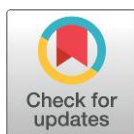


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The construction of the concept of information for innovation: approaches based on a systematic literature review

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ABSTRACT

Introduction: in the face of rapid technological, economic, and social changes, innovation has become crucial for organizational competitiveness and sustainability. Information plays a strategic role in enabling innovation by supporting decision-making and fostering creative solutions. **Objective:** this study aims to develop a robust definition of "information for innovation," identifying its key characteristics and clarifying its role in organizational innovation processes. **Methodology:** a Systematic Literature Review (SLR) was conducted using six major databases in Information Science. The search covered publications from 2014 to 2023 in Portuguese and English, resulting in 1,334 initial records. After applying inclusion and exclusion criteria, 57 relevant articles were analyzed in-depth. **Results:** the analysis identified recurring themes such as products, processes, knowledge, information sources, competitiveness, patents, and customer insights. Information for innovation was characterized as dynamic, complex, relevant, timely, high-quality, and beneficial. It involves both internal and external sources, including employees, R&D, suppliers, customers, universities, patents, and market trends. Effective management and integration of these diverse information sources are crucial to drive innovation and gain competitive advantage. **Conclusion:** the study proposes that information for innovation is a strategic resource that supports all stages of the innovation process, from identifying opportunities to implementing solutions. The concept developed contributes to the theoretical framework of Information Science and offers practical insights for organizations aiming to leverage information to foster innovation and sustainable growth.

KEYWORDS:

Information for innovation. Organizational innovation. Innovation strategy. Innovation typology. Terminology.

A construção do conceito de informação para inovação: abordagens a partir de uma revisão sistemática de literatura

RESUMO

Introdução: diante das rápidas transformações tecnológicas, econômicas e sociais, a inovação tornou-se essencial para a competitividade e sustentabilidade das organizações. A informação exerce um papel estratégico ao viabilizar a inovação, apoiando a tomada

de decisão e estimulando soluções criativas. **Objetivo:** o estudo tem como objetivo desenvolver uma definição robusta de "informação para inovação", identificando suas principais características e esclarecendo seu papel nos processos de inovação organizacional. **Metodologia:** foi realizada uma Revisão Sistemática da Literatura (RSL) em seis bases de dados relevantes da Ciência da Informação. A pesquisa abrangeu publicações de 2014 a 2023, em português e inglês, resultando em 1.334 registros iniciais. Após aplicação dos critérios de inclusão e exclusão, 57 artigos relevantes foram analisados em profundidade. **Resultados:** a análise identificou temas recorrentes como produtos, processos, conhecimento, fontes de informação, competitividade, patentes e percepção dos clientes. A informação para inovação foi caracterizada como dinâmica, complexa, relevante, oportuna, de alta qualidade e benefício. Envolve fontes internas e externas, incluindo colaboradores, P&D, fornecedores, clientes, universidades, patentes e tendências de mercado. A gestão eficaz e a integração dessas diversas fontes de informação são cruciais para impulsionar a inovação e obter vantagem competitiva. **Conclusão:** o estudo propõe que a informação para inovação é um recurso estratégico que apoia todas as etapas do processo de inovação, desde a identificação de oportunidades até a implementação de soluções. O conceito desenvolvido contribui para o arcabouço teórico da Ciência da Informação e oferece subsídios práticos para organizações que buscam utilizar a informação como fator de inovação e crescimento sustentável.

PALAVRAS-CHAVE

Informação para inovação. Inovação organizacional. Estratégia de inovação. Tipologia de inovação. Terminologia.

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1 INTRODUCTION

The rapid technological, social, and economic changes we are currently experiencing make innovation essential for organizations to remain competitive and sustainable. In this scenario, information plays a strategic role, providing the necessary foundation for identifying opportunities, solving problems, and developing creative solutions. The relationship between information and innovation is complex and multifaceted, ranging from the use of internal and external data to the creation of new knowledge that leads to significant advances in products, processes, and services.

Despite the growing importance of the topic, there is a gap in the literature regarding the definition and characterization of the concept of information for innovation. Although the term is widely used, there is a lack of a systematic approach to understanding its dimensions, characteristics, and role in the process of developing innovative solutions. Therefore, an effort is needed to consolidate the understanding of this type of information, which is essential for organizations to move from operational levels to more advanced stages of innovative maturity.

Given this scenario, this study aims to develop a systematic concept of information for innovation, using a systematic literature review as a methodology. For this purpose, articles published between 2014 and 2023, extracted from relevant databases in the field of information science, have been analyzed. Based on the results, we try not only to propose a clear definition, but also to identify the main characteristics that make information a transformative element in the innovative context.

2 THEORETICAL FRAMEWORK

The term innovation comes from the Latin *innovatio*, which refers to the idea of renewing or introducing something new. Derived from *novus* (new) and the prefix *in-* (the idea of within or beginning), the word has been used since before the Middle Ages, particularly to describe changes in social practices. During this period, it was associated with transformations in areas such as religion, law, and politics. It appears in the writings of Apuleius¹ and Tertullian² at the end of the 2nd century AD and is often found in works of the Catholic Church, indicating its importance in theological discussions. It is primarily associated with the idea of renewal, which is a central theme in many religious contexts because it emphasizes transformative aspects that can lead to personal renewal. It suggests that innovation is not just about new ideas or technologies but also about deeper changes in human experience and belief systems (Ramsauer, 1997).

For example, Saint Augustine (354 AD-430 AD) used the term in his texts³, as in: [...] and with that sacrosanct bath begins the innovation of the new man [...] although the outer man is corrupted, the inner man is nevertheless renewed (paragraph 80 of section 35)⁴.

According to Benoît (2008), the evolution of the concept of innovation is marked by

¹ Lucius Apuleius (125 AD-170 AD) was a Roman writer, philosopher, and orator, known for his work *The Metamorphoses* (also called *The Golden Ass*), one of the most important and influential works of Roman literature.

² Tertullian (Quintus Septimius Florens Tertullianus) was a Christian writer and theologian, considered one of the first great thinkers of Christianity and one of the most important theologians of the second century. Tertullian is often called the Father of the Latin Church, as he was the first Christian author to write primarily in Latin rather than Greek.

³ AGOSTINHO, Aureli. *De Moribus Ecclesiae Catholicae et de Moribus Manichaeorum*. Hippo: 391-394. Available at: <https://www.augustinus.it/latino/costumi/index2.htm>.

⁴ "35. 80. [...] Et illo sacrosancto lavacro inchoatur innovatio novi hominis [...] Etsi exterior homo noster corrumpitur, sed interior renovatur

several significant historical periods, each contributing to its current understanding. The first is the Middle Ages (~ 5th to 15th centuries), when the concept was mainly associated with the idea of renewal and novelty. During this period, innovation was not yet a distinct category but was associated with the introduction of new ideas or practices that deviated from established norms. This period set the stage for how innovation would be perceived in later contexts.

