AI & SOCIETY (2025) 40:6097–6121
https://doi.org/10.1007/s00146-025-02428-1

RESEARCH

From risk to reward: AI's role in shaping tomorrow's economy and society

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Received: 12 December 2024 / Accepted: 6 June 2025 / Published online: 24 June 2025
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Abstract
This study investigates the impact of Artificial Intelligence (AI) on society, business, and management, using a qualitative approach centered on the analysis of interviews and a review of literature. Text mining techniques were applied through the KH Coder tool, allowing for a detailed exploration of how AI is transforming these three dimensions. The results reveal significant changes in management practices, deep economic impacts, and relevant social changes brought about by the rapid adoption of AI. The originality of this study lies in the combination of qualitative analysis with the exploration of textual data, providing a comprehensive view of the ethical and practical implications of AI. It also acknowledges limitations, such as the rapid pace of technological development and the potential bias in the perceptions collected. This work contributes to a better understanding of the challenges and opportunities presented by AI, and suggests pathways for ethical and effective integration.

Keywords Artificial Intelligence · Digital transformation · Social impact · Management · Economy

1 Introduction

Throughout history, each technological innovation has brought challenges and opportunities, from the Industrial Revolution to the era of digital transformation. However, Artificial Intelligence (AI) stands out for its ability to learn and adapt quickly to its context, leading to faster and more profound impacts. The AI revolution is having a significant effect on the transformation of society, people's lives, businesses, and employment, often in challenging ways. It is crucial to prepare society for these changes to maximize the benefits of AI and minimize its risks and disadvantages, making it accessible to as broad a range of users as possible (Makridakis 2017a, b).

Artificial Intelligence is a powerful technology with the potential to profoundly and broadly transform society, the economy, and management (Fosso Wamba et al. 2021a, b). The importance of AI lies in its ability to solve complex problems and improve people's quality of life, driving economic growth and innovation (Leavy 2023a, b). This study aims to map the current impact of AI and anticipate its future potential, outlining paths for the ethical and effective integration of AI into contemporary social and economic structures.

In society, AI can improve the quality of life in areas such as healthcare, education, security, and transportation by personalizing services and optimizing processes. Preparing society for both the benefits and risks of AI is crucial to maximizing its advantages while minimizing the risks and downsides (Sharma 2023a, b).

Economically, AI-driven automation and advanced data analysis are transforming value chains, boosting productivity, and stimulating innovation. AI has the potential to influence the formulation and implementation of economic policies, enabling more dynamic and responsive management

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of economic crises and real-time policy adjustments (Kaul 2022).

In management, AI helps companies optimize processes, reduce costs, and increase efficiency. It also facilitates the development of new management tools, such as demand forecasting systems and risk management platforms, promoting more accurate and proactive management (Ramachandran et al. 2023b). The use of AI in decision-making is becoming prevalent across various industries, such as finance, healthcare, and transportation, highlighting the need for a comprehensive understanding of the ethical implications of AI (Panduro-Ramirez et al. 2023). AI plays a crucial role in risk management by offering advanced methods for organizing knowledge, identifying, assessing, and visualizing risks efficiently (Holtz et al. 2023).

However, the impacts of AI are not solely positive and bring significant challenges, such as the need to adapt workers' skills, mitigate algorithmic errors, and ensure that AI development and implementation are ethical and fair. It is essential for governments and businesses to invest in reskilling and education programs to prepare the workforce for the future, in addition to developing standards and regulations that ensure the ethical and responsible use of AI (Feijóo and Kwon 2020).

The research problem is the need to comprehensively and thoroughly understand the impact of AI on society, the economy, and management, as well as the ethical and practical challenges that arise from this process. This study addresses critical gaps in the literature regarding the holistic impact of AI on society, business, and management. While numerous reviews have explored these domains in isolation, few have integrated qualitative insights with text mining to reveal the nuanced interactions between AI's technological advances and their socio-economic implications. In contrast to existing literature that often segregates the analysis of AI's impacts into distinct economic, social, or managerial facets, this study employs a comprehensive qualitative approach. By synthesizing interviews with a diverse range of professionals, it uncovers the interconnected effects of AI across these domains, offering a multidimensional perspective that is scarcely addressed in current reviews.

The objective of this study is to address these gaps by offering an in-depth view of the dynamics, opportunities, and challenges associated with the implementation of AI in various scenarios. This problem is particularly relevant due to the ability of this technology to broadly influence all aspects of human life, raising crucial questions about fairness, privacy, and technological governance (Sharma 2023a, b). Understanding these dynamics is essential to ensure a balanced and sustainable development of AI, maximizing social and economic benefits while minimizing risks.

As AI technologies evolve at an unprecedented pace, they catalyze profound changes across various domains—altering job structures, influencing economic policies, and reshaping societal norms. However, despite its widespread adoption, the comprehensive impact of AI remains underexplored, with most studies tending to focus on isolated aspects of its influence. This gap highlights the need for an integrated analysis that considers the symbiotic relationships AI fosters across these critical areas. Consequently, this study is driven by the fundamental research question: "**How does AI impact Society, the Economy, and Management?**" By addressing this question, we aim to unravel the multifaceted dynamics of AI, offering insights into its transformative capabilities and the overarching challenges it presents, thereby guiding strategic integration and policy formulation to harness its potential responsibly.

The main themes of this study include automation, transformation, evolution, personalization, society, labor market, ethics, and regulation. The variables to consider involve measurements of social, economic, and management impact, as well as indicators of technological acceptance and ethical regulations.

This study is structured by an introduction that presents the theme "The Impact of Artificial Intelligence on Society, Economy, and Management"; followed by the literature review, which analyzes articles on three main areas: "Artificial Intelligence in Society," "Artificial Intelligence in the Economy," and "Artificial Intelligence in Management." The methodology describes a qualitative approach centered on a book of interviews regarding the impact of AI on society and the labor market. The data analysis was conducted through the text-mining tool KH Coder, and the discussion addresses the results obtained in the qualitative analysis in comparison with the literature from various authors. Finally, the conclusion synthesizes the results, presents the final insights on the impact of AI, and acknowledges the research limitations, such as sample restrictions and the constant technological evolution.

Each chapter is supported by recent literature, ensuring a robust and up-to-date analysis of the trends and challenges associated with the rapid advancement of AI. This structure facilitates a comprehensive understanding of the topic and guides the reader through the theoretical and practical complexities that shape the contemporary landscape of AI.

2 Literature review

2.1 Impact of AI in society

Artificial Intelligence (AI) is defined as systems of machines or computers capable of learning and performing tasks typically associated with human intelligence. Initiated as a research project in 1956 at Dartmouth College, AI has evolved significantly, especially in the last 5 years, with

advancements in algorithms, big data, and cloud computing (Fosso Wamba et al. 2021a, b).

AI has the potential to provoke significant changes across all aspects of society, comparable to the Industrial and Digital Revolutions. These changes include highly interconnected organizations, decisions based on the analysis of large volumes of data, and intensified global competition among companies (Makridakis 2017a, b). AI can be applied for social good in various areas, including economic crisis response, economic growth, education, environmental challenges, equality and inclusion, health, combating hunger, information verification, infrastructure management, public administration, and security and justice (Fosso Wamba et al. 2021a, b). In addition, AI can help address the complexities in global coordination required to solve global problems such as climate change and antimicrobial resistance (Floridi et al. 2018).

Businesses will face substantial transformations, requiring innovation, adaptation to new technologies, and increased competitiveness. The AI revolution will have a considerable impact on employment patterns, with automation and AI usage creating new work and leisure patterns and altering the nature of employment (Makridakis 2017a, b). General-purpose technologies (GPTs) can revitalize traditional industries, create new jobs, and drive economic growth (Sharma 2023a, b).

Regulation of AI and global collaboration are essential to mitigate risks and ensure that benefits are widely shared without compromising responsible approaches due to competition among nations and companies. The goal will always be to support AI implementation that respects and promotes essential human values (Farina et al. 2022). This phenomenon challenges concepts of intelligence, creativity, and ethics, reflecting humanity and requiring reconsiderations of socio-economic systems, social policies, and notions of justice and inclusion (Manyika 2022).

There are concerns that AI-driven automation could increase unemployment and intensify economic inequalities, although it could also create jobs in innovative sectors (Sharma 2023a, b). It is important to address ethical challenges and the need for robust regulation concerning privacy, security, and the misuse of AI (Sharma 2023a, b). The impact of AI will be profound on society, people's lives, businesses, and employment in significant and challenging ways. This underscores the importance of preparing society for these changes, maximizing AI's benefits while minimizing its risks (Makridakis 2017a, b). It is essential to create an action plan that defines AI's role in society, promoting technological design that is aware of social impacts and reduces antisocial behaviors (Ullrich and Diefenbach 2023).

The integration of AI into society emerges as an emergent social agent, operating rapidly and unexpectedly, requiring new approaches to understand and measure its impact. Machines can improve efficiency and effectiveness in various domains but also create ethical risks and challenges that need to be managed. Preparing the workforce adequately and developing policies for ethical and equitable AI implementation is increasingly important. Governments and companies must collaborate to create an environment that maximizes AI's benefits while mitigating negative impacts on society and the economy (Quandt 2022).

One of the greatest challenges will be leveraging AI technologies' benefits and ensuring everyone has access to these benefits. New opportunities for products, services, and productivity improvements should be explored while avoiding increased unemployment and greater economic inequalities (Makridakis 2017a, b). It is crucial to prepare society for the changes brought by AI, ensuring ethical and equitable implementation. Governments and companies must collaborate to create an environment that maximizes AI's benefits while mitigating negative impacts on society and the economy (Manyika 2022). Public and political participation in the AI era is crucial, along with the need for robust policies regulating AI development and use ethically and responsibly (Shiroishi et al. 2019).

