriented initiatives. Understanding these dynamics is essential for conducting a systematic literature review on the influence of innovation strategy on business performance in these two sectors.

Methodology

This paper is based on the Bibliometric-Systematic Literature Review (B-SLR) structure as detailed by Marzi et al. (2024). The initial phase of the work is built on the four-stage bibliometric analysis described by Donthu et al. (2021a). This process involves defining the goal and aim of the study, choosing analytical techniques, collecting relevant data for the study, conducting the analysis, and summarizing the results.

This research aimed to have an overview of the scholars' publications and identify a relevant set of keywords to better understand the market evolution. Therefore, we conducted a literature review in February 2025 with a focus on innovation and performance in the healthcare business sector. In line with the B-SLR methodology, we established precise inclusion and exclusion criteria before starting the data collection process, thus ensuring a systematic and thorough approach to evaluating relevant scientific papers.

The first level of analysis is based on the bibliometric analysis, an efficient method for evaluating various statistical elements of research publications, such as citation trends. Bibliometric Analysis provides a comprehensive understanding of how research has progressed over the years in each field and helps identify new areas of investigation. This approach facilitates the statistical evaluation of published studies and is recognized as a suitable technique for examining large amounts of scientific papers (Donthu et al., 2021).

We know that bibliometric analysis is used by researchers for several purposes, such as mapping collaborative networks, identifying research trends, and examining publication data to help improve scholarly contributions. In this study, we focus our bibliometric analysis on identifying research trends associated with keywords relevant to innovation and performance in healthcare, followed by an in-depth exploration of the main concepts of innovation in healthcare business areas. Subsequently, the relevant data are used for the next phase of analysis, focusing on two aspects of bibliometric evaluation: performance assessment and scientific mapping. The process involves the use of performance indicators and visualization of bibliographic connection using VOSviewer version 1.6.20 (Van Eck and Waltman, 2017).

The second level of analysis is an in-depth look of a specific research area while addressing key research questions, using a Systematic Literature Review (SLR) (Agrawal et al., 2023). This methodical strategy ensures comprehensive collection of all relevant articles that meet the established inclusion and exclusion criteria, facilitating a detailed analysis of the research topic and adheres to a methodical and clear approach (Mengist et al., 2020). We opted for systematic literature reviews to reduce errors during article selection, pre-selection, and synthesis.

Selection of database

In order to gather the necessary data for our study, a bibliometric analysis was conducted using the Scopus database. The selection of Scopus was deliberate, given that it represents the most extensive database of peer-reviewed abstracts and citations across scientific journals, books, and conference proceedings. Furthermore, Scopus database offers a comprehensive summary of worldwide and cross-disciplinary scientific knowledge. The process of selecting documents for this study was carried out through a series of systematic steps, as presented in Fig. 1.

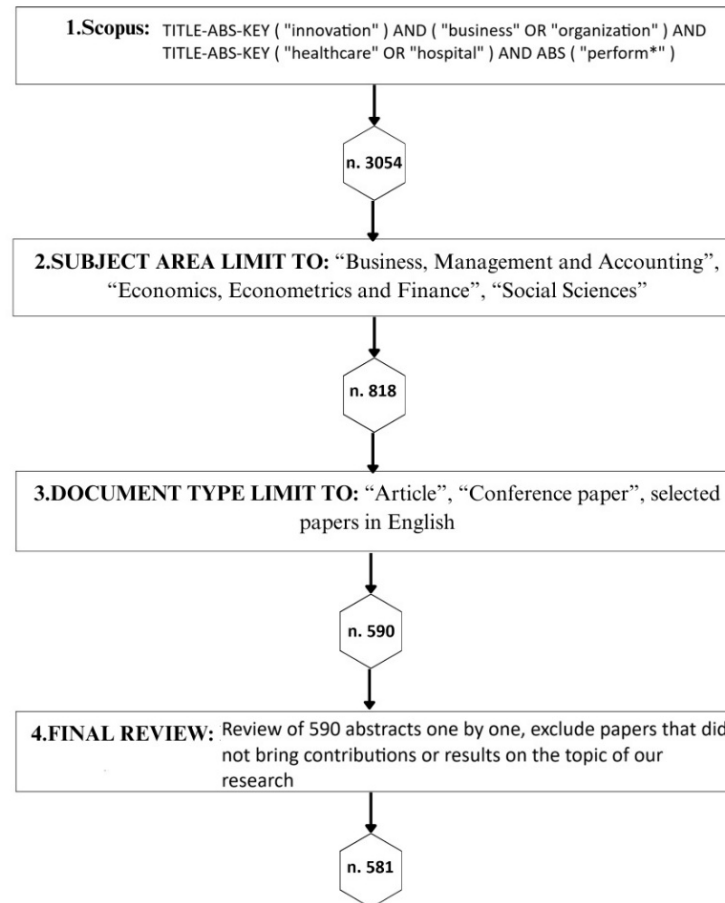


Figure 1. Literature search process (February 2025)

Source: Authors' own research.