The second, encompassing the Renaissance (~14th to 16th centuries) and the Enlightenment (~17th to 18th centuries), brought significant advances in various fields, including science, art, and philosophy. During this period, the concept of human creativity and intellectual progress was embraced. The concept of invention became more prominent, emphasizing the role of individual creativity in generating new ideas and solutions.

The Industrial Revolution (~18th to 19th centuries), the third period, marked a transformative moment in the history of innovation. Characterized by rapid technological advances and mass production, this era saw innovation closely linked to economic growth and industrial development. The focus shifted to the practical applications of inventions, leading to a modern understanding of innovation as one of the main drivers of economic and social change.

Finally, in the 20th century, the concept of innovation was broadened to include insights from sociology and economics. Innovation began to be seen not only as a technological phenomenon but also as a social process involving collaboration, adaptation, and the diffusion of ideas. This contemporary understanding recognizes the complexity of innovation, encompassing different forms such as social, organizational, and technological innovation.

Economist Joseph Schumpeter (1883-1950) is widely regarded as the leading theorist of innovation. He introduced the concept of creative destruction in *Capitalism, Socialism, and Democracy*⁵ (1942) to describe how innovation drives economic growth while replacing old practices and technologies. It refers to improvements made to existing products, manufacturing processes, organizational procedures, and other factors intending to create opportunities.

Recent use of the term has broadened and refined it, particularly in the context of technological, organizational, and social advances. It is no longer seen simply as the creation of something new but now includes the practical application of ideas to create value in products, processes, business models, and society. According to the Oslo Manual (OECD, 1997, p. 56), technological innovation refers to

process and the introduction of new or significantly improved production methods, including product delivery methods. Such methods may involve changes in equipment or production organization, or a combination of such changes, and may result from the application of new knowledge. The methods may be designed to produce or deliver technologically new or improved products that cannot be produced or delivered using conventional production methods, or to increase the efficiency of the production or delivery of existing products.

The Glossary of Innovation, Organizational Knowledge, and Scientific and Technological Information by Alvares, Carvalho Segundo, and Souza (2024) defines innovation as the

The process of creating, developing, and implementing new ideas, products, services, or processes that result in significant improvements or technological advances. This process includes opportunity identification, concept generation, experimentation, and commercialization with the goal of increasing the efficiency, competitiveness, and sustainability of organizations. Innovation can be incremental, with continuous improvements, or disruptive, radically changing markets and industries. It is fundamental to economic growth and social development, driving technological

⁵ Schumpeter, Joseph. *Capitalism, Socialism, and Democracy*. Paris: Payot, 1942.

progress, job creation, and improved quality of life. Research and Development (R&D). (p. 117).

Innovation has been addressed by various authors from different perspectives, such as Clayton Christensen (1997), who introduced the concept of disruptive innovation, highlighting how simple and accessible solutions can replace established market leaders, or Eric Ries (2011) with his Lean Startup methodology, proposing an agile and continuous approach to rapidly develop and test ideas. Geoffrey Moore (1999) introduced the concept of crossing the chasm, explaining how technological innovations must overcome challenges to reach the mass market. Guided by these perspectives, the glossary by Alvares, Carvalho Segundo, and Souza (2024) provides the following definitions:

DISRUPTIVE INNOVATION. A concept that describes the process by which a new technology or business model that is initially simple or affordable eventually displaces established technologies or models. This type of innovation typically begins in underserved niche markets by offering cheaper, more convenient, or products that are more accessible or services. Over time, the quality, and functionality of disruptive offerings improve, attracting a larger customer base and eventually replacing the dominant solutions. Disruptive innovations transform industries, create new markets, and can lead to the obsolescence of traditional market leaders. (p. 115).

CONTINUOUS INNOVATION. The process of implementing continuous improvements and updates to products, services, processes, and practices within an organization. Rather than focusing solely on radical or transformative innovations, continuous innovation involves incremental adjustments and incremental improvements that maintain competitiveness and efficiency. This approach allows organizations to respond quickly to changes in market demands and operating conditions, fostering a culture of adaptation and growth. Continuous innovation contributes significantly to maintaining long-term relevance and effectiveness by ensuring that the organization evolves with the needs and expectations of its stakeholders. (p. 115).

TECHNOLOGICAL INNOVATION. The process of introducing new technologies or improving existing ones to meet emerging needs or improve efficiency in various areas. It may involve the development of new products, the implementation of new technological processes, or the combination of existing technologies in innovative ways. In addition to creating new products and services, technological innovation can transform business models and operational processes to drive value creation and adapt to market changes. This type of innovation often leads to advances in the quality, functionality, and accessibility of available technological solutions. (p. 117).

Collaboration and sustainability are also fundamental pillars of contemporary innovation. Henry Chesbrough (2010) popularized the concept of open innovation, which advocates value creation through partnerships between organizations. Navi Radjou (2012) introduced frugal innovation, which aims to develop simple, accessible, and sustainable solutions. From these perspectives, the glossary by Alvares, Carvalho Segundo, and Souza (2024) provides the following definitions:

OPEN INNOVATION. An innovation management model that promotes collaboration among companies, universities, research institutes, and external individuals to accelerate the development of new technologies, products, and services. Instead of relying solely on internal resources, organizations leverage external ideas and pathways to expand their innovation potential. This model encourages the sharing of knowledge and technology, reduces costs and development time, and increases the diversity of solutions. Open innovation facilitates technology transfer and the creation of collaborative networks, thereby strengthening the innovation capacity and competitiveness of companies. (p. 115).

FRUGAL INNOVATION. The process of developing simplified and accessible products, services, or solutions using limited resources to meet the needs of consumers with economic constraints. This type of innovation focuses on essential features and

eliminates unnecessary complexity, and is often targeted at emerging markets or low-income communities. Frugal innovation promotes sustainability and inclusion by providing socially beneficial, economically viable solutions. Sustainability. Inclusive innovation. Accessible solutions. Sustainable development. (p. 116).

Other authors link innovation to strategic and educational aspects. Peter Drucker (1985) defined innovation as the entrepreneur's tool for creating radical change and seizing opportunities. O'Reilly III and Tushman (2004) reinforce the concept of ambidexterity, which seeks to balance new ideas with operational efficiency. Cukier, Chavoushi, and Mo (2023) highlight social innovation for inclusion as an essential element in preparing citizens for an ever-changing world. Guided by these approaches, the glossary by Alvares, Carvalho Segundo and Souza (2024) provides the following definition:

RADICAL INNOVATION. The introduction of entirely new and disruptive products, services, or processes that transform existing markets or create new ones. These innovations often involve advanced technologies or new business models that offer significantly different and superior solutions to those previously available. Radical innovations are characterized by high risk and high potential reward, require significant investments in research and development (R&D), and often face initial resistance. Companies that successfully implement radical innovations can gain a significant competitive advantage, revolutionize industries, and redefine market standards. (p. 116).

