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ARTIFICIAL INTELLIGENCE AND ENTREPRENEURSHIP: A SYSTEMATIC REVIEW FROM A CONTEXTUAL APPROACH

INTELIGENCIA ARTIFICIAL Y EMPRENDIMIENTO: UNA REVISIÓN SISTEMÁTICA DESDE UN ENFOQUE CONTEXTUAL

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ABSTRACT: This article examines the contemporary impacts of artificial intelligence on entrepreneurship. It delves into the role of artificial intelligence agents, transforming human-technology interaction and generating inevitable cultural changes. In the field of entrepreneurship, it analyzes how artificial intelligence integrates with the tradition of viewing organizations as information systems, addressing issues such as information processing and bounded rationality. The methodology involves a systematic review of literature present in the Web of Science (WOS) system, highlighting opportunities and threats at the intersection of artificial intelligence and entrepreneurship. The discussion explores theoretical models of the articles included in the review. The conclusion is a synthesis of the main theoretical frameworks from which entrepreneurship is addressed in terms of artificial intelligence. The contribution lies in synthesizing the relevant literature, offering a comprehensive view of artificial intelligence and entrepreneurship.

Keywords: *Artificial Intelligence, Entrepreneurship, Business, Management, Technology.*

RESUMEN: Este artículo examina los impactos contemporáneos de la inteligencia artificial sobre el emprendimiento. Se profundiza en el papel de agentes de inteligencia artificial, transformando la interacción humano-tecnología y generando cambios culturales inevitables. En el ámbito del emprendimiento, se analiza cómo la inteligencia artificial se integra con la tradición de ver las organizaciones como sistemas de información, abordando problemáticas como el procesamiento de información y la racionalidad limitada. La metodología implica una revisión sistemática de literatura

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presente en el sistema Web of Science (WOS), destacando oportunidades y amenazas en la intersección de la inteligencia artificial y el emprendimiento. La discusión explora modelos teóricos de los artículos incluidos en la revisión. La conclusión es una síntesis de los principales marcos teóricos desde los cuales se aborda el emprendimiento en función de la inteligencia artificial. La contribución radica en sintetizar la literatura relevante, ofreciendo una visión integral de la inteligencia artificial y el emprendimiento.

Palabras clave: *Inteligencia Artificial, Emprendimiento, Negocios, Gestión, Tecnología.*

INTRODUCTION

Contemporary industrial changes related to artificial intelligence, interpreted as a new industrial revolution have affected various areas of society (Giuggioli and Pellegrini, 2023; Haefner et al., 2023; Robledo et al., 2023; Lee et al., 2023; Haefner et al., 2021; Iandoli, 2023; Jatobá et al., 2023; Chauhan et al., 2022; Van Iddekinge et al., 2023; Feliciano-Cestero et al., 2023; Li et al., 2023; Madanaguli et al, 2024; Zaoui et al., 2024; Zhu et al., 2024; Obreja et al., 2024). Issues related to this particular scientific field have developed since about the middle of the 20th century, related to automation and machine learning; however, new changes associated with the so-called fourth industrial revolution have challenged cultures and institutions globally, producing radical changes related to robotics, digitization, and automation (Giuggioli and Pellegrini, 2023).

In this sense, agents based on artificial intelligence, such as ChatGPT, Siri, Alexa, Google Assistant, among others, have changed the daily life of all people, even creating new social conditions in which human subjects coexist with non-human agents for the achievement of their goals, decision making or performance improvement, transforming the social reality between human and technology, even creating social robots that interact with people in similar conditions, imitating human behavior and cognition (Iftikhar et al., 2023), creating a new artificial social agent that affects institutional regulations, in a process of inevitable cultural change (Lee et al., 2023) in interaction with these social robots (Iftikhar et al., 2023).

In the case of business administration, the current innovations derived from artificial intelligence and intelligent machines have been in tune with a complementary tradition (Haefner et al., 2021) that understands organizations as information systems. Therefore, issues such as information processing, bounded rationality, and cognitive capabilities are

problems related to the new technological advances in artificial intelligence, so this issue is not alien to the field of business administration, and particularly to new business ventures (Giuggioli and Pellegrini, 2023).

In this sense, business administration argues that organizations and computers are similar, being the computational system a resource to explore and exploit behavior, generating a positive perspective in the relationship between administration and the artificial (Simon, 1996). However, each area of management and business requires a particular contextualization of the new advances in artificial intelligence technology. This is why, for an organization, AI constitutes an intangible asset that generates an added value in each component of its structure (Rubin, 2024).