As mentioned, for the second part of the study, based on bibliometric analysis, we selected three main innovation domains to focus on: innovation performance, innovation management, and innovation strategy. This process aims to gain insight into the methodologies used in this field and the associated theoretical foundations. An important goal is to identify gaps in existing studies and reveal opportunities for further investigation.

Therefore, to conduct a systematic literature review for our study we start to investigate the focus on innovation research and uncover the intrinsic relationship between innovation and performance in the healthcare business sector. A thorough literature review should follow the steps: i) developing a literature search strategy; ii) establishing inclusion and exclusion criteria; and iii) executing a research selection and evaluation process (Srivastava, 2007).

The data collection procedure was carried out using the PRISMA methodology, as illustrated in Fig. 2. This figure depicts the conceptual framework for performing a systematic literature review and selecting pertinent scholarly articles.

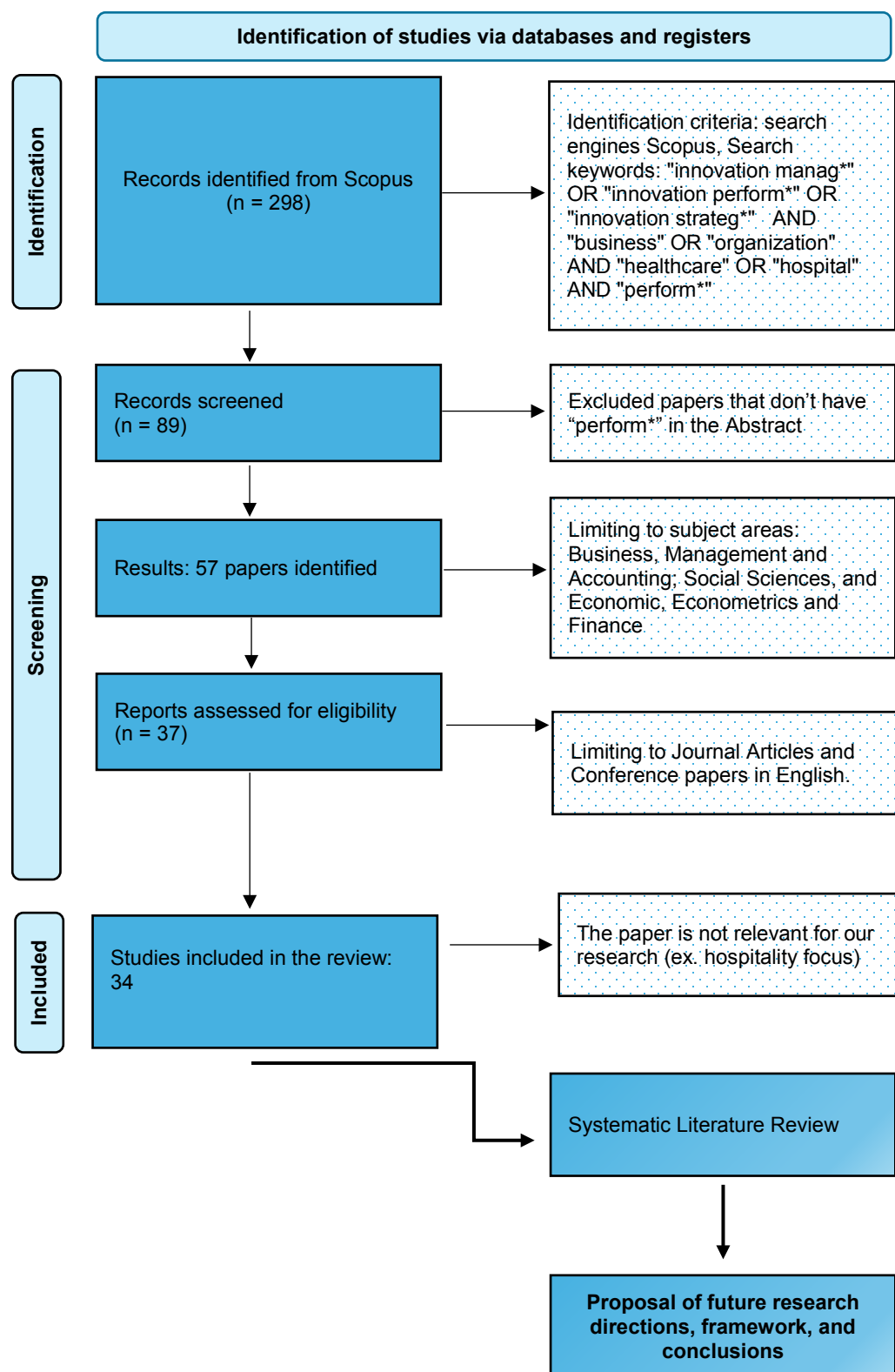


Figure 2. Prisma flow diagram

Source: Authors' own research.

Results and discussions

Results and discussions considering Bibliometric analysis