INCREMENTAL INNOVATION. The process of making continuous, incremental improvements to existing products, services, or processes. Rather than introducing radical changes, incremental innovation focuses on small adjustments and refinements that accumulate over time to create significant value. This approach allows companies to remain competitive and relevant in the marketplace by responding quickly to customer needs and feedback. Incremental innovation is characterized by lower risk and investment than disruptive innovation and is essential for operational optimization and efficiency. (p. 116).

INCLUSIVE INNOVATION. The process of developing and implementing new solutions and practices that consider and meet the needs of all segments of society, especially historically marginalized or disadvantaged groups. It involves the creation of products, services, and technologies that are accessible, equitable, and promote the active participation of diverse groups. Inclusive innovation seeks to reduce inequalities, promote equity, and ensure that the benefits of innovation are widely shared. This approach not only enriches the diversity of ideas and perspectives but also promotes a more equitable and sustainable environment and drives social and economic growth for all. (p. 116).

SOCIAL INNOVATION. The development and implementation of new solutions, practices, or approaches aimed at addressing and solving social and societal challenges. These innovations may include new business models, processes, or products that promote social inclusion, improve quality of life, and have a positive impact on issues such as poverty, health, education, and the environment. Social innovation seeks not only to create economic value but also to contribute to collective well-being and social sustainability. It often involves collaboration between different sectors, such as government, the private sector, and nongovernmental organizations, to create significant and lasting change. (p. 117).

These different approaches show that innovation is a complex and multifaceted phenomenon that is essential for economic, social, and environmental progress. At its core is information, a fundamental pillar for the creation and application of new ideas. Information leads to the understanding of problems and the identification of opportunities. It is the basis for identifying causes, exploring alternatives, and supporting the development of creative solutions, enabling a profound understanding of issues and the creation of effective responses.

Information that supports innovation is the foundation for new ideas and change; it drives the development of creative solutions. However, there remains a significant gap in defining a concept for this type of transformative information, as well as defining its key

characteristics. Information for innovation can be expressed in various ways to highlight the potential for transformation and creativity that information suitable for invention can generate, including information to support innovation, information to drive innovation, strategic information for innovation, and disruptive information, among others.

According to Davis, Miller, and Russel (2008), organizational information can be found at the following levels: (a) operational or performance, (b) consolidation, (c) integration, (d) optimization, and (e) innovation. The authors also point out that 70% of organizations are at the second level, which means that most of them operate at the departmental level, far from the last level of sustainable quality development and permanent change, which represents the innovation level. The transition to the innovation level requires maturity, where information ceases to be an operational resource and becomes part of the organizational strategy.

Rogers (1983) characterizes innovation as "an idea, practice, or object that is perceived as new by an individual or other adopting unit"[1] (p.1). The author focuses not only on the characteristics of innovations but also on how they are diffused and adopted by different social groups. In particular, he emphasizes the role of communication and information in the diffusion of innovation, in the way innovative ideas are shared.

Christensen (1997) emphasizes that companies that fail to innovate often lack adequate access to information about market needs and changes. He argues that disruptive innovation occurs when new information challenges established practices and creates solutions that serve a different or underserved audience. In this sense, an organization's ability to capture and process this information is critical to its long-term survival and growth.

Drucker (1985) emphasized that innovation is not only a matter of creativity, but also of how organizations process and apply information. He suggests that the ability to innovate is closely related to how organizations gather and use information to identify opportunities for change and improvement.

Finally, innovation, in its many aspects and dimensions, is essential to economic, social, and technological progress. Throughout history, the concept of innovation has evolved to encompass not only the creation of something new, but also the practical application of ideas to create value in different contexts. In this scenario, information plays a central role as the foundation that supports the creation and implementation of innovative solutions. By enabling an in-depth understanding of problems and the identification of opportunities, information becomes a unique strategic resource for the development of disruptive and incremental ideas. However, the transition from the organizational level to the innovation stage requires a significant maturation, in which information moves from being merely operational to being integrated into a strategy of continuous and transformative change.

3 METHODOLOGICAL PROCEDURES

To define the concept of information for innovation, we chose to conduct a systematic literature review (SLR), considering the main databases in information science. According to Okoli (2015, p. 3), SLR is a rigorous methodology originally developed to conduct meta-analyses in the health sciences; it has since been extended to the social sciences and other research fields, and has been expanded to include other synthesis approaches, including qualitative ones. A systematic review is not simply a review of the literature in the sense of a collection and discussion of relevant literature; it is a rigorous scientific methodology for answering questions with authority when there is a sufficient amount of existing research on a topic synthesizing the existing research.

With the aim of systematically reviewing the available literature, RSL, according to Campos, Caetano and Gomes (2023, p. 146), is "research that reviews other research using a systematic and rigorous system or protocol." This review, according to the authors, aims to

answer the research question based on primary studies. This purpose is consistent with this research, which has as its research problem the construction of information for innovation concept.

Information about the RSL synthesis protocol used in this study is shown in the chart below.

Chart 1. RSL protocol: summary

Objective	Identify the concept of information for innovation.
Database	SciELO; Brapci; Lisa; Academic Search Premier; Scopus; e Google Scholar.
Period	2014 to 2023.
Search criteria	Peer-reviewed articles; articles in Portuguese and English; full texts.
Inclusion criteria	Articles introducing the concept of information for innovation.
Keywords	Information AND innovation; information AND innovation;

Source: developed by the authors

Chart 2 shows the search strategies, and the number of records retrieved.

Chart 2. Search strategies for information for innovation

Base	Search strategy	Total
SciELO	Search: (Information OR Information) AND (innovation OR innovation)	1.661
	Search: (Concept OR Definition OR Meaning OR Term* OR Concept* OR Definition*)	91.023
	Search: (S1 AND S2)	267
Brapci	Search: (Information AND Innovation) OR (information AND innovation) AND Delimitation: (2014-2023)	275
Lisa	Search: IT (information* AND innovation*) AND Constraints - Language: English, Portuguese, Spanish	216
Academic Search Premier	Search: IT (Information AND Innovation) AND Limiters – Publication; Date: 2014-2023; Document type: Article; Language: English, Portuguese. Spanish	245
Scopus	Search: (TITLE (information AND innovation)) AND PUBYEAR > 2013 AND PUBYEAR < 2024 AND (LIMIT-TO (LANGUAGE, "English") OR LIMIT-TO (LANGUAGE, "Portuguese") OR LIMIT-TO (LANGUAGE, "Spanish"))	1.287
	Search: TITLE-ABS-KEY (Concept* OR Definition* OR Term*) AND PUBYEAR > 2013 AND PUBYEAR < 2024 AND (LIMIT-TO (LANGUAGE, "English") OR LIMIT-TO (LANGUAGE, "Portuguese") OR LIMIT-TO (LANGUAGE, "Spanish"))	439.129
	Search: (S1 AND S2)	276
Scholar	Search: allintitle: "information for innovation" OR "information for innovation"	55
TOTAL		1.334

Source: developed by the authors

As shown in Chart 2, the terms were searched in Portuguese and English from 2013 to 2023, using the Boolean operators AND and OR and the truncation technique (*), to increase the scope of the results obtained.