The European Union promotes an inclusive vision of AI, based on European values such as human dignity, privacy, and democracy. The European Commission, through the Artificial Intelligence Act of 2021, proposes a risk-based approach to regulating AI, categorizing systems into different risk levels: unacceptable, high, limited, and minimal or no risk (Roberts et al. 2021). On the other hand, the United States adopts a more liberal approach, focusing on limiting excessive regulation and promoting innovation. The American vision for a "good AI society" prioritizes national and global competitiveness and leadership in research and development, with less emphasis on strict regulations to protect individual rights and fundamental values (Roberts et al. 2021). Despite differences in AI management approaches, both the European Union and the United States recognize the importance of international dialog and cooperation. Initiatives like the Global Partnership on Artificial Intelligence (GPAI) and adherence to OECD AI ethics principles demonstrate common ground for transatlantic cooperation (Roberts et al. 2021).

The transformative role of AI in modern societies has been extensively documented in the literature. Seminal works by Makridakis (2017a, b) and Leavy (2023a, b), which are among the most cited in the field, describe AI's broad economic implications and its potential to disrupt traditional business models and employment patterns. These studies provide a robust framework for understanding the macroeconomic shifts driven by AI technologies. Similarly, the work of Fosso Wamba et al. (2021a, b) offers comprehensive insights into AI's impact on management practices, particularly in operations and supply chain management,

highlighting how AI-driven automation enhances productivity and innovation capabilities.

However, while these high-impact studies lay a solid foundation, they often overlook the nuanced interactions between AI and socio-economic structures at a micro-level. For instance, Sharma (2023a, b) emphasizes AI's role in personalized services and its potential to significantly alter consumer behavior and societal norms. Yet, there remains a gap in the literature regarding the comprehensive assessment of these personal impacts and their broader societal implications.

Our study aims to bridge this gap by not only synthesizing findings from these seminal works but also by introducing a novel qualitative analysis that captures the subtleties of AI's influence across different societal segments. By employing a mixed-methods approach, this research will extend the current understanding of AI's impact, providing a more detailed exploration of the interplay between technological advancements and socio-economic changes.

2.2 Impact of AI in economics

Artificial Intelligence (AI) is viewed as an enhancement of statistical techniques, enabling detailed analysis of large data volumes, resulting in more accurate predictions and reduced forecasting costs (Leavy 2023a, b). Technological changes in economic belief formation indicate that economists have started to incorporate AI methods into learning about expectations and exploring the concept of AI agents. However, these concepts are primarily used as tools to solve models without directly considering technology's influence on belief formation (Svetlova 2022).

The enormous amount of data produced today necessitates the use of AI to organize and identify hidden correlations, extracting value from vast datasets. In behavioral economics, AI can significantly impact understanding and modeling behavior in areas such as social networks, personal digital censuses, and e-commerce (Rasetti 2020). Initially applied in specific solutions, AI has yet to transform existing economic systems fully. One area where AI has had a significant impact is in artificial prediction markets, where machine learning algorithms replace human traders to aggregate forecasts about future events, transforming economic forecasting methods (Michalak and Wooldridge 2017).

AI has transformative potential in understanding and modeling economic behavior, with advanced tools offering new perspectives and improving the accuracy of economic analysis and decision-making. AI can reduce the impact of bounded rationality, enhancing decision-making and making markets more rational by decreasing information asymmetry (Rasetti 2020). AI has the potential to influence the formulation and implementation of economic policies, enabling more dynamic and responsive management of economic crises and real-time policy adjustments (Kaul 2022).

There is a need to interpret and conceptualize sustainable AI as a technology to maintain the stable development of economic systems. Sustainable AI is proposed as essential for managing environmental crises and preventing future environmental threats. AI can improve environmental efficiency and manage natural resources more effectively, such as in satellite image analysis to identify environmental violations and in intelligent environmental monitoring (Lobova et al. 2022).

Lobova et al. (2022) suggest promising areas for sustainable AI in post-COVID economic and environmental management, such as developing green finance, automated disclosure of financial information on climate change, automated allocation of emission quotas, and intelligent environmental monitoring. Thus, sustainable AI has significant potential for economic development and environmental management, yet it remains underexplored. It is recommended to review current approaches to better address global challenges, such as climate change, and integrate advanced digital technologies into economic and environmental management to achieve a "synergistic effect" of sustainable development (Lobova et al. 2022).

The adoption of systemic AI solutions will alter power dynamics in industries, creating winners and losers. AI has the potential to increase economic productivity and living standards by accelerating innovation and creating new products and materials. Nonetheless, it is crucial to prepare society for these changes, including reskilling the workforce and developing policies that ensure ethical and equitable AI implementation (Leavy 2023a, b).

AI will positively impact the gross domestic product (GDP) primarily through increased labor productivity achieved by automating routine tasks, expanding workers' skills, and adding value to their work. In the financial sector, process automation by AI has already demonstrated improved productivity. Projections by Ernst and Young indicate that AI will eliminate 336,000 jobs in the financial sector by 2030 while creating 37,000 new jobs in the fintech industry (Zhang et al. 2022).

Organizations are accelerating AI adoption and investment, using it to complement rather than replace human resources. AI will affect individuals' social status and change the workforce structure by eliminating low-skilled jobs and creating new, yet undefined roles (Zhang et al. 2022). Future research directions in AI economics suggest the need for interdisciplinary studies combining insights from economics, ethics, and technology to better understand and shape AI's future impact on the economic field (Kaul 2022).

2.3 Impact of AI in management

Artificial Intelligence (AI) is increasingly integrated into decision support systems, enhancing efficiency and accuracy in fields such as management, cybersecurity, marketing, healthcare, and finance. Various practical applications of AI, including predictive modeling, process optimization, and decision support systems utilizing machine learning and natural language processing, are analyzed. The benefits of this integration include reduced decision-making time and increased precision. However, limitations such as the need for explainable AI systems and ethical considerations in AI use in management remain significant (Ramachandran et al. 2023a).

The integration of AI with the Internet of Things (IoT) and big data, along with the development of AI models, can provide transparent and understandable decision-making processes for stakeholders. Emphasizing the importance of developing AI models that collaborate with humans rather than replace them aligns automated decision-making with human goals and values (Ramachandran et al. 2023a).

AI usage in decision-making is becoming prevalent in various industries, such as finance, healthcare, and transportation, highlighting the need for a comprehensive understanding of ethical implications. Implementing and regulating AI responsibly in decision-making is crucial to ensure fair and equitable outcomes (Panduro-Ramirez et al. 2023).

AI plays a crucial role in risk management, offering advanced methods to organize knowledge, identify, assess, and visualize risks efficiently. AI methodologies such as neural networks, deep learning, and machine learning are applied to improve accuracy in risk predictions and decision-making (Holtz et al. 2023). Despite significant opportunities offered by AI in risk management, challenges include the need for high-quality data to train models and interpreting complex results. There is expected to be continual growth in AI applications in risk management, with a significant increase in publications and studies, indicating a future where AI will play an even more central role in this area (Holtz et al. 2023).

AI can improve decision-making, increase efficiency, and enhance the accuracy of risk assessments, providing a competitive advantage to organizations. However, issues such as data quality, privacy, information security, technical complexity of algorithms, and implementation costs represent significant challenges (Ramachandran et al. 2023b). A comparison between AI methods and traditional methods reveals that while AI offers greater speed and accuracy, its implementation is more complex and costly (Ramachandran et al. 2023b).

AI is transforming customer relationship management (CRM) by enabling large-scale data analysis and interactions, potentially changing the nature of customer service. AI allows for more accurate predictions of customer lifetime value, enabling more tailored treatment and market segmentation. The ability of AI to personalize interactions at scale makes customer service more efficient but raises concerns about consumer autonomy loss and increased social inequality (Libai et al. 2020).

While AI offers economic benefits such as cost reduction and increased efficiency, it also presents regulatory challenges related to market concentration and data privacy. More rigorous regulations are needed to balance ethical efficiency and intensifying inequalities in access to quality services, favoring customers with higher predicted lifetime value (Libai et al. 2020).

AI offers various benefits in inventory management, such as increased efficiency, improved decision-making, better inventory control, greater visibility, and cost reduction. There is a significant positive relationship between AI use in inventory management and increased profitability. Organizations using AI in their inventory management processes tend to experience higher profitability levels (Dhaliwal et al. 2023). Adopting AI in inventory management can significantly improve organizational profitability by optimizing operations and reducing costs, justifying the adoption of these technologies (Dhaliwal et al. 2023).

Another field where AI can improve is knowledge management, assisting in the creation, storage, retrieval, sharing, and application of knowledge. AI can identify hidden patterns in data, organize legal precedents, connect people with similar interests, and facilitate the situational application of knowledge (Jarrahi et al. 2023). For AI to significantly impact knowledge management, an organizational complement that includes people, infrastructure, and processes is necessary. This involves increasing the human role in knowledge management, preparing data for AI, promoting AI literacy, developing knowledge processes, and redesigning processes for AI integration (Jarrahi et al. 2023).

AI can enhance knowledge sharing within an organization by connecting individuals working on similar problems and improving team collaboration. Intelligent assistants and AI-based tools can provide contextualized recommendations and facilitate quick access to relevant information (Jarrahi et al. 2023). Despite the significant opportunities AI offers to enhance knowledge management in organizations, success depends on a balanced approach that recognizes AI's limitations and human capabilities (Jarrahi et al. 2023).

Operations and supply chains are also increasingly transformed by technologies such as AI, big data, and IoT, emphasizing the need to adapt business models to new production and consumption dynamics (Fosso Wamba et al. 2022). Practical AI applications discussed include product recommendations, real-time production tracking, prevention of order shipment delays, inventory shortages, and supplier monitoring to reduce acquisition costs (Fosso Wamba et al.