A significant evolution in paper numbers, which accounts for nearly half of the collection of articles that were examined (581 articles in total), has been observed over the past four years. Figure 3 shows the trend of publication over the years, which points out an increasing trajectory in research on innovation in the healthcare sector.

This wave of publications can be attributed to the growing national and international significance of innovation in the medical field, which has been influenced by the COVID-19 pandemic as well as the fast development of digitalization and artificial intelligence and the focus on population well-being.

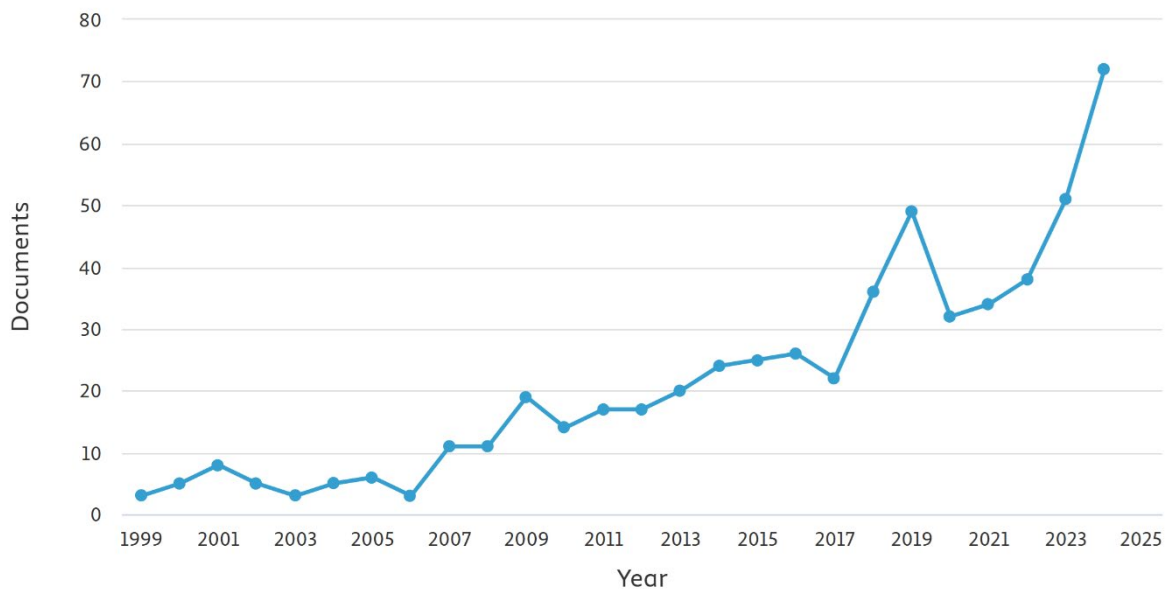


Figure 3. Document evolution by year

Source: Authors' own research.

The specific software used for this analyze was version 1.6.20 of the VOSviewer, as described by Van Eck and Waltman (2017). Using this instrument, we performed a bibliometric network analysis to create a comprehensive map of the final sample, consisting of 581 selected articles, enabling the investigation of correlations between authors and key terms.

Figure 4 illustrates the co-occurrence of keywords about innovation and healthcare performance, featuring two distinct clusters indicated by colors:

- Green Cluster (Innovation and Performance in Healthcare Businesses)
- Red Cluster (Traditional Healthcare and Management)

Each cluster includes essential concepts that make clear the interaction among healthcare systems, innovation, and business performance.