Thus, the corpus for analysis regarding the definition of the concept of information for

innovation consisted of 1,334 articles, whose data were exported to a format suitable for the Rayyan software, a free web application used to assist in literature review research, where duplicate works were in languages other than Portuguese or English, and those that did not refer to the object of study were excluded. The exclusion process was carried out by reading the article abstracts. Thus, 299 papers were included in the research corpus and read in full. Through these readings, we identified mentions of aspects related to information for innovation, which were found in 57 documents. These documents were considered for the data analysis presented below.

4 DATA ANALYSIS AND RESULTS

The data analysis conducted in this study focused on identifying key elements for constructing the concept of information for innovation. Based on a systematic screening of the 1,334 records retrieved from the main databases, 57 articles were selected that addressed aspects directly related to the topic.

These articles were read in full and analyzed in depth to understand the characteristics, functions, and applications of information in the context of innovation. This section presents the results of this analysis, highlighting the main perspectives identified in the literature, the emerging categories, and the links established between information and innovation processes. In Chart 3, these references are presented in the chronological order of the analyzed articles. Note that Table 3 was developed to compile data contributing to the concept of Information for Innovation without constructing taxonomies or linguistic bases.

Chart 3. Mentions of the concept of information for innovation

Year	Authors	Mention
1998	Birchall; Chanaron	Research in Information Systems (IS) has identified useful taxonomies for recognizing necessary information in digital innovation ecosystems. McKinney and Yoos (2010) proposed four views: (1) token, as processable data; (2) syntax, which measures relationships between data; (3) representation, as a sign of an object to the observer; and (4) adaptation, as the perception of changes that promote actions. Despite the relevance of all perspectives for innovation, the views of representation and adaptation are central to managing interdependencies and uncertainties, as they assist in aligning interests and coordinating actions in complex ecosystems.
2008	Moraes	Scientific and technological information is linked to human progress, enabling the understanding of nature, the transmission of knowledge, and innovation. It is a social component of memory, identity, and economic processes. To generate innovative knowledge, companies combine internal sources, such as product development and organizational training, with external sources, such as consulting, licenses, and embedded technologies, characterizing technology transfer. Companies that create original innovations rely more on research and training institutions, while those that adapt technologies use knowledge from suppliers, customers, and competitors, optimizing technological changes according to their strategies and production scales.
2009	Sánchez-González; González-Álvarez; Nieto Antolín	Information in the context of innovation is a dynamic and complex element, where the satisfaction of an information need often generates new demands or presents other needs. According to Citroen (2011), the quality of information is essential for its effective use, ensuring that it meets specific information needs. This relationship highlights the strategic importance of information for organizations, especially in the development of innovation, as it supports creative processes and transformative solutions, which has a direct impact on the adaptability and competitiveness of companies.
2009	Castro	Information is a fundamental input to innovation and competitiveness, providing the knowledge needed to develop new ideas, products, and processes. It enables organizations to respond quickly to market changes and is essential for strategic decision-making that drives innovation and improves a company's competitive position.

2010	Angulo	Innovation is directly related to problem solving, where identifying and structuring information needs is essential to overcoming problems or exploiting opportunities. This involves transforming data into knowledge through learning and mental creation processes that integrate internal and external information. Environmental monitoring identifies relevant information, while intelligence transforms it into practical inputs for decision-making and strategic action. In the educational context, information acts as a support and input for innovation, with innovative agents continuously interacting with local and external information, promoting transformations in organizational processes, modes, and ways of acting.
2011	Robinson; Stubberud	Product and process innovation depends on internal and external sources of information, such as customers, suppliers, competitors, consultants, and universities. Although internal sources are important, external sources are critical to innovation performance, especially in open innovation contexts. External contributions vary depending on the type of innovation: suppliers are essential for process innovation, while customers lead in product innovation. However, internal knowledge remains relevant because companies that use it are better able to evaluate and integrate external information, highlighting the complementarity of both sources in strengthening organizational innovation capacity.
2013	Dzikowski	Public research institutions, such as universities and specialized centers, are important free sources of information for innovation. They provide access to patents, conferences, journals, and exhibitions available in national and international contexts, without requiring the acquisition of technology or intellectual property rights. However, obtaining knowledge without direct interaction with these sources may require high investments in equipment and software. In addition, innovative collaborations based on active interaction with other actors, such as companies, research institutions, and regulatory agencies, stand out as one of the main ways to access strategic information and drive technological development.
2014	Cunha; Ribeiro; Pereira	Research on sources of ideas, information, and knowledge in hospital organizations revealed that the most important sources come from internal relationships, such as employees, customers, and users, as well as interactions with government agencies, such as the Ministry of Health and the State Health Secretariat. Universities are of secondary importance in relation to these sources. No significant importance was observed in seeking ideas from other hospitals, suppliers, or entities such as PAHO and hospital management specialists. Social networks were also not identified as relevant sources of information or knowledge.
2014	Gielnik; Kramer; Kappel; Frese	Information management is fundamental to the competitiveness and innovation of organizations because it enables the development of products and processes. The ability to innovate is directly linked to the ability to acquire, process, and deliver information quickly and efficiently. In the service sector, innovation is associated with process qualification, which adds value to the decision-making process. In the information society, information is considered a strategic resource and essential for the development of innovation. Effective management of internal and external information flows and the creation of collaborative networks are fundamental to open innovation. Organizations that manage information and their knowledge networks well are better able to innovate, differentiating themselves by adopting systematic practices for finding and using information and transforming it into new products and services with significant economic impact.
2014	Leal Filho	Information technologies have made knowledge an essential element in the production process and, at the same time, a valuable asset, as it is the main source of product and process innovation in the current context of capitalism. Information, based on knowledge, has always been fundamental to the creation of wealth and services, but today it has become essential to face global competition. Innovation, understood as the application of this knowledge, is the key to increasing productivity and competitiveness. Patents, which protect innovations for 20 years, are examples of how information is transformed into new products or processes. To effectively apply information to innovation, public policies are needed to address the difficulties faced by universities, research centers, and companies.
2014	Melcher; Lowe	Information technology (IT) is influencing product innovation, allowing manufacturers to adapt their products more frequently, as is the case with iPhone or Android applications. This is due to the continuous flow of information from customers, which allows for rapid adjustments and continuous improvement of products to meet users' needs and preferences.