This research seeks to focus on the link between artificial intelligence and entrepreneurship in the field of business administration, from an institutional approach, because these artificial technologies are configured according to algorithms and automated processes that are based on rules and objectives predefined by the institutional or sociocultural context (Pietronudo et al., 2022), understanding that artificial intelligence is the technological creation contextualized in a particular society that nourishes it with data, information, standards, guiding its learning as an intelligent machine. In short, the calculations performed by artificial intelligence using increasing volumes of data are not alien to previous rules and programming, which were predefined by their creators, who belong to the cultural contexts of their societies.

Finally, to carry out this approach to the relationship between artificial intelligence and business entrepreneurship, a systematic review of the specialized and relevant literature on the subject was carried out. The results highlighted dimensions related to the opportunities it offers, its effects on decision-making and educational performance (Giuggioli and Pellegrini, 2023), establishing a common discourse in the relevant articles, in which the effects of artificial intelligence in context and the particular effects on entrepreneurship are observed, highlighting the opportunities and threats that derive from these situations. Overall, AI is crucial and has important implications in terms of how entrepreneurs develop, design, and scale their ventures during the entrepreneurial process (Chalmers et al., 2021).

The article is structured with a theoretical section that conceptually addresses the phenomenon of artificial intelligence in entrepreneurship, followed by a methodological section that explains the systematic review conducted, describing the selection procedure of relevant articles, continuing with the results constituted by common elements in the discourses of the selected relevant articles, to subsequently generate a discussion section regarding the theoretical foundations of the selected relevant articles, to conclude with the contributions of this systematic review.

ARTIFICIAL INTELLIGENCE AND ENTREPRENEURSHIP

The approach adopted to understand the relationship between artificial intelligence and entrepreneurship is contextual. Its objective is to describe the institutional environment that guides the development of the entrepreneurial process using artificial intelligence. This is because artificial intelligence technology operates under rules and objectives established in a contextual and predefined manner (Pietronudo et al., 2022). In this sense, the aim is to describe cultural contexts composed of normative phenomena, which delimit both the subject matter of the research and the phenomenon studied.

Artificial intelligence can be defined as human-like cognitive capabilities demonstrated by machines, or the examination of how computers and digital algorithms perform tasks and solve complex problems that would normally require or exceed the rational or cognitive capabilities of human persons (Giuggioli and Pellegrini, 2023). The definition used transversely is that of John MacCarthy, understanding artificial intelligence as the science and engineering of making intelligent machines, specifically intelligent computer programs (McCarthy, 1958), which is an operationalization that dates to the mid-twentieth century. However, the current generative type of artificial intelligence includes language models and multimodal systems that exceed the optimistic expectations of that era.

Currently, the phenomenon of artificial intelligence is characterized by the process of the limited rational capacity of people, surpassing itself through a download of human cognitive work, based on computers (Haefner et al., 2023), establishing this type of intelligent

machines and software as agents with cognitive abilities similar to humans, and with the ability to learn and solve problems (Lee et al., 2023). In this way, artificial intelligence is configured as a tool that supports decision-making and evaluations, providing suggestions based on data of increasing volume (Pietronudo et al., 2022).

In the beginning the applications of artificial intelligence in business were focused on the automation of routine tasks, but nowadays the generative and machine learning technological advances, together with the availability of Big Data and the exponential increase of computational power, allow artificial intelligence to be applied to complex tasks traditionally intended for people with high specialized cognitive capabilities (Weisz et al., 2023), transforming artificial intelligence into a strategic capability for the competitiveness of organizations, increasing the relevance of these new technologies for business development (Haefner et al., 2023; Lee et al., 2023).

On the other hand, human capabilities for entrepreneurship, understood as the processes by which people explore and take advantage of new business opportunities through the founding of companies (Giuggioli and Pellegrini, 2023), can be enhanced with artificial cognitive resources. These resources allow for coping with large volumes of information and uncertain scenarios more competently (Pietronudo et al., 2022). In the field of business entrepreneurship, this generates a new competence that requires artificial intelligence for successful development (Haefner et al., 2023). As a result, organizations will increasingly use technologies associated with artificial intelligence. It is predicted that more than 80% of executives surveyed in a global survey plan to invest heavily in this area in the next three years, significantly changing the context of entrepreneurship (Lee et al., 2023).

Thus, artificial intelligence systems are being applied in various functions of an organization, improving performance and raising the competitiveness of companies (Basu et al., 2023), which affects the configuration of the workforce, requiring a lower cost, which is a solution to one of the challenges of entrepreneurship and its entry barriers, capturing the attention of decision makers because it is possible to create hybrid resources that optimize workflows, using an increasingly larger set of data (Weisz et al., 2023), thus generating evidence-based

management supported by artificial intelligence, which allows streamlining the uncertainty processes associated with business and particularly with the start of new ventures.

