Innovation Driven By Artificial Intelligence: Exploring The Opportunities And Challenges For Technological And Business Development

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Summary

A documentary review was carried out on the production and publication of research papers related to the study of the variable Artificial Intelligence, Innovation and Business Development. The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2017-2022, achieving the identification of 568 publications. The information provided by this platform was organized through graphs and figures categorizing the information by Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors towards the proposed theme is referenced through a qualitative analysis. Among the main findings made through this research, it is found that China with 107 publications was the country with the highest scientific production registered in the name of authors affiliated with institutions of that nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of the variable Artificial Intelligence Innovation and Business Development was Computer Science with 286 published documents, and the Type of Publication most used during the period indicated above were Conference Articles with 36% of the total scientific production.

Keywords: Artificial Intelligence, Innovation, Technological Development, Business Development.

1. Introduction

A revolution is taking place at the intersection of technology and business development that will fundamentally change the way organizations operate, create value and remain competitive on a global scale. At the center of this revolution is artificial intelligence, a discipline that has evolved dramatically in recent decades, driving waves of innovation and redefining the boundaries of possibility. Artificial intelligence basically refers to the ability of machines to mimic and automate human cognitive processes such as reasoning, learning, and decision-making. As AI algorithms and models become more complex and powerful, they have begun to unlock great potential in several business areas. From automating routine tasks to creating highly customized solutions and generating innovative ideas, artificial intelligence is driving drastic changes in the way companies solve problems and seize opportunities.

The widespread use of artificial intelligence has led to several technological advances that have redefined industries and markets. The massive data processing and analytical capabilities of artificial intelligence allow companies to make real-time decisions based on more accurate information. Al solutions also open up new perspectives for customer interaction through chatbots, virtual assistants and sentiment analysis, improving customer experience and loyalty. Al-driven innovation also creates new business opportunities. Forward-thinking companies are using artificial intelligence to develop revolutionary products and services, using the power of technology to identify hidden patterns and emerging trends in data. In addition, artificial intelligence is transforming supply chain, logistics and inventory management, optimizing operational efficiency and reducing costs.

However, this technological revolution is not without challenges and ethical considerations. As artificial intelligence plays an increasingly important role in making critical decisions, concerns have been raised about transparency, fairness, and accountability of the use of algorithms and models. It is imperative to ensure that Al-driven innovation complies with ethical values and promotes a positive impact on society. Finally, current technological and business development is closely related to innovation driven by artificial intelligence. Al's ability to process data, automate processes, and create knowledge is changing the way businesses operate and create value. As we enter this era of accelerated innovation, AI must be ethically and socially embraced and harness its potential for a more efficient, creative and sustainable business future. For this reason, this article seeks to describe the main characteristics of the compendium of publications indexed in the Scopus database related to the variables Artificial Intelligence, Innovation and Business Development, as well. As the description of the position of certain authors affiliated with institutions, during the period between 2020 and 2022.

2. General Objective

Analyze from a bibliometric and bibliographic perspective, the elaboration and publication of research works in high-impact journals indexed in the Scopus database on the variables Artificial Intelligence, Innovation and Business Development during the period 2017-2022.

3. Methodology

This article is carried out through a mixed orientation research that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study Artificial Intelligence, Innovation and Business Development. On the other hand, examples of some research works published in the area of study indicated above are analyzed from a qualitative perspective, starting from a bibliographic approach that allows describing the position of different authors against the proposed topic. It is important to note that the entire search was performed through Scopus, managing to establish the parameters referenced in Figure 1.

3.1. Methodological design



Figure 1. Methodological design Source: Authors.

3.1.1 Phase 1: Data collection

Data collection was executed from the Search tool on the Scopus website, where 537 publications were obtained from the choice of the following filters:

TITLE-ABS-KEY (artificial AND intelligence, AND innovation, AND business AND development) AND PUBYEAR > 2016 AND PUBYEAR < 2023

- Published documents whose study variables are related to the study of the variables, Artificial Intelligence, Innovation and Business Development.
- Limited to the years 2017-2022.
- Without distinction of country of origin.
- Without distinction of area of knowledge.
- Regardless of type of publication.

3.1.2 Phase 2: Construction of analysis material

The information collected in Scopus during the previous phase is organized and subsequently classified by graphs, figures and tables as follows:

- Co-occurrence of words.
- Year of publication.
- Country of origin of the publication.
- Area of knowledge.
- Type of publication.