2015	Capuano	Patent information plays an important role in fostering innovation by providing knowledge about new technologies and solutions, thereby stimulating the development of new products and processes. Access to patents allows companies and researchers to avoid duplicating efforts and to draw inspiration from inventions that have already been protected, fostering continuous progress in technological innovation.
2015	Zhang <i>et al.</i>	Information asymmetry is a key factor influencing the risks involved in generating innovation, as the lack of accurate information can affect decision-making. Information support directly contributes to data-driven innovation, which is essential to the innovation process. Information has a threefold nature in innovation processes: 1) it is necessary at all stages of the innovation process, helping to organize production with technologies, standards, and processes; 2) it has economic value, being created, differentiated, and consumed to generate new technologies and products; 3) it acts as a link between all stages of the innovation process. For innovation to be successful, information and marketing are critical, especially in networked contexts where the flow of information is fundamental to the effective development of innovations.
2015	Ramírez; Vega	According to Santos and Urbina (2002), efficient and fast information services help users keep up with technological advances and transform the information they receive into innovations. Information systems (IS) facilitate the flow and exchange of information within organizations, allowing different actors to absorb and share knowledge to create innovative products and services. These systems are fundamental to the generation of innovations because they enable effective knowledge management. According to Shu <i>et al.</i> (2012), knowledge management enables the identification, acquisition, development, and transfer of information, which increases innovation, agility, and productivity at all organizational levels.
2015	Menha; Tomael	Tigre (2006) highlights the main sources of technology and knowledge used by firms: 1) internal technological development, such as R&D, reverse engineering, and experimentation; 2) technology transfer agreements, such as licenses, patents, and agreements with universities and research centers; 3) embedded technology, such as machinery and software; 4) codified knowledge, such as books, manuals, information on the Internet, exhibitions, courses, and educational programs; 5) tacit knowledge, such as consulting, customer information, internships, and training; 6) cumulative learning, which involves the development of internal methods and processes through practice, experimentation, and interaction.
2015	Ziviani; Ferreira; Neves	Docks, Tisenkopfs, and Bock (2012) highlight the end consumer as an important actor in innovation, acting as an information broker and providing feedback on products or services introduced to the market. Research institutions also play a key role as information brokers, catalyzing innovation and providing options for improving production and organization in the sector. In Brazil, institutions such as Embrapa have been essential for agricultural innovation. According to the OECD (2005), sources of information for innovation can be classified as open (freely accessible, but without the possibility of generating patents), paid (such as the acquisition of assets or specialized services), and resulting from partnerships that drive innovation through active cooperation between actors. These sources are fundamental for generating knowledge and promoting innovation, especially when they involve strategic alliances and collaboration with the consumer market.
2016	Gómez; Salazar; Vargas	Sources of information for innovation include a wide range of resources, such as customers, internal sources, suppliers, conferences, trade shows, exhibitions, competitors, newspapers, trade journals, scientific societies, domestic and foreign research and development (R&D) units, and universities. Companies should individually assess which of these sources, internal or external, are most profitable (Chesbrough, 2006). Public information about innovation, including patents, conferences, and exhibitions, can be produced locally or globally. One of the most important sources is innovative collaboration, where firms work with suppliers, customers, competitors, and research institutions to foster innovation (Miotti, Sachwald, 2003). Scientific societies also stand out as influential sources of information for innovation.

2016	Rosa; Vitorino	Information plays a decisive role in the competitive market and becomes an essential input for knowledge management and organization, with a focus on innovation management. Innovation management involves the practical construction of innovative elements, whether through culture, leadership, competence, or structuring, which are influenced by the ability to transform information. These processes contribute significantly to society, generating innovations that positively affect different sectors and promote continuous development (Ades, Vasconcelos, Plonski, 2011).
2016	Silva	Crispin (2005) emphasizes that information is essential to drive innovation in processes, products, and services, as it acts as a competitive advantage and is directly linked to strategic objectives, as well as being fundamental to decision-making and the innovation process in organizations. Cunha (2016) adds that scientific and technological information serves as a valuable source of inspiration and serendipity for professionals, researchers, professors, and students and can enhance the innovation process of organizations when organized according to their specific needs, promoting significant advances.
2016	Soares; Fernandes	Patents are valuable sources of information because they help assess trends in research by revealing the areas of innovation where inventors are focusing their efforts. In addition to being public and reliable, patents provide opportunities to analyze information about technology and innovation. Publicly available patent applications contain essential data such as the name of the applicant, the filing date, and technical details of the invention, making them a critical tool for understanding the directions of innovation and identifying areas of technological development.
2017	Araújo; Silva; Varvakis	External sources of information and knowledge can be classified into three main types: market sources, such as customers, suppliers, competitors, and consultants; institutional sources, such as universities, governments, and research institutes; and other sources, such as conferences, trade shows, exhibitions, scientific journals, and professional associations. Gomes, Salazar, and Vargas (2016) emphasize the importance of firms' absorptive capacity to identify, access, and assimilate knowledge from these external sources, highlighting that firms are increasingly turning to them rather than relying solely on internal sources. Participation in events such as trade shows and conferences is also considered essential for innovation. In addition, external sources, such as scientific and market sources have a significant impact on the innovative performance of companies in all sectors, including low-tech sectors.
2017	Campos Junior; Mendes Junior	Organizational innovations, such as just in time and quality management, can be implemented more efficiently and economically in companies with well-developed information and communication technology (ICT) systems. These systems, such as supply chain management and electronic data interchange (EDI), enable better control of information flows within companies and enhance organizational innovation by integrating and optimizing internal processes in a complementary manner.
2017	Canuto; Cherobim	Information is an essential strategic element in the process of scientific and technological innovation. It is transformed in the minds of those who receive it, modifying existing knowledge through addition, exclusion, or comparison, and thus generating new knowledge that is the raw material for innovation. Information, present in various forms in everyday life, becomes more productive when it is organized into information assets within organizations, facilitating its selection and use. This contributes significantly to the intellectual enrichment of those who use it, promoting progress in the innovation process and the development of new solutions.
2017	Zhao; Cheng, Huang	Information is a fundamental resource for innovation, providing the knowledge needed to identify opportunities, solve problems, and create new solutions. It serves as the basis for the development of new ideas, products, processes, and services, and is critical to the continuous improvement and success of organizations. The ability to effectively access, process, and apply information can determine a company's level of innovation and competitiveness in the marketplace.