Source: Authors' own research results using VOSviewer.

Cluster	1. Traditional Healthcare and Management (Red Cluster)	2. Innovation and Performance in Healthcare Business (Green Cluster)
Main Keywords:	Humans, organization, total quality management, health service, leadership, education, motivation, procedures, efficiency, health care delivery.	Innovation, performance, innovation management, technology, knowledge management, artificial intelligence, open innovation, technological innovation, sustainable development.
Interpretation:	• Leadership and health service management are crucial for driving innovation adoption. • Total quality management and efficiency highlight the importance of performance evaluation and process improvement. • Education, training, and motivation indicate the role of human resources development in adapting to new healthcare technologies.	• Technological innovation, and artificial intelligence emphasize the importance of innovation strategy in healthcare • Innovation impacts financial sustainability, efficiency, and market positioning in healthcare. • Information and knowledge management confirm the importance of innovation management in data-driven decision-making. • Open innovation suggest the importance of collaboration across healthcare institutions.

Source: Authors' own research result based on VOSviewer clustering.

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assurance, and leadership. This means that these factors are essential for guaranteeing efficient and high-quality service delivery; however, they may present obstacles to the integration of innovation due to rigid regulations, structures and established workflows.

Technological advancements, economic factors, and the strategic application of innovation in healthcare organizations are the spotlights on the **green cluster**. It marks how healthcare enterprises can enhance performance via digital transformation and strategic innovation management.

Therefore, reconciling traditional healthcare frameworks with the adoption of innovation is very important for improving medical business performance. Specifically, healthcare entities, both public and private, can augment service delivery, optimize resources, and enhance overall business performance by incorporating innovative strategies.

Results and discussions considering SLR analysis

Based on the findings from the bibliometric analysis, we conducted our systematic literature review on the three innovation topics in healthcare: innovation strategy, innovation performance, and innovation management.

First of all, we started with a characterization of the sample to quantitatively analyze the selected articles and identify patterns and trends within the temporal framework. We selected 34 articles, as indicated in Fig. 2. Table 2 centralized the findings regarding the quantity of articles, publication timeframe, geographical distribution of the examined companies, and the methodological strategies utilized in the research.

Year	Number of Articles	Geographic Location						Analytical Approach			Type of study	
		Asia	Europe	America	Oceania	Africa	Mixed	Quantitative	Qualitative	Mixed	Empirical	Conceptual
2009	1		1						1		1	
2014	2	1	1					1	1		1	1
2017	1		1					1			1	
2018	2	2						1	1		1	1
2019	7	1	6						5	2	4	3
2021	2	1		1				1	1		1	1
2022	4	1		2			1	2	2		2	2
2023	6	2	1	1			2	1	5		3	3
2024	9	1	4	2	1		1	1	5	3	7	2
Total	34	9	14	6	1	0	4	8	21	5	21	13

Table 2. Location and Methodologies

Source: Authors' own research.

Moving on, a scan of the publication timeline indicated a significant increase in research papers on innovation subjects since 2019, with 82% of the publications published post-pandemic (Fig. 5). Europe exhibits greater focus on this topic, comprising 41% of the analyzed publications.

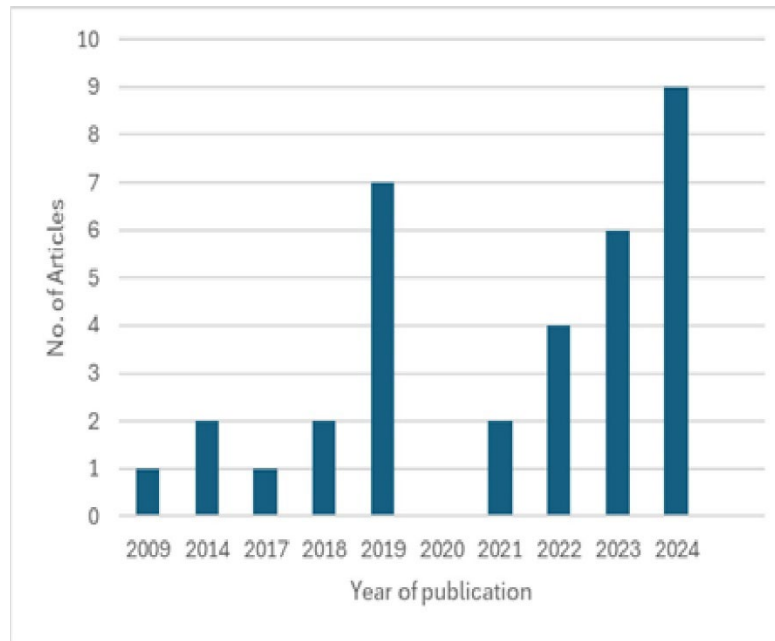


Figure 5: Number of articles per year

Source: Authors' own research.