METHODOLOGY

The relationship of artificial intelligence with business management is a topic widely addressed since about 1950 (Giuggioli and Pellegrini, 2023), however, recent industrial changes in this area give relevance to contemporary publications that address these transformations and current scenarios.

Artificial intelligence technology is confused with digital technologies in general, however, the new technological changes are different because artificial intelligence now can develop higher-order cognitive processes, generative, malleable results, and related to external elements and increasing volumes of information (Haefner et al., 2023; Pietronudo et al., 2022).

To understand the relationship between current artificial intelligence and entrepreneurship, a systematic literature review was conducted, which focused on relevant articles, which were operationalized using the following criteria, described in Table 1 below.

Table 1

Criteria for Inclusion of Relevant Articles

Criteria	Description
Criteria 1	Relevant articles included in this systematic review of the literature on artificial intelligence and business entrepreneurship should be indexed in the Web of Science search system (search engine link: https://www.webofscience.com/).
Criteria 2	Relevant articles included in the systematic review of the literature on artificial intelligence and business entrepreneurship should be in the search results using the Web of Science specialized platform, based on the keywords: a) artificial intelligence; and b) entrepreneurship with its synonyms. In the Web of Science search engine, the following Boolean search tool is used, in the advanced search option: ((((ALL=(entrepreneurial OR entrepreneurship OR entrepreneurialism OR venture OR company OR business)))) AND ALL=(artificial intelligence)). This conjunction of

	elements resulted in 23,920 document units, which exceeds the scope of this systematic literature review (link to search results: https://www.webofscience.com/wos/woscc/summary/bcd32403-f453-49da-aaa9-eef4d11adf0d-c7d40bf9/relevance/1).
Criteria 3	To these results derived from the specialized platform of Web of Science, a refinement is made in the search, establishing that the journals of the relevant articles included in this systematic review must be indexed in the Social Science Citation Index (SSCI) system, because in this way research that is not in the field of social sciences is excluded, understanding business administration, and particularly the development of entrepreneurship, as a social science.
Criteria 4	A new refinement is made to the results derived from the refinement of criterion 3, establishing that the journals of the relevant articles included in the systematic review must be included in the topics of journals under the categories business or management specifically, to focus on the field of social sciences to publications related to business administration. Along with this, it is also established that the relevant articles should be review articles to broadly address the state of the art in the field and avoid specific empirical studies that restrict the contextual view of the field of the relationship between artificial intelligence and entrepreneurship.
Criteria 5	From the results derived from the application of the first four criteria, the results are again refined by searching in the same search results for the category of entrepreneurship, to focus the field of business administration specifically on the topic of entrepreneurship. The result is 19 relevant articles specializing in entrepreneurship and artificial intelligence.
Criteria 6	Of the articles that were found, derived from the application of the first 5 criteria, those that were published in high-impact journals, that is, according to the measurement of Quartile of Jurnal Impact Factor of JCR, understanding this concept under the indicator of quartiles of Q1 and Q2, discarding Q3 and Q4, were used for the synthesis. However, in any case, the excluded articles of lower quartiles were reviewed, to be integrated into the theoretical framework as background as appropriate.
Criteria 7	From the results of the refinement by keywords, indexing, and journal impact, consisting of six steps in the search process, articles were excluded that, upon review, were identified as addressing the topic of artificial intelligence as a secondary element or annex to other main topics. Thus, articles from high-impact journals relevant to entrepreneurship and artificial intelligence were included.

Source: own elaboration.

The application of these search criteria made it possible to focus on relevant review articles published in high-impact journals on artificial intelligence in the specific field of business entrepreneurship. These articles are constituted by a sample of 8 units, which were analyzed

in detail to integrate them into their common consensus themes. All 19 articles resulting from the refinement of the search at the level of criterion 5 were used to build the theoretical framework and to support the general context of the use of artificial intelligence in business management. In addition, other bibliographic resources referenced in the same readings of the selected relevant articles were incorporated, using a total of approximately 21 bibliographic references in this systematic literature review article.