2017	Omelyanenko	Innovation is a new development resulting from human intellectual activity aimed at increasing the efficiency of processes or products, and is the main component of competitiveness. To innovate, it is essential that innovators have access to relevant knowledge and timely information. Monitoring information is an essential step in decision-making and process improvement. Information obtained through tactics and strategies is the most important resource for innovative activities. Tactical information helps to make economic decisions under conditions of limited resources, while strategic information helps to monitor changes and reduce risks. Information support for innovation involves the collection of data on research results, project implementers' capabilities, and communication with information centers using databases and telecommunication systems. This data is critical to the selection of innovative projects and the development of technological products; managers and researchers need scientific, financial, technological, and market data to make effective decisions in implementing innovations.
2017	Trantopoulos; Krogh; Wallin; Woerter	An organization's internal sources of information include innovation activities that take place within departments such as R&D, production, and marketing. External sources, on the other hand, include various agents such as suppliers, competitors, customers, universities, research institutes, and general sources such as conferences and trade shows. The importance of external sources is recognized because they are fundamental to innovation activities, and a firm's ability to find, acquire, and manage these sources has a direct impact on its productivity. Companies adopt strategies to generate knowledge internally or acquire it externally, with an emphasis on working with external agents. Customer knowledge is a valuable source of information for innovation and is considered one of the most important, regardless of the size of the company. In addition, customers and suppliers, in both industrial and service sectors, are seen as essential partners in the innovation process.
2018	Cesso; Ferraz; Storopoli	Combining different sources of information and knowledge is essential for organizations to innovate and manage change. This is because many technological problems require the use of different types of knowledge. This integrated approach allows organizations to more effectively address challenges and develop innovative solutions tailored to market needs.
2018	Fernandes; Cesário; Castela	The interaction between internal and external sources of information can drive technological renewal and improve the ability to identify useful information for productive development and the creation of new products. This collaboration between different sources of knowledge is crucial for companies, as it allows them to occupy significant market shares and stand out for their innovation and adaptation to changes in the competitive environment (Bittencourt; Britto; Giglio, 2016).
2018	Franco Castro <i>et al.</i>	Until the popularization of the open innovation model, product and service innovation was mainly developed internally within organizations. With the advent of open innovation, collaborative processes began to involve interactions between various stakeholders, such as suppliers, customers, educational and research institutions, and the government. The main sources of information for these innovations include digital media and events sponsored by representative organizations. Although innovation is largely driven by internal contributions from employees, end users and suppliers also play an important role. However, despite the success stories, some organizations have not yet adopted the open model because of the perceived complexity of interactions with external partners, with the main factors of complexity being the issue of intellectual property, confidentiality of strategic information, and alignment of expectations between partners with different interests.
2018	Pedron; Picoto; Colaco; Araújo	An increase in the stages of a product's life cycle, combined with a reduction in information asymmetry, tends to lead to more closed innovation. This is because as the product advances in its life cycle and information becomes clearer and more accessible within the organization, the firm can focus its internal efforts on developing and improving the product more efficiently without relying on external sources. In this context, closed innovation becomes more viable and effective because the organization has greater control over processes and decisions.

2018	Otonicar; Valentim; Feres	Knowledge integration (KI), or the ability to gather and process different types of information within an organization, is essential for innovation. This is because innovation often depends on combining different types of knowledge, which, when effectively integrated, enables the development of new solutions, products and processes. Effective management of this information integration enables the organization to maximize its innovation potential by leveraging internal and external knowledge to create value and address challenges more creatively and effectively.
2018	Silva; Valentim	Information is a critical enabler of civic engagement and social innovation, facilitating access to the knowledge necessary for active participation in society and the development of collective solutions to social problems. By ensuring access to relevant information, communities can make decisions that are more informed, strengthen their capacity to organize and engage, and promote meaningful social change. Social innovation, in turn, depends on new and effective ideas to address social challenges, and information is the foundation that enables the creation, dissemination, and application of these solutions.
2018	Susarla; Mukhopadhyay	Updating the information infrastructure is essential for companies to obtain more financial support for innovation, as it improves transparency and efficiency in processes. First, it makes it easier for investors to identify high-quality companies, reducing adverse selection and improving the allocation of market capital. Second, it allows investors to monitor the progress of innovation projects, ensuring that funds are being used correctly. Finally, the development of broadband infrastructure facilitates the transfer of information, overcomes time and space constraints, and reduces the costs of offline research, thereby benefiting development and innovation in firms.
2019	Barykina	Gathering and analyzing information about a new product in the market is essential in the innovation process, which occurs in the Prospecting phase, when the end customer receives the new product or service offering. The next stage, strategy building, is divided into three phases: analysis, selection, and planning, and information plays a fundamental role in all these phases, being essential for the implementation of the idea, as highlighted by Tidd, Bessant, and Pavitt (2008). Information management and innovation management are considered complementary to improve the competitiveness of organizations, with both playing an important role in the technological and interdisciplinary development of information science. However, the results indicate a gap in information management in studies of the innovation process, highlighting the need to better integrate these concepts to optimize innovation in organizations.
2019	Bertin; Fortaleza; Silva; Okawachi	Carvalho, and Araújo Júnior (2014) state that "before thinking about management models, it is essential to understand how information is used in the innovation process" (p. 74). This statement highlights the importance of understanding the role of information in innovation before developing management strategies. The effective use of information in the innovation process is essential to ensure that decisions and actions are aligned with innovation goals, thereby maximizing the impact and competitiveness of organizations.
2019	Sena; Vianna; Blattmann	Organizations dealing with technology tend to manipulate and manage innovative processes, since technological information has the unique ability to modify the means of production, generate development, and adapt scientific knowledge to the business context (Braga; Simeão, 2018). Technological information management plays a key role in scientific and technological development, promoting the organization, dissemination, and use of knowledge, which facilitates the creation of new knowledge and technologies, contributing to social improvements (Aun, 1996). For Castells (2003), innovation depends on the generation of knowledge, which is facilitated by access to information, especially when it is available online. Information and communication technologies and globalization play a fundamental role in technological transformation, which is expanding due to their ability to connect, generate, store, retrieve, work with, and disseminate information. This demonstrates the inseparability of information and innovation, especially when considering the development and analysis of technological readiness.