2022). Various organizational and managerial challenges exist in AI adoption, including identifying necessary capabilities and obstacles for successful implementation and the impact of AI on operations management, production planning, and control, and performance (Fosso Wamba et al. 2022).

Ojo et al. (2019) identify specific mechanisms in organizational, individual, and AI innovation contexts associated with positive outcomes in the public sector. These mechanisms include using machine learning and natural language processing to improve citizen services and internal operations. Implementing AI solutions in the public sector faces challenges such as limited capacity to manage large data volumes, insufficient knowledge of machine learning among employees, and the need to maintain privacy policies and protection mechanisms (Ojo et al. 2019).

AI offers significant advantages over conventional methods, such as processing large data volumes, identifying patterns that are difficult to detect manually, and generating high-precision forecasts. In financial management, AI applications include credit risk analysis, portfolio management, and fraud detection, improving forecast accuracy and risk management effectiveness. Despite its significant potential, AI implementation faces challenges such as system development complexity and concerns about privacy and security (Goel et al. 2023).

Positive results reported with AI implementation include greater process automation, increased efficiency in citizen services, and improvements in decision-making and risk identification (Ojo et al. 2019). Various technical, organizational, and individual challenges exist in AI implementation, including the need for specific AI skills and issues related to data privacy and policy (Ojo et al. 2019).

Preparing businesses, industries, and society for the changes brought by AI, including workforce reskilling and developing policies to ensure ethical and equitable AI implementation, is increasingly important. Governments and companies must collaborate to maximize AI benefits while mitigating negative impacts on society and the economy (Goel et al. 2023).

2.4 Artificial Intelligence in modern society

The integration of AI into various sectors is reshaping the economic landscape and societal structures, presenting both opportunities and challenges. As AI technologies evolve, they are increasingly recognized for their potential to drive efficiency, enhance decision-making, and foster innovation across industries. However, the rapid adoption of AI also raises significant ethical, social, and economic implications that must be carefully navigated to ensure that the benefits of AI are realized while minimizing associated risks.

AI's role in enhancing decision-making processes is particularly evident in sectors such as finance, healthcare, and manufacturing. By processing vast datasets and identifying trends, AI augments human decision-making capabilities, leading to more informed choices and improved outcomes (Osasona et al. 2024). This capability not only enhances operational efficiency but also empowers organizations to respond more effectively to market demands and societal needs. For instance, in healthcare, AI applications are revolutionizing diagnostics and patient care, enabling personalized treatment plans that improve patient outcomes (Bangash et al. 2024). However, the reliance on AI for critical decision-making raises ethical concerns regarding accountability and transparency, necessitating the establishment of robust ethical frameworks to guide AI deployment (Akinrinola et al. 2024; Li et al. 2024).

In the context of education, AI is transforming teaching and learning methodologies, fostering innovation, and enhancing administrative efficiency. Stakeholders in higher education have expressed positive attitudes toward AI's potential to streamline processes and improve educational outcomes (Al-Zahrani and Alasmari 2024). The implementation of AI in educational settings, however, must be approached with caution, as it raises questions about data privacy, algorithmic bias, and the need for ethical guidelines to protect students and educators alike (Hardaker 2025; Fraidan 2024). The integration of AI into educational frameworks can also support diversity, equity, and inclusion (DEI) initiatives, ensuring that educational opportunities are accessible to all (Karthikeyan 2024).

The economic implications of AI adoption are profound, particularly concerning labor market dynamics. While AI has the potential to enhance productivity and drive innovation, it also poses risks of job displacement, particularly in sectors characterized by routine tasks (Krstic 2024). Policymakers must, therefore, consider strategic interventions to mitigate the adverse effects of automation on employment, such as retraining programs and support for workers transitioning to new roles (Folorunso et al. 2024; Idoko et al. 2024). The challenge lies in balancing the benefits of AI-driven efficiency with the need to protect and empower the workforce, ensuring that technological advancements do not exacerbate existing inequalities.

The societal impact of AI extends beyond economic considerations, influencing social interactions and community dynamics. AI technologies, particularly generative AI, have the potential to amplify voices and foster community engagement, particularly among youth (Muoneke 2024). By democratizing access to information and enabling collaborative problem-solving, AI can facilitate meaningful societal change aligned with the United Nations Sustainable Development Goals (SDGs) (Grewal et al. 2024). However, the deployment of AI must be accompanied by ethical

considerations to prevent the perpetuation of biases and ensure that marginalized communities are included in the development and implementation processes (Vargas 2024).

As AI continues to evolve, the need for comprehensive regulatory frameworks becomes increasingly critical. Legal systems worldwide must adapt to the challenges posed by AI, including issues related to liability, accountability, and ethical treatment of AI entities (Bojić et al. 2024). The establishment of clear guidelines and standards for AI development and deployment is essential to safeguard individual rights and promote societal well-being ("Linkage of Artificial Intelligence and Violation of International Human Rights Law: A Dialectical Relationship" 2024; Kotsis 2024). Furthermore, fostering public trust in AI technologies is paramount, necessitating transparency in AI algorithms and decision-making processes (Li et al. 2024; Lottu et al. 2024).

The intersection of AI and sustainability is another area of significant interest, as AI technologies can play a pivotal role in addressing global challenges such as climate change and resource depletion. AI applications in environmental monitoring and management can enhance the effectiveness of sustainability initiatives, providing actionable insights for policymakers and stakeholders (Durai et al. 2024; Lu 2024). However, the environmental impact of AI itself must also be considered, as the energy consumption associated with AI technologies can contribute to ecological degradation if not managed responsibly (Moyano-Fernández et al. 2024).

The transformative potential of AI in shaping tomorrow's economy and society is undeniable. However, realizing this potential requires a concerted effort from stakeholders across sectors to address the ethical, social, and economic challenges that accompany AI adoption. By fostering collaboration, promoting transparency, and ensuring that ethical considerations are at the forefront of AI development, society can harness the benefits of AI while mitigating its risks. The future of AI lies not only in its technological advancements but also in the commitment to creating a just and equitable society that prioritizes human values and well-being (Table 1).

3 Research methodology

The present study aims to analyze the influence of Artificial Intelligence on society, economy, and management, with the goal of maximizing the benefits that this technology can offer to these three areas. The research explores a range of issues, from problem-solving and challenges to the various opportunities and advantages that AI can provide, always considering its impact on social dynamics, ethical concerns—including responsibility, privacy, and security—as well as the changes in the labor market, functions, and tasks resulting from its implementation.

To achieve this objective, a qualitative approach was chosen, allowing for a comprehensive collection of relevant information, followed by a detailed analysis of this data. The methodology adopted includes, first, the identification of relevant issues based on a literature review, drawing from previous studies conducted by experts in the relevant fields. Subsequently, an in-depth analysis was conducted on the book "The 88 Voices of Artificial Intelligence," in which 89 professionals, connected to the study areas, provide insights based on the issues previously identified. Finally, text mining techniques were applied using QH Koder software to extract insights and testimonies that offer a robust analysis and conclusion regarding the study's objective.

The primary purpose of this research is to understand the practical applications of AI and to gather testimonies from top professionals operating in a complex, dynamic, and fast-paced corporate environment. Through the mentioned work, it is intended to reveal how AI can transform the three areas of study in focus.

In this study, we employ a qualitative research approach to explore the multifaceted risks and rewards of AI. This method is particularly effective for this analysis due to its ability to capture the depth, complexity, and contextual nuances that quantitative methods might overlook. Through structured interviews with industry experts, academics, and practitioners who are directly engaged in the implementation and oversight of AI technologies, we gain rich, detailed insights into the experiential and perceptual aspects of AI impacts.

This qualitative framework allows us to delve into the subjective interpretations of AI's benefits and drawbacks, providing a platform for stakeholders to articulate their views and experiences. Such narratives are invaluable for understanding the varied implications of AI across different sectors and contexts, revealing not only the tangible benefits and risks but also the ethical considerations, societal expectations, and potential unintended consequences. By focusing on qualitative data, we can explore the nuanced ways in which AI influences decision-making processes, changes in organizational culture, ethical dilemmas, and strategic alignments within businesses and society at large.

The qualitative approach facilitates a thematic analysis where emerging themes related to AI's risks and rewards can be identified and explored in depth. This method provides a comprehensive view of the potential and challenges of AI, enabling a balanced discussion that supports informed decision-making and policy development. The insights derived from this qualitative analysis contribute significantly to the literature by providing grounded examples of AI's impact, which can guide future research and practical applications (Table 2).