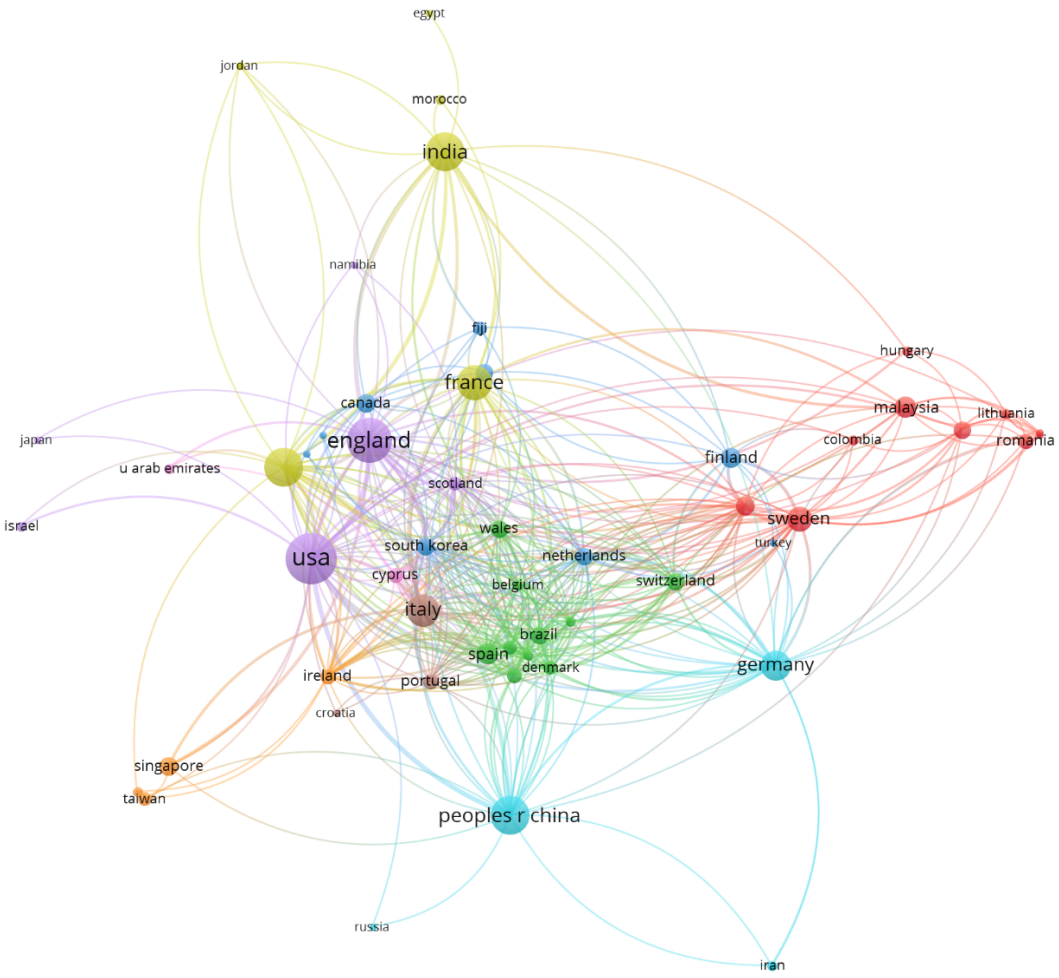
Finally, in this systematic review with a contextual approach, the geographical locations of the scientific contributions to this discussion can be mapped and evidenced, together with the co-authorships in this same subject, in addition to the influence of each country in the global scientific productivity through the frequency of documentary citation.

RESULTS

Figure 1 and Table 2 show the frequency of scientific productivity in artificial intelligence and entrepreneurship, together with its influence according to the frequency of documentary citation, based on the sample that reached the fourth selection criterion. This map, created using the VOSviewer software, shows that the United States and England, together with France and India, as well as China and Germany, are the main geographical areas in which this collaborative scientific productivity in co-authorship is developed. Probably, they are also the countries with national industries more linked to artificial intelligence, or with a greater presence of artificial intelligence use in their product processes, generating priority in this subject. Also, Table 2 shows how the United States, England, France, and Italy lead the influence in scientific productivity according to the number of citations achieved in their documentary productivity, highlighting that the articles generated by the United States were cited 1,993 times globally while concentrating the highest documentary productivity with 42 scientific articles on the subject.

Figure 1

Map of scientific productivity by country.



Source: own elaboration using VOSviewer.

Table 2

Influence of countries on scientific productivity according to citation frequency

Country	Quantity of articles	Quantity of cites
United States	42	1.993
England	33	1.632
France	20	1.044
Italy	17	1.024
Sweden	10	773
Germany	15	632

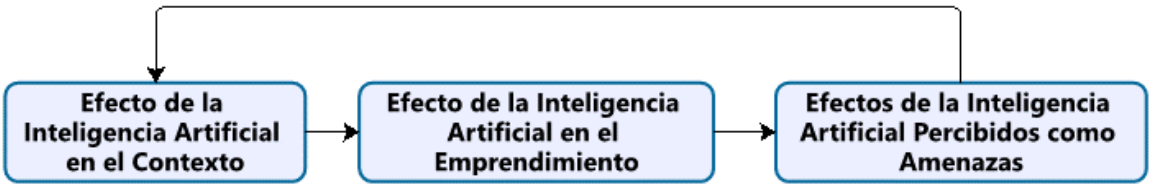
India	24	607
Norway	6	556
Australia	24	549
China	24	497

Source: own elaboration using VOSviewer.