2019	Sena; Blattmann; Fiates	Companies draw inspiration for innovation from various sources, such as patents, machinery, technical articles, and software. The ability to innovate is influenced by the ability to absorb and combine information from internal sources (R&D, marketing, production) and external sources (competitors, suppliers, customers, consultants, universities, and research institutes). The Technological Innovation Survey (Pintec) highlights the importance of identifying relevant sources to understand the origin of innovative ideas. Effective management of these sources is a prerequisite for business competitiveness and the continuous development of new products and processes to ensure long-term survival.
2019	Pérez Mora	External sources of scientific information play a critical role in innovation, as highlighted by several scholars. The open innovation model (Chesbrough, 2003) emphasizes that external sources of information and knowledge sharing outside the organization are essential for the development and implementation of innovation. Recently, firms have shifted their innovation focus from internal sources of information, such as employee expertise and education, to external sources, such as customers, universities, suppliers, and business partners (Gomes, Kruglianskas, and Scherer, 2011). Varis and Littunen (2010) examined different sources of information related to specific types of innovation in Finnish small and medium-sized enterprises and concluded that product and marketing innovation were positively related to other external sources of information, process innovation to information from financial support organizations, and organizational innovation to cooperative relationships and regional knowledge organizations. These findings support the idea that different types of innovation are associated with the use of different sources of information and collaborative relationships, highlighting the importance of external sources for innovation performance.
2019	Dmitriev; vladimirova; Kallaur; Tsygankova	Cooke, Uranga, and Etxebarria (1997) define innovation as a systemic process involving multiple information flows and multiple actors. They understand innovation as an institutional exchange that involves both production and consumption and has an impact on society as a whole. The appropriation of information is seen as fundamental to the production of new knowledge, products, processes, and services. According to Jannuzzi, Falsarella, and Sugahara (2016), all innovation involves the generation, use, and assimilation of knowledge, which inevitably involves the management of information for its development and implementation.
2019	Shkarlet; Kholiavko; Dubyna	Information for innovation does not come from a single organized source, but rather from the collection of multiple fragments of information from different sources. This innovation process is incremental, that is, it occurs gradually as information is combined, adapted, and applied to generate new ideas, products, or processes. This model reflects the collaborative and dynamic nature of innovation, where diverse knowledge and perspectives come together to drive progress.
2020	Simon	The innovation process in organizations depends on systematic information flows that involve searching for, accessing, retrieving, processing, and using information. These flows are supported by information sources from actors such as governments, universities, development agencies, and companies. The major challenge in research on digital information environments is to integrate technologies that balance the generation, access, and control of this information, taking advantage of emerging opportunities for innovation. Digital environments using semantic technologies and autonomous agents are critical for managing large amounts of information and supporting decision-making in innovation processes.
2020	Santos; Figueiredo	In a global and digital economy, information is one of the most important assets for business competitiveness and innovation. It plays a critical role in the generation of knowledge, which makes it central to the innovation process. According to Rogers (1995), innovation can be defined as an idea, practice, or object that is perceived as new by an individual or an adopter unit. The ability to use information effectively is therefore fundamental to the development and implementation of innovation in organizations.
2020	Otonicar; Nascimento; Biaggi; Mosconi	The demand for information and knowledge to develop new products makes the flow of information more dynamic and complex, influenced by factors such as market observation, new product visibility, communication, and ongoing research trends. In this context, information becomes the raw material for product innovation and is essential to the creation process. Technological information stands out as a fundamental component, as it is directly related to the development and improvement of new products and is mandatory for driving innovation in the sector.

2020	Gaban	Innovation has become an area of interest for information science, especially with the development of national systems to monitor its evolution and economic impact, as has occurred in the United States, Europe, and recently in Brazil. This monitoring requires a large amount of qualified and up-to-date information, which is essential for the adjustment of countries' economic policies. The main tool used in this process is innovation indicators, a specialized type of information that helps evaluate and guide innovation and economic development strategies.
2021	Bazoberri	Factors such as transparency of information and greater user involvement have a positive effect on innovation acceptance and user satisfaction with technologies. This suggests that when information is clear and accessible and users are involved in the process, innovation is better received, leading to greater engagement and more satisfactory outcomes.
2021	García Martín <i>et al.</i>	The study of specific industries is essential because the literature suggests that the impact of using external information sources for innovation varies significantly depending on the characteristics of the industry (Pavitt, 1984; Heidenreich, 2009). A seminal study by Mansfield and Lee (1996) showed that universities, as an external institutional source, had a significant impact on product and process development in companies in different industrial sectors. With the trend of open innovation, companies began to place more emphasis on the use of external sources such as suppliers, customers, competitors, consultants, and universities (Lungeanu; and Contractor, 2015). However, the ability to absorb external knowledge limits the impact of these sources on firms' innovative performance (Cohen and Levinthal, 1990). Industry characteristics and the economic environment directly influence the impact of information sources on innovation. The combination of internal and external knowledge creates an environment conducive to the effective use of these sources for innovation, thereby promoting more robust innovative performance.
2021	Pozo Nuñez	In the era of the Fourth Industrial Revolution, information assets are considered critical to sustainable competitive advantage. These resources, when leveraged by technologies such as big data and artificial intelligence, can make or break companies. Information can be classified as internal and external, with external information obtained through interactions with organizations outside the enterprise, such as customers, suppliers, universities, and research institutes. Information from vertical channels (suppliers and customers) strengthens deep knowledge and drives exploratory innovation, while information from horizontal channels (universities and consulting firms) broadens the scope of collaboration and drives radical innovation. However, studies suggest that the effects of external information on innovation are mixed, depending on the absorptive capacity of the firm. Firms with higher absorptive capacity are better able to use external knowledge, exploit innovation opportunities, and adapt quickly to market demands. On the other hand, firms with low absorptive capacity may not benefit from external resources despite having access to valuable information.
2021	Muniz; Figueiredo; Dandolini; Souza	Patent information, which contains the results of research and development activities with industrial applications, can be an important source for enhancing creativity and supporting the solution of research problems that drive innovation through new products and processes. In addition, effective management of this information can generate ideas for future business, leading to innovations that can create competitive advantage for the organizations that own them, enabling them to differentiate themselves in the marketplace and create new value.
2021	Ottonicar; Souza; Valentim	The use of information can be considered a product of innovation within organizations, as it plays a central role in creating new solutions and continuously improving processes. Information and knowledge have a direct impact on the innovation process, enabling organizations to become more competitive in the marketplace. Innovation, as a complex factor, is not the result of isolated elements, but occurs through the integration of resources, information and people working together to generate new ideas, products and processes that meet the needs of the market and society.
2021	Suzuki	Information transmission is a fundamental mechanism in capital markets, as it promotes innovation and business development. Effective information transmission can not only reduce information asymmetry and the cost of capital, but also promote business innovation by helping managers improve their technological innovation decisions. This allows firms to gain competitive advantage in the product market. Innovation and service development in the capital market largely depend on the effectiveness of information transmission in this system.