Table 1 Main topics and lines of research

Author (year)	Main topics (actual research)	Main issues (future research)
Makridakis (2017a, b)	Analyzes the significant changes that the Artificial Intelligence revolution brings to society, businesses, and employment, comparing it with previous industrial and digital revolutions	Highlights the importance of preparing society to maximize the benefits of AI while minimizing its risks and disadvantages
Michalak and Wooldridge (2017)	Explores the common areas between economic theory and AI, highlighting how AI designs rational agents that choose optimal actions based on their perception of the environment	It provides insight into future challenges and research directions at the intersection of AI and economics, demonstrating how this interdisciplinary approach can advance both fields
Floridi et al. (2018)	Accentuates the impact of AI on business management and society, and the importance of an ethical and cooperative approach	Proposes 20 recommendations to ensure that AI fosters an ethical society, including audits, incentives, and public education
Shiroishi et al. (2019)	Focuses on the importance of keeping humans in decision-making roles and using AI to formulate evidence-based policies in Society 5.0	Discusses the ethical challenges of AI, including privacy, data security, and the risk of social polarization due to uneven implementation of technologies
Rasetti (2020)	Explores how AI impacts behavioral economics to improve decision-making by considering limited rationality and vast amounts of data	Discusses the mathematical challenges of machine learning, highlighting the need for a robust mathematical framework for learning capacity
Manyika (2022)	Provides a comprehensive view of the development and impact of AI on society, highlighting its effects as well as ethical and social concerns	Accents the need for a holistic approach to benefit all of humanity
Quandt (2022)	Discusses the role of AI in society, focusing on the interaction and mutual influence between human teams and machines	Suggests future directions for research in AI and society, emphasizing the importance of developing robust theoretical models to predict and understand the impact of AI on social interactions and cultural dynamics
Zhang et al. (2022)	Prioritizes the growing role of AI in daily life and its impact on national and global economies	Identifies the need to address ethical and social issues related to the application of AI
Ullrich and Diefenbach (2023)	Addresses the impact of AI on socio-economic transformations, focusing on social norms, surveillance, social scoring, and its role as an aid or authority in decision-making	The article highlights the importance of preparing society for AI by developing new ideas for future coexistence and a plan of action to define the role of AI and promote mindful technological design
Jarrahi et al. (2023)	Presents practical ways to establish an effective partnership between humans and AI in organizational knowledge management, emphasizing the importance of a symbiotic balance	The article concludes that the success of AI in organizational knowledge management depends on a balanced approach and adjustments in people, infrastructure, and processes

Source: Own elaboration

Table 2 Research questions and objectives

Lines of research (authors, year)	Research question	Research objective
The challenge is to predict the impact of AI inventions and how human roles will be affected when machines of equal or superior intelligence can substitute, supplement, or amplify nearly all mental tasks previously exclusive to humans (Makridakis 2017a, b)	RQ1: How will the Artificial Intelligence revolution influence the role of professionals within companies, particularly regarding the substitution, supplementation, and amplification of cognitive tasks?	RO1: To assess the impact of the AI revolution on professionals' roles in companies, focusing on cognitive task changes and identifying the resulting opportunities and challenges for management and the labor market
This article reports the findings of AI4People, an Atomium—EISMD initiative designed to lay the foundations for a 'Good AI Society'. We introduce the core opportunities and risks of AI for society; present a synthesis of 5 ethical principles that should undergird its development and adoption; and offer 20 concrete recommendations—to assess, to develop, to incentivize, and to support good AI (Floridi et al. 2018)	RQ2: How can ethical principles be applied to maximize social benefits and minimize the risks associated with the adoption of Artificial Intelligence, contributing to the creation of a 'Good AI Society'?	RO2: How can ethical principles be applied to maximize social benefits and minimize the risks associated with the adoption of Artificial Intelligence, contributing to the creation of a 'Good AI Society'?
Using AI, we successfully analyzed mass amounts of collected data and extracted and modeled relationships that may escape human notice. However, data used in the policy-making process by AI may not be complete or even correct. Humans need to remain as the central decision maker in the process (Shiroishi et al. 2019)	RQ3: How can Artificial Intelligence support evidence-based policy-making in Society 5.0, ensuring the preservation of human values and ethical considerations in the decision-making process?	RO3: To investigate the role of Artificial Intelligence in evidence-based policy-making for Society 5.0, focusing on developing strategies that ensure the centrality of human values and the inclusion of ethical concerns in the decision-making process
In other words, it is a way of asking what we need to get right if AI is to be a net benefit to society (Manyika 2022)	RQ4: What are the main challenges and opportunities in the development of Artificial Intelligence, and how can society ensure that AI is used in a way that benefits humanity?	RO4: To evaluate the challenges and opportunities inherent in the development of Artificial Intelligence, with the goal of identifying strategies and practices that ensure ethical and beneficial use of AI, promoting social well-being and minimizing associated risks
AI will inevitably affect the social status of the individual human actor and change the structure of the labor force. Low-skilled jobs will disappear, while new but currently undefined roles will be created. This prospect raises several ethical concerns associated with AI. Unless we address these concerns, we jeopardize the considerable rewards associated with its application (Zhang et al. 2022)	RQ5: How is automation driven by Artificial Intelligence reconfiguring the labor market, and what are the ethical implications of these changes for organizations and society?	RO5: To analyze the impact of Artificial Intelligence-driven automation on the structure of the labor market, with an emphasis on the replacement of low-skilled jobs and the creation of new roles, and to explore the ethical implications of these transformations, proposing strategies for organizations to assume Technological Social Responsibility (TSR) to maximize social benefits

Source: Own elaboration

3.1 Main issues, research questions, and research objectives

3.2 Research instrument

The book under analysis compiles 82 interviews with professionals from the fields of society, economy, and management, who have direct experience with AI in practical contexts or through real-life testimonies.

Participants were carefully selected based on their recognized expertise and contributions in academic and professional domains relevant to AI. The selection criteria focused on individuals known for their scholarly research or significant practical applications of AI, ensuring that they could provide expert insights into the study's themes. Invitations to participate were extended directly through personalized communications via email and telephone, aiming to curate a diverse and heterogeneous sample that could offer a wide range of perspectives on AI.

The interviews were conducted over a 6-month period from January 2024 to June 2025. This extended timeframe allowed for careful scheduling and thorough preparation to accommodate the availability of each expert, ensuring that the data collection was as comprehensive as possible. Interviews were held both in-person and via remote conferencing using ZOOM, depending on the location and preference of the participants, to facilitate a flexible and accessible interview process.

Each session lasted approximately 45 min, a duration determined to be optimal for maintaining participant engagement while allowing for in-depth discussion of complex topics. The semi-structured interview format employed open-ended questions, which were designed to encourage detailed responses and facilitate a deeper exploration of each topic. This approach provided the flexibility to probe further into areas of particular interest or relevance during the discussions, thus enriching the qualitative data collected.

The structure of the interview guide is organized as follows: it begins with the title of each interview, which describes the main topic to be addressed by the interviewee. Next, the interviewee's name and professional role are presented, followed by a summary (Brief) introducing the subject of the interview. The interview then focuses on the three key questions of the study, tailored to the specific context of each interviewee's area and sector of expertise. Finally, the interview concludes with a brief characterization of the interviewee and a summary of their professional background. The structure of the interviews is, therefore, outlined as follows:

1. Title of the interview
2. Name of the interviewee
3. Introductory summary (Lead or Brief)
4. Detailed text on the content of the interview, including the description and discussion of the three key questions
5. Biography of the interviewee

The interviews were designed to address three central questions directly related to the research problems of the present study, and adapted to the specificities of each area of knowledge and professional sector:

What impact will Artificial Intelligence have on human social life?

This question seeks to understand how AI is transforming social interactions and people's daily lives, shaping social dynamics and human relationships in the long term. The impact of AI is examined in key areas such as health, public safety, communication, and even in the way we consume products and services. The main objective is to grasp how AI alters our everyday life, introducing new forms of social interaction and adaptation, both in personal and professional contexts.

How can we ensure that Artificial Intelligence is ethical, providing a global benefit to humanity?

This question focuses on the ethical challenges that arise with the advancement of AI, exploring how to ensure that its use benefits society in a fair and inclusive way. It reflects concerns around privacy, security, accountability, and regulation, aiming to understand the main regulatory proposals and transparency mechanisms that can ensure the ethical use of AI, preventing inequalities and potential technological abuses.

How can we address the changes in the labor market resulting from Artificial Intelligence, balancing task replacement with the emergence of new skills, and ensuring a fair transition to a new economy?

This question addresses the profound changes that AI is generating in the labor market. The focus is on task replacement through automation and the need to develop new skills to meet the demands of emerging technologies. The major challenge is to find solutions that balance automation with the creation of new professional opportunities, ensuring that both companies and workers adapt to this reality while guaranteeing a fair transition to an increasingly automated and digitalized economy.

Table 3 presents a summary of the book, indicating the number of interviews, the general objective, and the key questions that guided the qualitative analysis of the interviews.

4 Data analysis

In this chapter, a qualitative analysis of the book entitled '88 Voices on Artificial Intelligence—What is left for the machine and what remains for humans?' is presented,

Table 3 Research contextualization

Book	88 voices on Artificial Intelligence—What is left for the machine and what remains for humans?
Number of interviews	82 interviews (some interviews involved more than one person, totaling 89 interviewees)
General objective	Perceptions/experiences of the interviewees on three fundamental questions related to the theme
Question 1	What will be the impact of Artificial Intelligence on human social life?
Question 2	How can we ensure that Artificial Intelligence is ethical, providing a global benefit to humanity?
Question 3	How can we address the changes in the labor market caused by AI, balancing task replacement with the emergence of new skills and ensuring a fair transition to a new economy?

Source: Own elaboration

consisting of 82 interviews with a total of 89 respondents. The analysis focuses on data processing, the results obtained, and the subsequent commentary, with the aim of exploring and interpreting the perceptions and experiences of professionals from various fields, including society, economics, management, and information technology. This qualitative analysis was conducted using KH Coder 3 software, following the transcription and formatting of all interviews for integration into the software.

The primary objective of this analysis is to identify the key themes, patterns, and insights emerging from the interviews, with particular emphasis on the influence of Artificial Intelligence (AI) in the mentioned areas. The analysis seeks to understand both the challenges and opportunities that AI presents, addressing topics such as its social impact, ethical implications, and the transformations it brings to the labor market.

The book gathers interviews with professionals from strategic areas who have a direct or indirect relationship with the application of AI in their fields. The sample was carefully selected to ensure a significant diversity of roles and sectors, providing a comprehensive understanding of the impact of AI on society, economics, and management.