3.1.3 Phase 3: Drafting of conclusions and outcome document

In this phase, we proceed with the analysis of the results previously yielded resulting in the determination of conclusions and, consequently, the obtaining of the final document.

4. Results

4.1 Co-occurrence of words

Figure 2 shows the co-occurrence of keywords found in the publications identified in the Scopus database.



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Figure 2. Co-occurrence of words

Source: Own elaboration (2023); based on data exported from Scopus.

Artificial Intelligence is the most frequently used keyword within the studies identified through the execution of Phase 1 of the Methodological Design proposed for the development of this article. Digital Transformation is also among the most frequently used variables, associated with variables such as Machine Learning Industry 4.0, Data Analysis, Decision Making, Productivity, Product Development. From the above, it is striking that, due to the rapid development of artificial intelligence, business and technological structures have undergone unprecedented changes. The confluence of intelligent algorithms, unparalleled computing power, and the proliferation of data has created an ever-evolving business ecosystem where innovation is the most valuable bargaining chip. AI encompasses disciplines such as machine learning, natural language processing, and computer vision that are revolutionizing the way businesses solve problems, make decisions, and create value.

However, the research and adoption of artificial intelligence is also changing the concept of business decision making. By using advanced data analytics and AI-powered predictive models, companies can make more informed strategic decisions. The ability to process large amounts of information in real time allows organizations to identify hidden patterns, better understand customer preferences, and predict market trends.

4.2 Distribution of scientific production by year of publication



Figure 3 shows how scientific production is distributed according to the year of publication.

Figure 3. Distribution of scientific production by year of publication. **Source:** Own elaboration (2023); based on data exported from Scopus

Among the main characteristics evidenced by the distribution of scientific production by year of publication, a level of number of publications registered in Scopus was the years 2022, reaching a total of 173 documents published in journals indexed in said platform. This can be explained thanks to articles such as the one entitled "Measuring the adoption of artificial intelligence

applications in online learning environments by institutions: integration of the theory of the diffusion of innovation with the rate of technology adoption" This study aims to investigate the experiences of users with AIA for government purposes in the Gulf area. The conceptual model comprises the properties of adoption (i.e., testability, observability, compatibility, and complexity), relative advantage, ease of doing business, and technology export. The novelty of the article lies in its conceptual model that correlates with both personal characteristics and technology-based characteristics. The results show that the variables of diffusion theory have a positive impact on the two variables of ease of doing business and export of technology. The practical implications of the present study are significant. We urge the relevant authorities in the government sector to understand the importance of each factor and encourage them to make plans, in the order of importance of the factors. The managerial implications provide information on the implementation of AIA in government systems to improve the development of the services they offer and facilitate their use by all users. (Almaiah, 2022)

4.3 Distribution of scientific production by country of origin

Figure 4 shows how scientific production is distributed according to the country of origin of the institutions to which the authors are affiliated.



Figure 4. Distribution of scientific production by country of origin. **Source:** Own elaboration (2023); based on data provided by Scopus.

Within the distribution of scientific production by country of origin, records from institutions were taken into account, establishing China, as the country of that community, with the highest number of publications indexed in Scopus during the period 2017-2022, with a total of 107 publications in total. In second place, India with 57 scientific papers, and the United States occupying the third place presenting to the scientific community, with a total of 52 documents among which is the article entitled "Smart schools on the way: how school principals in Catalonia address the future of education within the fourth industrial revolution" This article proposes a comprehensive definition of smart schools. Smart schools must be equipped with comprehensive, inclusive, sustainable management systems and adopt new learning methodologies and Industry 4.0 advances efficiently. Despite this conception and because research, government policies and

business projects are not always aligned with research, there is a need to know more about how the school is facing its next transformation. To illuminate this purpose, this study interviewed 37 principals of primary and secondary schools in Catalonia. Thematic analysis focused on technological and pedagogical innovations, management systems, inclusion and sustainability identified some analogies with related research, noting that schools are far from implementing advanced technologies. Inclusion is the most respected element thanks to existing government regulation. Sustainability is hardly considered due to lack of economic resources, but several schools are considered green schools and exhibit environmental practices. Conclusions are drawn to show that while schools are not yet prepared to cope with the Fourth Industrial Revolution, its impact depends on the level of maturity and ease of use of the technology, as well as stakeholders such as policymakers.(Mogas, 2022)

4.4 Distribution of scientific production by area of knowledge

Figure 5 shows the distribution of the elaboration of scientific publications from the area of knowledge through which the different research methodologies are implemented.