The main findings related to the relationship between artificial intelligence and entrepreneurship identify common themes addressed by the most relevant publications on the subject, according to the selection and inclusion process discussed in the methodological section. These contents are articulated in a logical process which is represented in the process map described in Figure 2 below.

Figure 2

Map of common content in systematically reviewed articles



Source: own elaboration.

This Figure 2 shows three common elements in the systematically reviewed articles, which are constituted by: a) contextual elements associated with the effects of artificial intelligence on society in general; b) particular effects on artificial intelligence entrepreneurship; and, c) effects of artificial intelligence perceived as threats. The articles analyzed have in common a cyclical discourse that addresses contextual transformations associated with artificial intelligence, highlighting the opportunities it presents, to later focus on the particular elements of entrepreneurship, ending in a reflection on the negative aspects as threats or weaknesses associated with artificial intelligence, which again nourishes the initial contextual elements, generating a descriptive cycle associated with the opportunities and threats of artificial intelligence related to business entrepreneurship. Each thematic element of this argumentative cycle is explained below.

Description of common themes in systematic literature review

Effect of artificial intelligence in the context: In this thematic on the effects of artificial intelligence in the context, it is established that artificial intelligence affects most of the technological paradigms of the current industrial changes, for example, regarding smart factories, the internet of things and communication between machines, productive operations without human intervention thanks to the generation, transfer and analysis of the data flow necessary to perform production tasks, control of artificial intelligence on systems, workflows, quality of results and maintenance activities, among several other topics (Giuggioli and Pellegrini, 2023), affecting organizations in all sectors (Haefner et al., 2023).

The popularity of this tool can be evidenced by the fact that a global survey indicates that 85% of executives surveyed will invest heavily in AI technologies in the next three years (Lee et al., 2023), perceiving a significant change in the business landscape in the 21st century. For example, one of the current characteristics of contemporary society is dynamism, changing markets, and unpredictable social transformations, which generate uncertainty, coupled with the need for constant innovation to face competition, being this situation a challenge that can be addressed with artificial intelligence tools, which will reduce the cost invested in innovation processes and processing of volatile and abundant information (Haefner et al., 2021). Thus, the dynamic and challenging context of the contemporary scenario is presented as a problem in which artificial intelligence can function as a solution for information processing, supporting the limited rationality and limited cognitive resources of people, and increasing the possibilities of adapting to a changing environment, rationalizing processes of uncertainty.

Technological advances in automatic machine learning, the availability of Big Data, and the exponential increase in computational power allow people to apply artificial intelligence-based solutions to complex problems with uncertain outcomes, through a human-like social language, with autonomy and learning capacity (Weisz et al., 2023). In this sense, personal assistants such as Cortana, Alexa, ChatGPT, and others, will offer greater efficiency to the user in multiple performance domains (Basu et al., 2023).

Finally, people are teaming with intelligent autonomous agents in work environments such as surgical or educational settings (Iftikhar et al., 2023; Weisz et al., 2023; Basu et al., 2023; Giuggioli and Pellegrini, 2023; Haefner et al., 2023; Robledo et al., 2023; Lee et al., 2023; Haefner et al, 2021; Iandoli, 2023; Jatobá et al., 2023; Chauhan et al., 2022; Van Iddekinge et al., 2023; Feliciano-Cestero et al., 2023; Li et al., 2023), but also in everyday environments such as video games, establishing a link between human effort and artificial intelligence, shaping new social relationships with technological agents.

Effects of artificial intelligence on entrepreneurship: In the thematic of the particular effect of artificial intelligence on business entrepreneurship, the phenomenon of entrepreneurship is conceived as part of business management, having in common that work processes are developed, which are rapidly integrating with artificial intelligence, evolving and transforming the nature of contemporary work, and restructuring the cultural norms related to the interaction between people and technology (Iftikhar et al., 2023).

Artificial intelligence can facilitate the design, management, and evaluation of work processes, through forecasts on multivariate conditions, using Big Data techniques (Weisz et al., 2023). In this way, artificial intelligence contributes to increasing the cognitive capabilities of people, through more competitive information processing, rationalizing decisions previously subject to limited cognitive resources, imperfect information, or cognitive biases, establishing a greater rationalization of human activity, configuring a hybrid cognitive system of aggregated knowledge and capabilities (Weisz et al., 2023).

In this sense, artificial intelligence can rationalize work processes and roles associated with organizations (Basu et al., 2023), also leading to rationalizing business entrepreneurship activities. In this sense, it will allow for strengthening the rationality of decision-making and in entrepreneurship processes, along with automating organizational processes, decreasing uncertainty through rationalization, and the use of Big Data (Pietronudo et al., 2022).