4.1 Sample characterization

The sample includes professionals from various sectors, covering areas such as economics, management, technology, healthcare, education, retail, advertising, among others. This diversity allows for a rich, multidisciplinary analysis of the implications and uses of AI. The interviewees were selected based on their experience, with the majority having over 15 years of experience in their respective fields, which provides significant depth to the analysis in terms of understanding the transformations that AI has triggered, both in labor dynamics and in business strategies and public policies.

Most of the professionals interviewed hold leadership and decision-making positions in their respective organizations. This ensures that the data collected is highly relevant for understanding the integration of AI into management practices and the challenges this process entails. Most of the interviewees are directly responsible for coordinating teams and implementing new technologies, including AI, within their organizations.

Table 4 provides a summary of the distribution of interviewees by sector, number of professionals, and their roles.

The sample collected from the interviewed professionals offers a holistic and in-depth view of the impact of AI across different sectors of society, the economy, and management. The diversity of the sample and the extensive experience of the interviewees provide a rich perspective on both the benefits and challenges brought by AI. Among the key conclusions are the opportunities presented by AI in terms of process automation, the digital transformation of organizations, and changes in the labor market, as well as the ethical challenges that need to be addressed to ensure a responsible and beneficial application of AI.

4.2 Results analysis

The interpretation of the interviews presented in the book '88 Voices on Artificial Intelligence—What is left for the machine and what remains for humans?' was organized into three main areas of investigation, based on the three central questions posed to the interviewees. This division aimed to group the responses in a way that would facilitate the identification of recurring themes and explore the diversity of opinions within each area of analysis. The three guiding questions that structured the data were:

4.2.1 Impact of AI on society

The first question examines the impact of Artificial Intelligence (AI) on people's daily lives, focusing on how this technology is perceived in the context of social interactions and everyday activities. The analysis of the responses reveals a comprehensive understanding of the effects of AI, highlighting both its transformative potential and the risks inherent in its implementation.

Task automation and time optimization The word frequency list (Fig. 1) highlights the predominance of terms such as 'AI,' 'life,' 'impact,' 'society,' and 'people,' suggesting the importance that interviewees attribute

Table 4 Sectors of activity and roles of the interviewees

Sector of activity	Subsector	Number of professionals	Percentage (%)	Roles of each professional
Education	Higher education, research	32	35.96%	Professor, vice-rector, researcher, president, CEO, program director, coordinator
Information technology	Automation, data, Artificial Intelligence, Digital Transformation, consulting, blockchain	20	22.47%	CEO, director, president, founder, entrepreneur, head of consulting, chief business officer, engineer
Industry	Cinema, transport, marketing, art, printing solutions, real estate, architecture, publishing	10	11.24%	Founder, CEO, director, administrator, president, artist, designer
Economy	Banking, law, stock exchange, auditing	9	10.11%	Administrator, president, economist, analyst, lawyer, partner, entrepreneur
Retail	Marketing, information technology, food and beverages, clothing and fashion, publishing and education	5	5.62%	President, head of marketing, head of IT, operations
Health	Medicine, information systems, digital transformation	4	4.49%	Coordinator, director, clinical director, doctor
Public administration	Government, public safety, postal distribution	3	3.37%	Director, head of learning and talent development, secretary
Media	Filmmaking, media, journalism, advertising	3	3.37%	CEO, chief digital officer, journalist
Management consulting	Executive administration, consulting	2	2.25%	Manager, business manager, consultant
Telecommunications	Management	1	1.12%	CEO

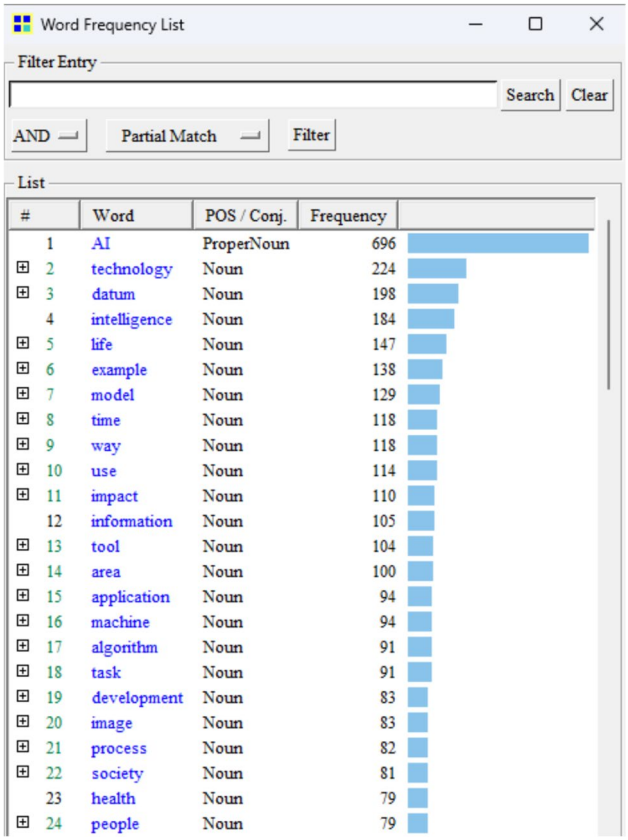
Source: Own elaboration

to Artificial Intelligence (AI) in the context of everyday life. The high frequency of the term 'AI' underscores the centrality of this technology in the analysis, reflecting its transformative role in various aspects of human life. The terms 'life' and 'impact' indicate that AI is seen as a force not only revolutionizing the technology sector but also areas such as health and education, where its effects are particularly evident. 'Society' reinforces the idea that these transformations extend beyond the individual, affecting society as a whole. Finally, the term 'people' emphasizes that, while the focus is on AI, human impact remains a key concern, reflecting changes in social interactions and well-being.

The co-occurrence network centered around the word 'life' (Fig. 2) highlights the centrality of AI in daily changes and social interactions. The strong connections between 'life,' 'AI,' and 'impact' demonstrate that interviewees recognize the transformative role of AI in everyday dynamics, affecting everything from simple tasks to deeper aspects of social relationships. The word 'daily' suggests that AI's influence extends to day-to-day routines, while associations with the terms 'positive' and 'negative' reveal an ambivalent perception of its effects. On the one hand, AI is seen as a tool to 'improve' processes, increasing efficiency, but on the other hand, concerns arise regarding potential negative impacts, particularly excessive dependence on technology and the loss of autonomy.

Social impact of AI The general co-occurrence network (Fig. 3) reveals the interconnection between key terms such as AI, people, impact, life, use, and technology, reinforcing the perception that AI is viewed as a catalyst for significant social changes. The link between change and society reflects the interviewees' understanding that AI is driving profound transformations in the social fabric. However, the appearance of terms such as benefit and risk suggests a balanced perspective among the interviewees, who acknowledge both the opportunities offered by AI, such as increased efficiency and innovation, and the associated risks, particularly concerning privacy, security, and equity. The relationship between use and technology highlights the central role of AI in technological development, while its connection with risk and society underscores the importance of robust regulation and transparency to mitigate potential negative effects, such as the mismanagement of personal data and the exacerbation of social inequality.

The graphs analyzed reveal a diversity of opinions regarding the impact of AI on daily life. Professionals in the technology sector emphasize the efficiency gains and automation provided by AI, while those working in fields such as healthcare and education express greater caution, fearing social and ethical risks, particularly concerning privacy and data security. This tension between the enthusiasm for technological innovation and concerns about its social consequences reflects the complexity of the AI phenomenon. On



#	Word	POS / Conj.	Frequency
1	AI	ProperNoun	696
2	technology	Noun	224
3	datum	Noun	198
4	intelligence	Noun	184
5	life	Noun	147
6	example	Noun	138
7	model	Noun	129
8	time	Noun	118
9	way	Noun	118
10	use	Noun	114
11	impact	Noun	110
12	information	Noun	105
13	tool	Noun	104
14	area	Noun	100
15	application	Noun	94
16	machine	Noun	94
17	algorithm	Noun	91
18	task	Noun	91
19	development	Noun	83
20	image	Noun	83
21	process	Noun	82
22	society	Noun	81
23	health	Noun	79
24	people	Noun	79

Fig. 1 Word frequency list. Source: Own elaboration based on KH Coder

one hand, AI is perceived as a powerful tool for process optimization and increased productivity; on the other hand, the interviewees stress the need for careful adoption, supported by regulations that protect society's interests and ensure a fair distribution of benefits.

In conclusion, the data show that AI has the potential to profoundly transform daily life, bringing clear benefits in task automation and efficiency. However, the ethical and social challenges are evident and cannot be overlooked. The graphs highlight a persistent duality between the benefits and risks of AI, emphasizing the importance of effective regulation and continuous transparency in its implementation. For AI to be truly beneficial to society, it is essential that privacy and security issues are addressed responsibly and with rigor.

4.2.2 Ethics and AI

The second question focuses on the ethical challenges that arise with the development and application of Artificial Intelligence (AI). The qualitative analysis reveals that the interviewee's view AI ethics as a fundamental concern, with particular emphasis on transparency, regulation, and responsibility in the use of this technology.

Ensuring ethics and regulation The word frequency list (Fig. 4) highlights terms such as 'AI', 'ensure', 'ethical', 'regulation', and 'privacy', reflecting the key concerns of the interviewees regarding the responsible use of AI. The predominance of the term 'AI' confirms the central relevance of this technology in the discussion. Words like 'ensure' and 'ethical' point to the urgent need for mechanisms that guarantee the ethical use of AI, while 'regulation' and 'privacy' emphasize the importance of safeguarding individual rights and establishing clear guidelines for its use. The strong presence of 'ethical' and 'regulation' reinforces the view that technological innovation must be accompanied by responsibility and transparency.