Figure 5. Distribution of scientific production by area of knowledge. **Source:** Own elaboration (2023); based on data provided by Scopus

Computer Science was the area of knowledge with the highest number of publications registered in Scopus with a total of 286 documents that have based their variable methodologies Artificial Intelligence, Innovation and Business Development. In second place, Engineering with 190 articles and Business, Management and Accounting in third place with 162. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by the Computer Science area entitled "Artificial Intelligence Research in Agriculture: A Review" The purpose of this document is to provide a comprehensive review of the academic journey of artificial intelligence (AI) in agriculture and highlight the challenges and opportunities in the adoption of AI-based advances in agriculture. agricultural systems and processes. Design/methodology/approach: The authors conducted а

bibliometric analysis of the existing literature on AI in agriculture to understand the state of development in this domain. In addition, the authors proposed a framework based on two popular theories, namely diffusion of innovation (DOI) and unified theory of technology acceptance and use (UTAUT), to identify factors influencing the adoption of AI in agriculture. Findings: Four factors—i.e., institutional factors, market factors, technological factors, and stakeholder perception—were identified that influence the adoption of AI in agriculture. In addition, the authors pointed to challenges in environmental, operational, technological, economic and social categories with opportunities in this area of research and business.(Sood, 2022)

4.5 Type of publication

In the following graph, you will observe the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.



Figure 6. Type of publication.

Source: Own elaboration (2023); based on data provided by Scopus.

The type of publication most frequently used by the researchers referenced in the body of this document was entitled Conference Articles with 36% of the total production identified for analysis, followed by Journal Article with 35%. Chapter of the Book are part of this classification, representing 14% of the research papers

published during the period 2017-2022 in journals indexed in Scopus. In this last category, the one titled "Current and Future Artificial Intelligence (AI) Curriculum in Business School: A Text Mining Analysis" stands out. This study examines the current state of the AI curriculum in undergraduate and graduate business provides recommendations for the future schools and development of the AI curriculum. The study develops a technical competency model for the AI curriculum based on MSIS2016 -Global Competency Model for Graduate Programs in Information Systems and IS2020 - Competency Model for Undergraduate Programs in Information Systems and AI Technical Competencies. Using text mining analytics, we collected and analyzed AI courses from the top 46 undergraduate and graduate level business schools, ranked by U.S. News in 2020. The findings indicate that machine learning is at the core of the AI curriculum in business, and most AI curricula are a hybrid of AI and data analytics. This recognizes that the AI curriculum is still in its infancy and that business schools are closely adhering to the industrial development trend. The proposed technical competency model for the AI curriculum can serve as a guide for the future development of the AI curriculum in business schools. We hope this study will provide a systematic view of the AI curriculum and offer recommendations for business education, specifically in IS programs. (Chen, 2022)

5. Conclusions

Through the bibliometric analysis carried out in the present research work, it was established that China was the country with the highest number of records published for the variables Artificial Intelligence, Innovation and Business Development. with a total of 107 publications in Scopus database. Similarly, it was established that the application of theories framed in the area of Computer Science, were used more frequently in the implementation of artificial intelligence in innovation and business development systems, since the implementation of these have proven to be a catalyst to change the way companies operate, They create value and remain competitive in a changing business environment. As artificial intelligence continues to evolve and integrate into all aspects of life and business, its impact on innovation and business development is becoming clearer. When it comes to business development, Artificial Intelligence makes it possible to optimize processes, increase productivity and personalize the customer experience. By automating repetitive tasks and real-time analysis of complex data, companies can improve operational efficiency and reduce costs. In addition, artificial intelligence's ability to understand and adapt to individual customer preferences enables the creation of highly personalized products and services, creating a significant competitive advantage. However, the successful implementation of artificial intelligence in business development is not without challenges. Harnessing the full potential of AI will require investments in technology and employee training. In addition, ethical and regulatory issues arise from responsible data use and automated decision-making. AI will also disrupt certain areas of work, requiring careful planning to minimize the impact on employees.

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