This is relevant because ventures face increasing amounts of information in changing, highly competitive environments so the increase of capabilities to face the environment through solutions based on artificial intelligence is a basic component of the competitive survival of contemporary business ventures (Haefner et al., 2021), affecting operational efficiency,

customer experience and profitability (Lee et al., 2023). For these effects to be successfully exploited by entrepreneurs, they require the construction of sociotechnical systems appropriate to the new technologies, establishing a social component in this technological integration (Haefner et al., 2023). The potential of the use of artificial intelligence in business entrepreneurship will be in enhancing and complementing human capabilities, generating hybrid systems that articulate human strengths such as creativity with the speed, precision, replicability, predictability, and scalability of intelligent machines (Giugiioli and Pellegrini, 2023).

Effects of artificial intelligence perceived as threats: In the thematic of the effects of artificial intelligence perceived as negative, it is exposed that artificial intelligence may have negative consequences on those who fail to generate the expected higher productivity to remain competitive in the contemporary market, framed in the new industrial revolution (Giuggioli and Pellegrini, 2023), generating limits to the old work processes, leading to unemployment and economic inequality, which will harm those who do not adapt to this new technology, similar to the effects generated by the disruption of the first automation processes on manufacturing and retail or artisanal marketing.

This threatening situation is because, implementing and developing artificial intelligence is neither easy nor obvious, given that specific socio-technical environments are required to enable the adoption of artificial intelligence, and entrepreneurship and people must be properly organized to be able to take advantage of artificial intelligence (Haefner et al, 2023).

Along with this, another threat of artificial intelligence is characterized by an over-reliance on artificial intelligence-derived recommendations, which could systematically perpetuate cognitive biases, founded on rules programmed into artificial intelligence, without being aware of by the user, leading to undesired outcomes (Iftikhar et al., 2023), recalling that artificial intelligence has an institutional context that predefines rules and goals in its generative output.

In addition, artificial intelligence can affect people by changing the human resources of organizations, generating uncertainty in people who will not be able to adapt (Basu et al., 2023), causing unemployment or productivity problems. The reason for this situation is that

artificial intelligence is not a homogeneous tool that uniformly optimizes business and work processes (Pietronudo et al., 2022), generating multiple differences and inequalities. Finally, although artificial intelligence allows facing the uncertainty of dynamic markets and large volumes of information, it also creates uncertainty in those who cannot adapt to its effects (Lee et al., 2023), establishing a paradox between those who can reduce uncertainty using artificial intelligence, and those who increase their uncertainty by not using artificial intelligence, making it impossible to continue with the traditional and large uncertainty work processes to which they are accustomed.

Thus, the three fundamental elements associated with the systematic literature review are evidenced, which are constituted by common elements in the discourse of the scientific articles included, establishing an argumentative cycle that addresses the issues associated with the effects in the context of artificial intelligence, to delve into the particular effects of artificial intelligence in business entrepreneurship, to conclude by addressing the perceived threats associated with artificial intelligence.

DISCUSSION OF RESULTS

In this section, a discussion of the following theoretical models used by the articles included in the systematic review of relevant literature is addressed. One element to be considered is that artificial intelligence is based on computations of large data sets and automation, however, as already mentioned, these computations are oriented by predefined rules and objectives (Pietronudo et al., 2022), so there is an institutional component associated with the normative phenomena that nurture the processes of artificial intelligence, which is not explicitly addressed in these literature reviews, establishing that there is an opportunity for a broader review that considers the institutional approach as an orientation of the analysis.

In this sense, in the field of discussion on artificial intelligence applied to the field of business administration, and particularly, to the field of entrepreneurship, it is possible to identify the use of the following theoretical models, described in Table 3.