The co-occurrence network centered on the term 'ethical' (Fig. 5) reveals a strong connection between 'ethical' and concepts such as 'privacy', 'security', 'regulation', and 'transparency'. These terms reflect the interviewees' concern with ensuring that AI is used responsibly, highlighting the need for robust regulatory mechanisms to mitigate risks. The link with 'fundamental rights' and 'protection' underscores the importance of ensuring that AI implementation respects human rights and promotes fairness, particularly within the context of European norms and regulations. Terms such as 'use' and 'development' indicate the significance of a transparent and responsible application of AI, aligned with societal expectations.

Regulatory challenges and social responsibility The general co-occurrence network (Fig. 6) highlights the crucial connection between 'AI', 'people', 'ethical', 'ensure', and 'society', revealing the interviewees' concerns about ensuring that AI is used ethically and responsibly. Terms such as 'risk', 'regulation', and 'privacy' are closely linked, reflecting a growing concern about the need for data protection and the development of regulatory mechanisms to mitigate the potential dangers associated with AI use. The strong presence of 'regulation' underscores the importance of establishing clear guidelines that ensure transparency and the protection of individual rights, while 'risk' and 'privacy' point to the potential negative consequences of ineffective regulation.

The analysis of the graphs reveals a common concern among the interviewees regarding the need to regulate AI, although there are differences of opinion on the level of strictness such regulation should adopt. Some professionals in the technology sector warn that overly restrictive regulation could stifle innovation, while others argue that the absence of effective regulation could lead to abuses, especially in sensitive areas such as recruitment and criminal justice, where AI systems can perpetuate biases. This duality between innovation and ethics reflects the complexity of the AI debate. On the one hand, the interviewees recognize AI's transformative potential across various sectors; on the other hand, they highlight that without proper regulation, AI could

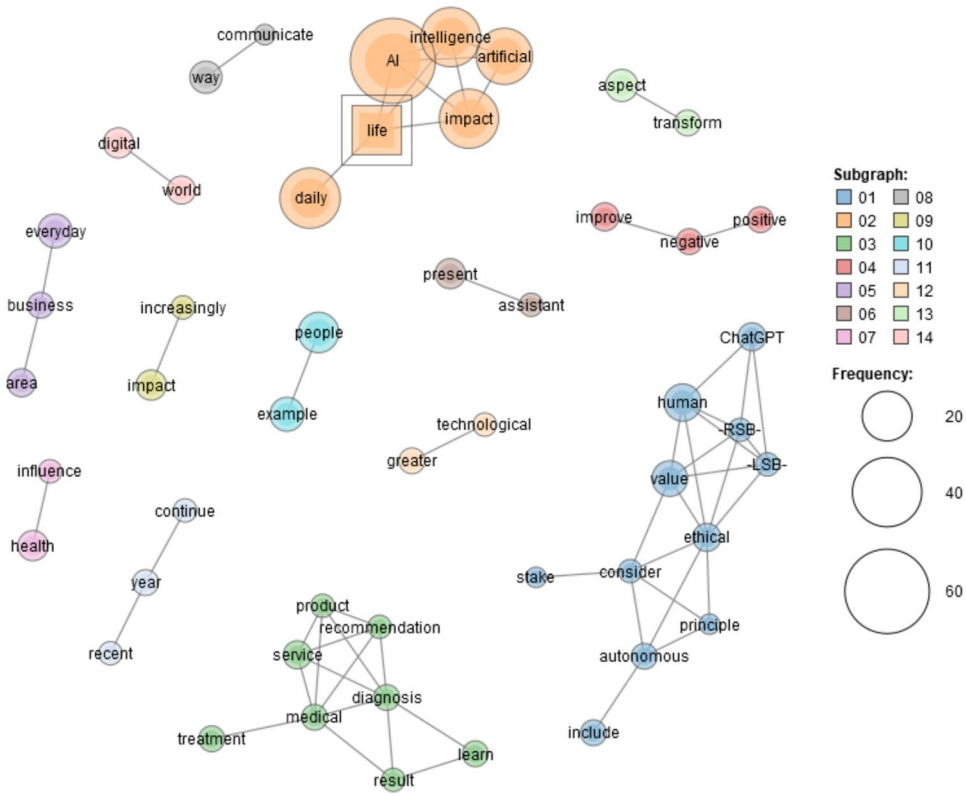


Fig. 2 Co-occurrence network of word 'Life'. Source: Own elaboration based on KH Coder

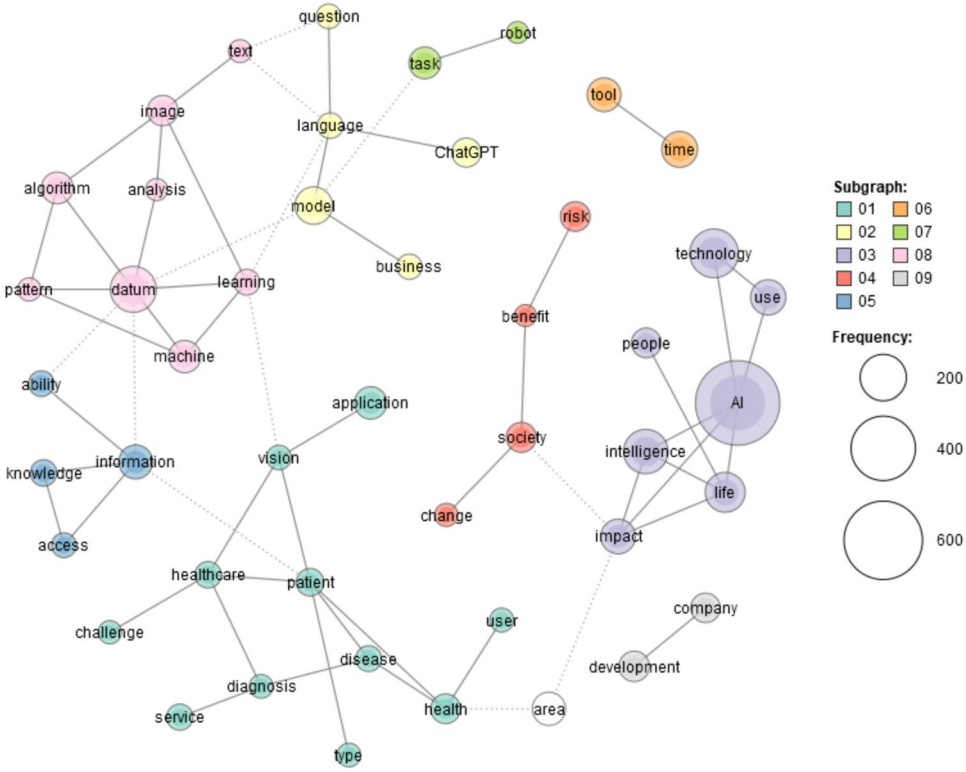
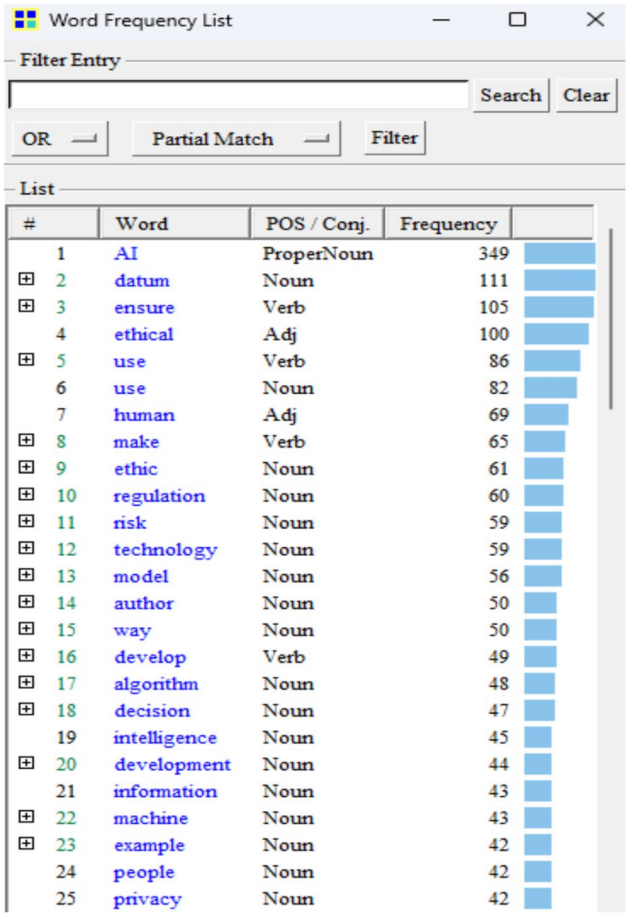


Fig. 3 General co-occurrence network. Source: Own elaboration based on KH Coder



#	Word	POS / Conj.	Frequency
1	AI	ProperNoun	349
2	datum	Noun	111
3	ensure	Verb	105
4	ethical	Adj	100
5	use	Verb	86
6	use	Noun	82
7	human	Adj	69
8	make	Verb	65
9	ethic	Noun	61
10	regulation	Noun	60
11	risk	Noun	59
12	technology	Noun	59
13	model	Noun	56
14	author	Noun	50
15	way	Noun	50
16	develop	Verb	49
17	algorithm	Noun	48
18	decision	Noun	47
19	intelligence	Noun	45
20	development	Noun	44
21	information	Noun	43
22	machine	Noun	43
23	example	Noun	42
24	people	Noun	42
25	privacy	Noun	42

Fig. 4 Word frequency list. Source: Own elaboration based on KH Coder

pose significant risks, particularly concerning transparency and fairness.