The findings reveal three primary approaches regarding the dimensions of the healthcare sector in the 34 selected articles.

The first approach, illustrated in Table 3, concentrates on the public healthcare sector (35% of the analyzed papers), with academic medical centers and hospitals as the primary topics of the research. The scholars research shows the influence of the innovation ecosystem and innovation management on healthcare business performance in over 60% of the papers in this cluster.

Authors	Research focus area						Innovation focus				
	healthcare sector	hospitals	non-profit healthcare	public sector	academic medical centers	various industries	innovation ecosystem	innovation management	innovation performance	innovation strategies	open innovation
Biancone et al. (2019)	x										x
Ekingen et al. (2018)		x							x		
Ganbold et al. (2021)		x							x		
Gonçalves et al. (2023)			x					x			
Huynh (2024)					x		x				
Justino et al. (2019)	x									x	x
Manent et al. (2024)					x		x				
Meer et al. (2023)					x			x			

Authors	Research focus area						Innovation focus				
	healthcare sector	hospitals	non-profit healthcare	public sector	academic medical centers	various industries	innovation ecosystem	innovation management	innovation performance	innovation strategies	open innovation
Radaelli et al. (2017)		X					X	X			
Salge & Vera (2009)		X						X			
Sánchez-Carreira et al. (2019)						X			X		
Van Lamoen et al. (2024)				X			X				

Table 3. Healthcare public sector focus area research

Source: Authors' own research.

Looking at the second approach which refers to the group of private healthcare enterprises, of which 26% analyzed papers were included (Table 4). The research focused on the healthcare sector in general, followed by healthcare SMEs and a mix of industries that included some healthcare entities. The main areas of innovation focus on innovation performance (44%) and the relationship between quality and innovation (33%).

Authors	Research focus area					Innovation focus				
	healthcare sector	hospitals	literature	SMEs healthcare	various industries	innovation ecosystem	innovation management	innovation performance	open innovation	quality and innovation
Katz-Navon et al. (2024)					X					X
Khan et al. (2022)				X				X	X	X
Kim & Kim (2018)				X				X	X	
Ozor et al. (2024)	X					X				
Pak et al. (2023)	X							X		
Quinhoes et al. (2024)			X				X			
Shen et al. (2024)					X		X			
Tonjang & Thawesaengskulthai (2024)		X								X
Xiao et al. (2023)	X							X		

Table 4. Healthcare privat sector focus area research

Source: Authors' own research.

Moving further, the final cluster offers a combination of private and public research, predominantly addressing healthcare in general, with a broad perspective on innovation: innovation performance, open innovation, and the emphasis on establishing an innovation ecosystem (Table 5).

Authors	Research focus area		Innovation focus			
	healthcare sector	hospitals	innovation ecosystem	innovation management	innovation performance	open innovation
Christopher et al. (2022)		x			x	
Dehe et al. (2024)	x					x
Labitzke et al. (2014)		x		x		
Mezher & Sajid (2019)	x		x			
Ren & Shen (2023)	x				x	
Wasilewski & Rohde (2021)	x				x	

Table 5: Healthcare public and private sector focus area research

Source: Authors' own research

In order to make a more suitable analysis for future research, looking at systematic literature reviews for these 34 articles, we centralized findings in some important themes and perspectives.

As such we can say with a fair amount of confidence that Innovation Ecosystems, Open Innovation and Cross-Sector Collaboration is the central focus. Considering these topics, public health organizations face difficulties in synchronizing innovation initiatives with startups, requiring flexible co-creation strategies (Manent et al., 2024). On the other hand, cross-sector collaboration, such as partnerships between universities, hospitals, and diverse industries, could significantly improve innovation in public health services (Huynh, 2024). Open innovation serves as a critical catalyst for digital health strategies, bordering the identification, development, and evaluation of opportunities (Quinhoes et al., 2024). Private health networks and collaborative events facilitate the diffusion of innovation (Ozor et al., 2024) and benchmarking and knowledge-sharing platforms are good solutions for promoting innovation in healthcare infrastructure (Dehe et al., 2024).