2021	Tshabalala; Marnewick	When analyzing the concept associated with trend analysis using a monitoring tool, it can be said that its implementation would allow information to be organized, quantified, processed, and used as a valuable resource for the development of innovation. The analysis of information behavior (trends) can support strategic decision-making and help organizations identify and address vulnerabilities, threats, and opportunities, thus contributing to success and adaptation in the competitive environment (Castellanos <i>et al.</i> , 2011).
2022	Oliveira; Cruz; Accioly	Customers are a critical source of information for business innovation, providing valuable insights into their needs, expectations, and behaviors. This information enables companies to develop products, services, and processes that are better aligned with market needs, helping to drive innovation and improve competitiveness. Customer feedback is essential for identifying areas for improvement and new opportunities for innovation.
2022	Liu; Xu; Wang	The literature on strategic management and organizational learning points out that innovation is an active process of obtaining new knowledge and information, managing and integrating diverse knowledge from different sources, and successfully applying this knowledge to new products or production processes to create value. These elements are essential for organizations to innovate effectively and generate competitive advantage (DeCarolis and Deeds, 1999; Eliasson, 1997).
2022	Niu; Xia; Shen	The application of innovation models essentially involves the combination of information and knowledge, since it is through the interaction and sharing of these elements that new knowledge is generated, enabling the development of products or services that are both market-oriented and responsive to society and the environment. Organizations do not innovate in isolation, as they depend on internal and external information and knowledge. This justifies the growing use of the open innovation model introduced by Henry Chesbrough in 2003. It emphasizes collaboration between different social actors, using external sources of knowledge as part of the internal innovation process.
2023	Gomes	Strengthening national networks and information systems is essential to fostering innovation, as it allows organizations to access high-value-added information that is fundamental to knowledge generation. Organizations need to understand how information is transformed into knowledge and how it can support decision-making for innovation. Innovation depends on the ability to absorb and combine internal and external information. Poor management or misuse of information can lead to the failure of innovative projects, highlighting the need for strategies and tools to filter the information needed for innovation (Veugelers, Bury, and Viaene, 2010). In addition, high-quality information is critical for innovation, and many companies still do not fully understand the value of information in this process. To remain competitive, it is necessary to learn from internal and external information and create an environment conducive to innovation activities with greater dissemination and sharing of knowledge (Plekhanova; Smith; Hamdan, 2012).
2023	Ziviani; Silva	To achieve innovation and competitive advantage, organizations need to obtain information about the market and their customers (Love; Roper; Bryson, 2011). These information sources can be internal or external. Internal sources include employees, who are an important resource because they contribute to new product development and other innovation activities, often beyond their job functions (Smith <i>et al.</i> , 2017). They have valuable information about the organization, products, resources, and processes that can be translated into new ideas, products, and processes. External sources include knowledge about competitors, customers, and market trends that help identify new business opportunities (Love; Roper; Bryson, 2011).

Source: developed by the authors

Based on the above, the most frequently occurring terms are listed in the chart below.

Chart 4. Recurring terms

Recurring terms	N
Product	20
Knowledge	17

Process	15
Information source	14
External information source	14
Services	11
Competitiveness	09
Patent	09
Actors	08
Information flow	08
Technology	07
Customer	06
Creativity	06
Open innovation	06
Competitive advantage	06

Source: developed by the authors

Based on the research conducted, and the results presented, the following definition for the concept of information for innovation is arrived at

Information for innovation is an essential element in developing or adding value to products, services, and organizational processes, enabling organizations to build competitive advantages that allow them to stand out in competitive markets. The use of this information makes a significant contribution to society. Information for innovation is used to find solutions to a wide variety of problems faced by an organization, as well as to analyze trends and make strategic decisions. Information for innovation can be internal or external to the organization, and it is the combination of this internal and external information used for organizational activities that leads to innovation, since it is precisely this combination of information that creates the context that enhances the use of these sources to generate innovation.

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Regarding the importance of information for innovation, it is worth noting that an organization's capacity to innovate is proportional to its ability to manage information for innovation.

Among the main characteristics of information for innovation, the following stand out: it is dynamic, complex, new, relevant, timely, high quality, and has high benefit.

The components of information for innovation include market observation; visibility of new products; communication and trends in ongoing research; commercial, marketing, statistical, demographic, legal, competitor, potential consumer, customer, and environmental (scientific and technical, financial and economic, technological, market, etc.) information.

Information for innovation can be found:

- mainly in patents;
- in various sources of information that may be internal or external, which means that information for innovation is fragmented across multiple sources;
- distributed across networks for innovation;
- in sources of information about the market, processes, suppliers, competing products and the company, services, prices, suppliers, customers, among others, i.e., internal and external sources of information.

The main sources of external information identified were: market trends, customers, external scientific sources, universities, suppliers, business partners, participation in conferences, competitors, professional magazines, exhibitions and fairs, government, professional and industrial associations, technologies embedded in machinery and equipment,

end consumers, digital media, public research institutes, and private consulting firms.

The main sources of internal information identified were employees, the company itself, quality programs, human resources training, organizational learning, the company's own research and development, marketing, and production.

It appears that frequent information flows enable organizations to make more frequent adjustments to their products and services, which can give them competitive advantages and strategic positions.

5 CONCLUSIONS

This study sought to fill a gap in the literature by proposing a systematic definition of information for innovation and identifying its main characteristics. The analysis showed that information for innovation goes beyond being an operational resource; it is a strategic resource that permeates the entire innovation process, from problem identification to the implementation of creative solutions.

In this context, information plays a unique role in supporting idea generation, decision-making, and adaptation to market demands. However, its effectiveness depends on factors such as quality, accessibility, and alignment with an organization's strategic goals. Advances in understanding this concept not only broaden its applicability, but also guide information management practices that stimulate the development of incremental and disruptive innovations.

The analysis of the references found in the literature revealed a wide range of perspectives on the relationship between information and innovation. These studies highlighted that information is an essential resource for all stages of the innovation process, playing roles such as input, support, and catalyst. Throughout the systematic review, terms and concepts such as strategic information, technological information, decision support information, and scientific information emerged repeatedly, contributing to a more detailed overview of the multiple functions of information in the innovation context.

These recurring terms help to characterize the relationship between information and innovation by explaining how different types of information are mobilized to generate new knowledge, identify market opportunities, improve organizational processes, and support decision-making. For example, scientific information was often associated with research and development (R&D), while market information was identified as fundamental to guiding product and service innovation.

The analysis also indicated that the quality and accessibility of information have a direct impact on an organization's ability to innovate. Efficient information flows, internal and external sources of knowledge, and the integration of collaborative networks were highlighted as differentiators of innovation success. Thus, these recurrences in the literature allowed us not only to map the importance of information but also to consolidate an understanding of how it should be managed to maximize its impact on innovation generation.

Based on this evidence, the relationship between information and innovation was characterized as multifaceted, encompassing operational, strategic, and cultural aspects. This detail allowed us to formulate a concept that reflects its essential nature as a dynamic resource that is adaptable to the demands of the innovation process.

By consolidating the concept of information for innovation, this study contributes to strengthening the theoretical base on the topic and provides a deeper understanding of the role of information in innovative processes. In addition, it provides valuable insights for future research and for the adoption of organizational practices that seek to more effectively integrate information and innovation, thereby fostering an environment more conducive to the development of creative and sustainable solutions.

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