In conclusion, the data shows that AI ethics is a central concern for the interviewees, who acknowledge the importance of establishing solid regulatory frameworks to ensure that AI is used ethically and responsibly. The co-occurrence of terms such as 'ethics', 'privacy', 'regulation', and 'security' reflects a broad concern for protecting individual rights and ensuring transparency in algorithmic processes. Effective regulation and transparency emerge as key factors to mitigate the risks associated with AI, ensuring that this technology can benefit society without compromising its core values.

4.2.3 Changes in the labor market

The third question explores the transformations in the labor market resulting from the implementation of Artificial Intelligence (AI). The qualitative analysis shows that interviewees are aware of the significant changes that AI can induce, both in terms of task substitution and the creation of new professions and skills.

Task substitution and opportunity creation The word frequency list (Fig. 7) highlights the impact that AI is having on the labor market. The high frequency of the term 'replacement' suggests a common concern regarding the effect of automation on repetitive tasks, particularly in sectors such as manufacturing and logistics. Words like 'job', 'task', and 'profession' indicate that AI is reshaping labor functions, requiring new skills while eliminating traditional jobs. Meanwhile, terms like 'risk' and 'society' underscore the need for deeper reflection on the social impacts of this transformation, especially concerning job security and the equitable distribution of the new opportunities created by AI.

The co-occurrence network centered on the word 'change' (Fig. 8) highlights how interviewees associate the transformation of the labor market with 'AI' and concepts such as 'work', 'skills', and 'market'. The connection with 'create' and 'skills' suggests that AI-driven automation will lead to a growing need for new competencies, especially in technological sectors. However, terms like 'replace' and 'risk' reveal uncertainty regarding the impact on lower-skilled workers, indicating that the transition to a more automated labor market poses significant social risks, both for workers and for traditional labor structures.

Challenges and requalification needs The general co-occurrence network (Fig. 9) delves more deeply into the challenges associated with retraining in the context of AI. The words 'AI', 'create', 'new', and 'work' are strongly linked to 'opportunity', highlighting AI's role in generating new employment opportunities, especially in technological fields. However, terms such as 'machine', 'human', 'replace', and 'risk' reveal concerns about the replacement of human jobs by machines, posing a significant risk for certain sectors. The relationship between 'change', 'market', 'task', 'work', and 'impact' suggests that the transformations driven by AI in the labor market are profound, requiring adaptations not only in the tasks performed but also in the structure of the labor market itself. On the other hand, the association with 'skills', 'training', 'ability', and 'require' underscores the need for continuous retraining of workers to keep pace with the new demands brought by automation and digital transformation.

The analysis of the graphs highlights a shared perception among interviewees that AI is profoundly reshaping the labor market, although there are differing views on the impact of this transformation. For some, AI represents an opportunity for the emergence of new professions and the acquisition of more advanced skills. However, others emphasize the social risks, particularly regarding job losses in more vulnerable sectors. Repetitive and administrative roles are seen as the most susceptible to replacement by automation

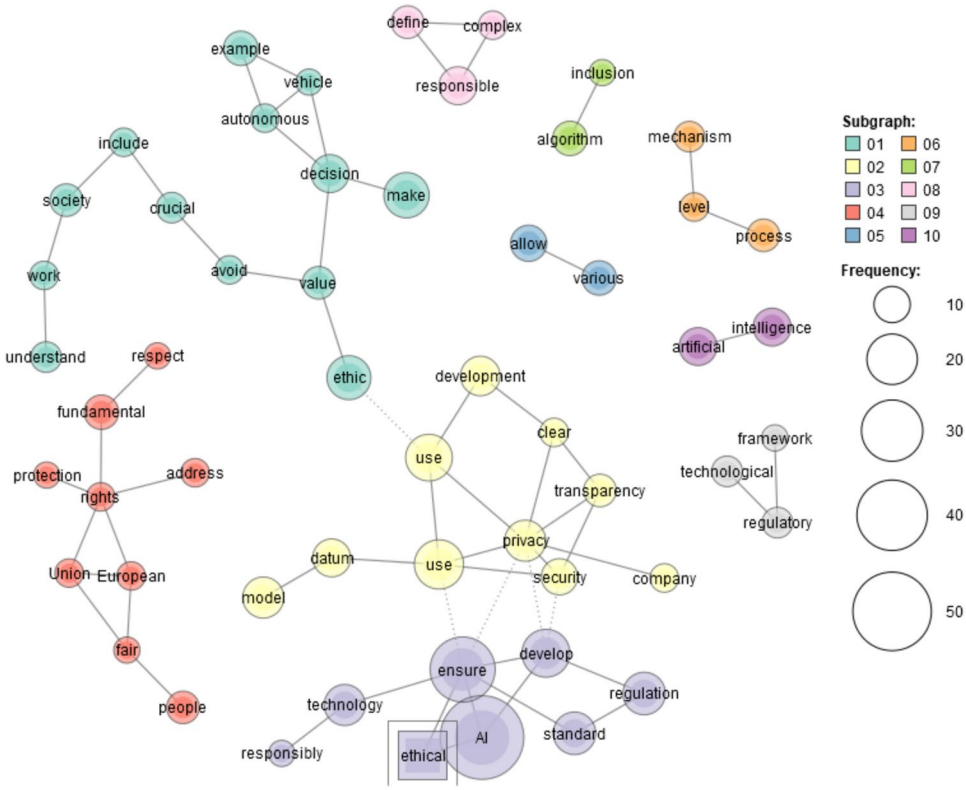


Fig. 5 Co-occurrence network of word 'Ethical'. Source: Own elaboration based on KH Coder

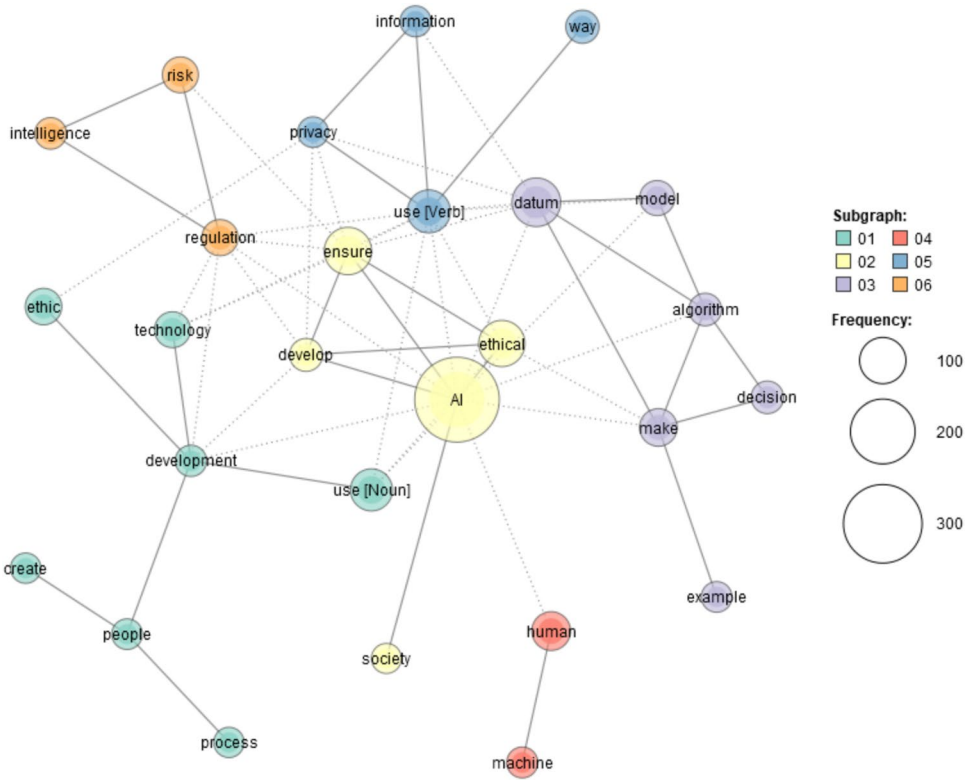
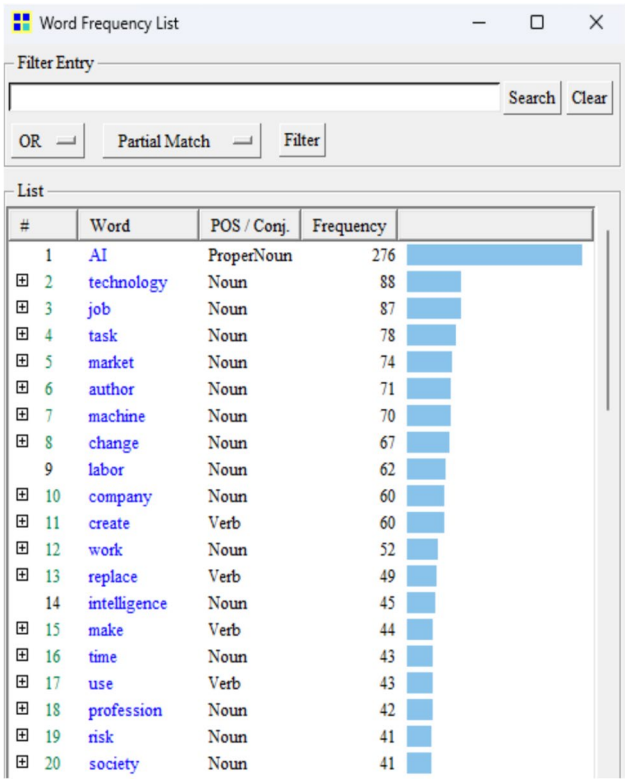


Fig. 6 General co-occurrence network. Source: Own elaboration based on KH Coder



#	Word	POS / Conj.	Frequency
1	AI	ProperNoun	276
2	technology	Noun	88
3	job	Noun	87
4	task	Noun	78
5	market	Noun	74
6	author	Noun	71
7	machine	Noun	70
8	change	Noun	67
9	labor	Noun	62
10	company	Noun	60
11	create	Verb	60
12	work	Noun	52
13	replace	Verb	49
14	intelligence	Noun	45
15	make	Verb	44
16	time	Noun	43
17	use	Verb	43
18	profession	Noun	42
19	risk	Noun	41
20	society	Noun	41

Fig. 7 General co-occurrence network. Source: Own elaboration based on KH Coder

technologies, raising concerns about job security and the stability of affected workers. Nevertheless, the need for retraining is a common point of agreement. Interviewees recognize that continuous training and the development of new skills are crucial to mitigating the impact of AI and ensuring that workers can adapt to new technological demands. While AI may replace certain tasks, it has the potential to create new opportunities, requiring ongoing adaptation.