Table 3

Theoretical Foundations of the Systematically Reviewed Articles

Theory Name	Theory Description
Business Process (Guiggioli and Pellegrini, 2023)	This is a process approach in which ventures and businesses develop through stages of a cycle that can be modeled. There are different approaches to this business process approach.
Sociotechnical systems theory (Haefner et al., 2023; Iftikhar et al., 2023)	It is a theoretical framework that seeks to highlight the social and cultural components of the context in which technologies are implemented, in which people interact with technology, considering socio-technical aspects of the interaction between artificial intelligence agents and human beings.
Dynamic Capabilities (Lee et al., 2023)	It is an approach that seeks to focus on the resources and capabilities of organizations that seek to explore new opportunities, reconfiguring their own capabilities in innovation processes, within the framework of understanding artificial intelligence as an element that strengthens the dynamic capabilities of organizations in changing contexts.
Stakeholder theory (Lee et al., 2023).	It is a theoretical model that focuses on the interaction of different stakeholders and agents, associated with the use of resources, within the framework of understanding the contextual and particular effects of artificial intelligence.
Theory of Firm Behavior (Haefner et al., 2021; Pietronudo et al., 2022)	Interest in the computational processing of organizations already existed in authors such as Herbert Simon, so this theory is understood as already previously linked to the birth of artificial intelligence and complementary to its current development. The original proposal is that organizational problem solving could be better understood by looking at organizations as information processing systems built by simple computational methods and algorithms, being the organization itself a simple algorithm or a combination of algorithms that process information, so that the behavioral theory is harmoniously related to artificial intelligence, especially about information processing and the argument of the bounded rationality of people, allowing to overcome human limits through support in artificial cognitive capabilities. Specifically, the garbage can model is also addressed, which seeks to address decision-making in contexts of bounded rationality (Pietronudo et al., 2022). In this sense, the rationalizing influences of artificial intelligence on innovation management as a decision-making process, because different types of rationalizations now come into play in organizations to make decisions in contexts of uncertainty. The garbage can model is based on the influence of rules and their rationalizing effects.

Theory of Evolution (Basu et al., 2023)	The theory of evolution is a historical perspective with a focus on macro transformations, which seeks to describe the changes that organizations and people must face in different environmental, technological, and social contexts. Artificial intelligence can be interpreted from this general historical process of human progress.
Organizational adaptation theory (Basu et al., 2023)	Adaptation theory refers to the capacity of organizations and individuals to modify themselves to face the transformations of the environment, particularly by taking advantage of opportunities and facing the threats of artificial intelligence.

Source: own elaboration.

Table 3 shows the different theoretical approaches to address the phenomenon of artificial intelligence associated with the phenomenon of business entrepreneurship in particular. It highlights the contributions of the behavioral theory of the firm, due to its harmony with the development of computation and informatics, highlighting artificial intelligence as a cognitive resource complementary to the limited rationality of people. Finally, it is possible to establish that all these theories address contextual elements that could be systematized from an institutional approach, especially regarding the rules that constitute information processing and algorithms, because their normative composition is predefined at the creation of the technology itself, from a specific cultural context (Pietronudo et al., 2022).

CONTRIBUTION

The main contribution of this systematic literature review is to make a synthesis of the most relevant articles focused on the relationship between artificial intelligence and entrepreneurship, generating a systematization of fundamental elements associated with the effects of artificial intelligence in the general context and business entrepreneurship in particular, considering the threats derived from these transformations, which generates the institutional challenge of making a cultural change for the successful implementation of artificial intelligence in a social context (Haefner et al., 2023; Iftikhar et al., 2023).

In this sense, the organizational culture should evolve to accept and prepare for changes, incentivize and reward changes and implement cognitive thinking, eliminate minor tasks, generate evidence-based management, and use increasing amounts of data, in an agile and

collaborative way (Lee et al., 2023). Thus, the institutional approach has an opportunity to deepen this analysis, due to its contextual strengths, and because of a lack of deepening in the explicit and implicit regulatory components in the field of artificial intelligence applied to business entrepreneurship. Finally, a future research perspective could derive from a meta-analysis of the scientific literature production, rescuing the empirical studies excluded in this systematic review, to approach them from a quantitative paradigm of explanatory scope, surpassing the descriptive and synthetic scope of this systematic literature review.

REFERENCES

Basu, S., Majumdar, B., Mukherjee, K., Munjal, S. and Palaksha, C. (2023). Artificial intelligence–HRM interactions and outcomes: A systematic review and causal configurational explanation. *Human Resource Management Review, 33*(1), 100893. https://doi.org/10.1016/j.hrmr.2022.100893

Chalmers, D., MacKenzie, N. G. and Carter, S. (2021). AI and entrepreneurship: implications for venture creation in the fourth industrial revolution. *Entrepreneurship Theory and Practice, 45*(5), 1028-1053.

Chauhan, C., Parida, V. and Dhir, A. (2022). Linking circular economy and digitalisation technologies: A systematic literature review of past achievements and future promises. *Technological Forecasting and Social Change, 177*, 121508. https://doi.org/10.1016/j.techfore.2022.121508

Feliciano-Cestero, M. M., Ameen, N., Kotabe, M., Paul, J. and Signoret, M. (2023). Is digital transformation threatened? A systematic literature review of the factors influencing firms' digital transformation and internationalization. *Journal of Business Research, 157*, 113546. https://doi.org/10.1016/j.jbusres.2022.113546

Giuggioli, G. and Pellegrini, M. M. (2023). Artificial intelligence as an enabler for entrepreneurs: a systematic literature review and an agenda for future research. *International Journal of Entrepreneurial Behavior & Research, 29*(4), 816-837. https://doi.org/10.1108/IJEBR-05-2021-0426