Looking at Innovation Management and Leadership, authors consider that leadership is crucial in promoting innovation, with service-based leadership contributing to strategic vision and innovation outcomes (Ren & Shen, 2023). On the other hand, lean management and problem solving exert contradictory influences on innovation, requiring a balance between operational efficiency and creativity (Katz-Navon et al., 2024). A controversial topic is that CEOs and leaders with PhDs are associated with increased innovation spending in private enterprises (Shen et al., 2024).

The third area is focused on Financial Results and Corporate Performance, considering that the representation of women in C-suite roles within hospitals demonstrates similar business performance to that of male-dominated leadership, yet underscores ongoing gender disparities (Christopher et al., 2022). Public procurement policies affect regional innovation development, with need to improved coordination between supply and demand-side policies (Sánchez-Carreira

et al., 2019). However, economic modeling and health technology assessments can distinguish cost-effective innovations from non-viable alternatives (Grutters et al., 2019).

Finally, our research highlights sectoral disparities: public versus private healthcare. The public sector faces challenges due to strict regulations, slow adoption of innovations, and hierarchical decision-making (Mezher & Sajid, 2019). Meanwhile, the advantages of private healthcare stem from adaptable strategies, increased investment in research and development, and a competitive drive for innovation-driven performance (Khan et al., 2022). Thus, both sectors are increasingly placing sustainability at the forefront of their innovation strategies, integrating economic, environmental, and social dimensions (Tonjang & Thawesaengskulthai, 2024).

Conclusion

First of all, this systematic literature review (SLR) indicates that research on innovation management, innovation performance and innovation strategy in healthcare has grown significantly, especially since 2019. This growth reflects for both public and private healthcare systems the growing demand for efficiency, digital transformation and patient-centered care.

Looking closer, advances in technological innovation, telemedicine artificial intelligence (AI) and knowledge management have impacted the need for strategic innovation methodologies. Healthcare systems are increasingly under pressure from an ageing population, escalating costs and global health crises such as COVID-19, requiring them to adapt and implement innovative solutions to ensure long-term sustainability and resilience. There is therefore a growing focus on innovation capabilities as a key aspect of competitive advantage in the healthcare sector, enabling organizations to improve service quality, operational efficiency and patient results. Furthermore, innovation plays a crucial role in impacting economic and social well-being, facilitating sustainable healthcare frameworks, reducing costs and increasing access to healthcare services.

This systematic review of the literature highlights the critical importance of innovation strategy in influencing healthcare business performance, both in public and private healthcare systems. Giving that resistance to change, as indicated by the red cluster in the co-occurrence analysis (Fig. 4), represents a considerable challenge, underscoring the need for strategic leadership and focused training programs to enable seamless integration of innovation. The results highlight that healthcare innovation transcends technology, requiring organizational change, leadership commitment, and workforce adaptation. We can observe that the performance gap between public and private healthcare systems highlights divergent paths to innovation adoption. As such, public healthcare organizations frequently face regulatory constraints and bureaucratic hurdles that can hinder fast innovation. In contrast, private healthcare providers, driven by market competition, exhibit greater adaptability in incorporating emerging technologies and business models. Variations in funding frameworks and investment approaches also affect the speed and scalability of innovation adoption in these sectors.

Thus, healthcare organizations need to adopt comprehensive innovation strategies to ensure sustained growth and improved delivery of healthcare. Measuring innovation performance through patient outcomes, efficiency improvements, and cost reductions is essential to determine the tangible benefits of innovation. We can observe that open innovation, interdisciplinary collaboration, and sustainable development are also essential to drive progress and compliance with ethical, economic, and environmental standards.

In addition, improving healthcare business performance requires an effectively organized innovation strategy that connects technological advances with practical applications. By

overcoming barriers to change and leveraging digital transformation, healthcare organizations, whether public or private, can drive sustainable progress, ensuring higher quality care, greater accessibility, and lasting industry resilience. Essentially, healthcare innovation performance reflects an organization's ability to successfully implement new and effective solutions, while innovation strategy serves as a structured framework that guides these efforts. The link between the two is fundamental, as a well-defined strategy provides the foundation for improving innovation performance. This, in turn, drives improvements in healthcare delivery, operational efficiency, and patient outcomes, ensuring sustainable progress in the sector.

Given these aspects, it is likely that any further research should investigate the influence of different innovation strategies on business performance in public versus private healthcare settings, considering elements such as regulatory frameworks, organizational culture, and financial investment in innovation.

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