Haefner, N., Parida, V., Gassmann, O. and Wincent, J. (2023). Implementing and scaling artificial intelligence: A review, framework, and research agenda. *Technological Forecasting and Social Change, 197*, 122878. https://doi.org/10.1016/j.techfore.2023.122878

Haefner, N., Wincent, J., Parida, V. and Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda☆. *Technological Forecasting and Social Change, 162*, 120392. https://doi.org/10.1016/j.techfore.2020.120392

Iandoli, L. (2023). Annual review article: The dual mindset of design-driven entrepreneurship: The case for a pedagogy of making and artefact-centred entrepreneurship education. *International Small Business Journal, 41*(4), 349-370. https://doi.org/10.1177/02662426231160525

Iftikhar, R., Chiu, Y. T., Khan, M. S. and Caudwell, C. (2023). Human–Agent Team Dynamics: A Review and Future Research Opportunities. *IEEE Transactions on Engineering Management, 71*, 10139-10154. https://doi.org/10.1109/TEM.2023.3331369

Jatobá, M. N., Ferreira, J. J., Fernandes, P. O. and Teixeira, J. P. (2023). Intelligent human resources for the adoption of artificial intelligence: a systematic literature review. *Journal of Organizational Change Management, 36*(7), 1099-1124. https://doi.org/10.1108/JOCM-03-2022-0075

Lee, M. C. M., Scheepers, H., Lui, A. K. H. and Ngai, E. W. T. (2023). The Implementation of Artificial Intelligence in Organizations: A Systematic Literature Review. *Information y Management, 60*(5), 103816. https://doi.org/10.1016/j.im.2023.103816

Li, J.-M., Wu, T.-J., Wu, Y. J. and Goh, M. (2023). Systematic literature review of human–machine collaboration in organizations using bibliometric analysis. *Management Decision, 61*(10), 2920-2944. https://doi.org/10.1108/MD-09-2022-1183

Madanaguli, A., Sjödin, D., Parida, V. and Mikalef, P. (2024). Artificial intelligence capabilities for circular business models: Research synthesis and future agenda. *Technological Forecasting and Social Change, 200*, 123189. https://doi.org/10.1016/j.techfore.2023.123189

McCarthy, J. (1958). *Programs with common sens*. Proceedings of the Symposium on Mechanisation, London.

Obreja, D. M., Rughiniș, R. and Rosner, D. (2024). Mapping the conceptual structure of innovation in artificial intelligence research: A bibliometric analysis and systematic literature review. *Journal of Innovation & Knowledge, 9*(1), 100465. https://doi.org/10.1016/j.jik.2024.100465

Pietronudo, M. C., Croidieu, G. and Schiavone, F. (2022). A solution looking for problems? A systematic literature review of the rationalizing influence of artificial intelligence on decision-making in innovation management. *Technological Forecasting and Social Change, 182*, 121828. https://doi.org/10.1016/j.techfore.2022.121828

Robledo, S., Grisales Aguirre, A. M., Hughes, M. and Eggers, F. (2023). "Hasta la vista, baby"–will machine learning terminate human literature reviews in entrepreneurship? *Journal of Small Business Management, 61*(3), 1314-1343. https://doi.org/10.1080/00472778.2021.1955125

Rubín, C. (2024). La IA en la administración de negocios actual. *Cuadernos Del CIMBAGE, 1*(26), 61-76.

Simon, H. A. (1996). *The Sciences of the Artificial* (3rd ed). MIT Press Cambridge.

Van Iddekinge, C. H., Lievens, F., and Sackett, P. R. (2023). Personnel selection: A review of ways to maximize validity, diversity, and the applicant experience. *Personnel psychology, 76*(2), 651-686. https://doi.org/10.1111/peps.12578

Weisz, E., Herold, D. M. and Kummer, S. (2023). Revisiting the bullwhip effect: how can AI smoothen the bullwhip phenomenon?. *The International Journal of Logistics Management, 34*(7), 98-120. https://doi.org/10.1108/IJLM-02-2022-0078

Zaoui, A., Tchuente, D., Wamba, S. F. and Kamsu-Foguem, B. (2024). Impact of artificial intelligence on aeronautics: An industry-wide review. *Journal of Engineering and Technology Management, 71*, 101800. https://doi.org/10.1016/j.jengtecman.2024.101800

Zhu, H., Vigren, O. and Söderberg, I. L. (2024). Implementing artificial intelligence empowered financial advisory services: A literature review and critical research agenda. *Journal of Business Research, 174*, 114494. https://doi.org/10.1016/j.jbusres.2023.114494