The graphs reveal that the transformation of the labor market driven by AI requires a careful balance between seizing the opportunities offered by this technology and managing the risks, particularly for lower-skilled workers. Continuous training and appropriate regulation will be essential to maximizing the benefits of AI while mitigating its negative impacts, ensuring a fair transition to an increasingly automated and digitalized labor market.

5 Discussion and findings

Upon the completion of data collection and subsequent analysis, the primary objective of this chapter is to present the most relevant results, addressing the research questions outlined and highlighting their key contributions to the development of the study. The discussion will be conducted through a comparative analysis between the theoretical framework explored in the literature review and the empirical data

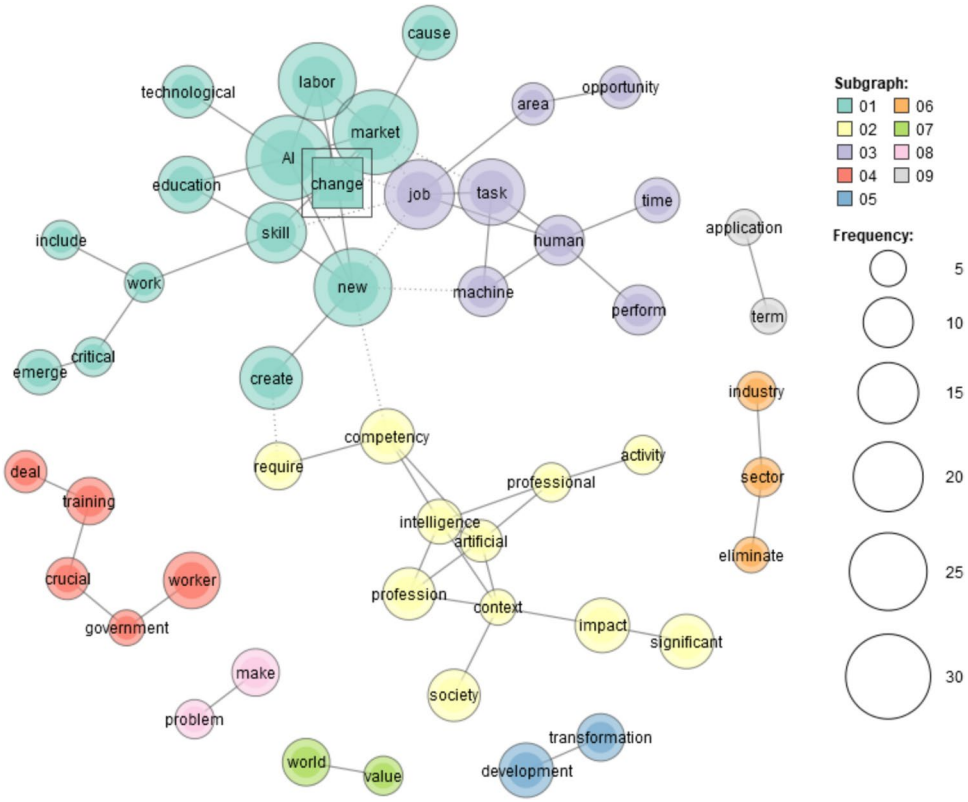


Fig. 8 Co-occurrence network of word 'Change'. Source: Own elaboration based on KH Coder

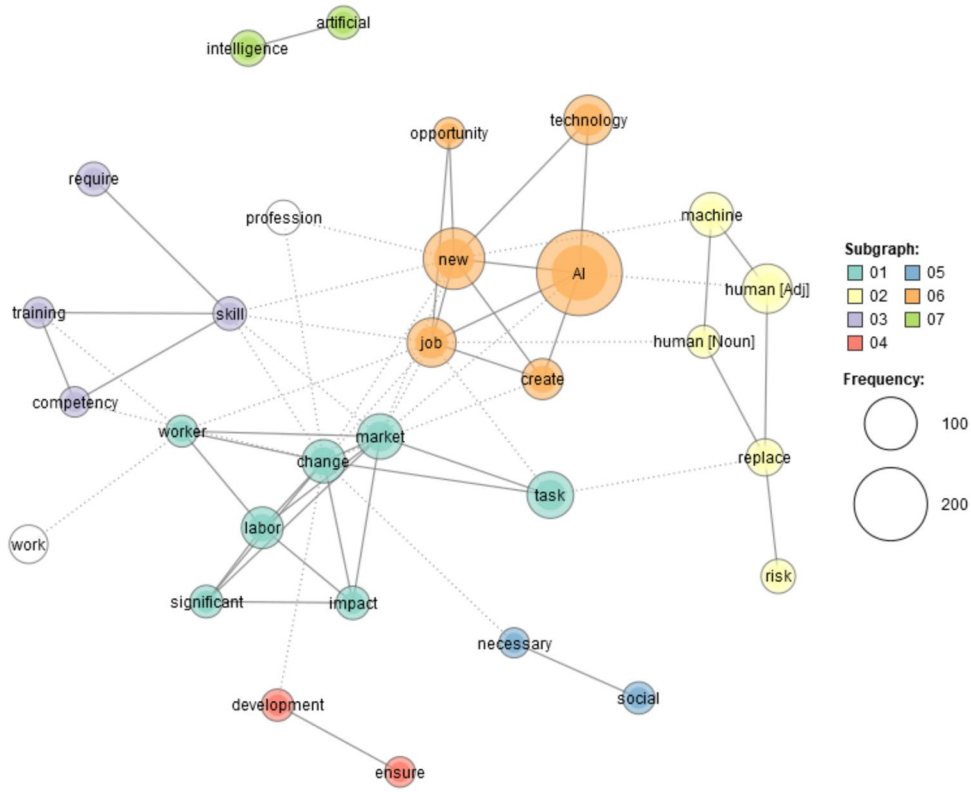


Fig. 9 General co-occurrence network. Source: Own elaboration based on KH Coder

obtained, providing a critical and well-founded interpretation aimed at confronting, validating, or refuting the theoretical premises considering the practical results observed.

5.1 Research discussion

RQ1 How will the Artificial Intelligence revolution influence the role of professionals within companies, particularly regarding the substitution, supplementation, and amplification of cognitive tasks?

The data analysis conducted in the previous chapter clearly demonstrates how Artificial Intelligence (AI) is significantly transforming the role of professionals within organizations, particularly by replacing repetitive tasks and amplifying more complex cognitive processes. The word frequency list graph (Fig. 7) reveals a high occurrence of terms such as "AI," "work," "task," and "replacement," highlighting how AI is reshaping the way tasks are distributed and executed in the workplace. These findings are consistent with Makridakis' (2017a, b) perspective, which emphasizes that the AI revolution not only alters the structure of work but also creates new job opportunities, albeit requiring constant requalification of professionals.

The analysis of the co-occurrence network (Fig. 8) further reinforces this idea, indicating that AI goes beyond task replacement, opening new opportunities, especially in terms of task supplementation. Technology emerges as a complement to human supervision, with terms like "technology," "skills," and "create" standing out, underscoring the need for new knowledge and abilities. These results are supported by the studies of Zhang et al. (2022), who assert that, in addition to eliminating certain jobs, AI creates new roles, necessitating continuous workforce retraining to ensure a fair transition to an increasingly automated economy. Adding to this perspective, Quandt (2022) highlights the importance of human–machine interaction in the new AI era, arguing that, rather than merely replacing tasks, AI amplifies human capabilities, fostering closer collaboration between professionals and technology. This view emphasizes that AI not only frees workers from routine tasks but also enables them to engage in more advanced cognitive activities, creating a supplementary relationship between humans and machines.

However, the co-occurrence graph (Fig. 9) highlights terms such as "replacement" and "risk," reflecting concerns about the potential elimination of certain jobs, particularly in low-cognitive-value areas. Ullrich and Diefenbach (2023) stress the importance of responsible technological design and the need to prepare society to face the ethical and labor challenges posed by automation. These authors emphasize that for AI adoption to be successful, it is crucial for organizations to implement retraining and adaptation strategies, ensuring that workers develop the necessary skills to remain competitive in this new labor landscape.

In conclusion, AI is profoundly reshaping the role of professionals within organizations, replacing routine tasks and enhancing more complex processes. While the productivity gains are clear, it is imperative to invest in workforce retraining, ensuring that professionals can adapt to this new labor paradigm, as evidenced by both graphical analysis and the literature presented.

RQ2 How can ethical principles be applied to maximize social benefits and minimize the risks associated with the adoption of Artificial Intelligence, contributing to the creation of a 'Good AI Society'?

The data analysis reveals that the application of ethical principles in the context of Artificial Intelligence (AI) is a central concern for the interviewees. The word frequency list graph (Fig. 4) highlights the high frequency of terms such as "ethics," "regulation," and "privacy," underscoring the importance of these issues for professionals. This concern aligns with the principles advocated by Floridi et al. (2018), who emphasize the need to build a "Good AI Society" based on five fundamental ethical pillars: justice, transparency, responsibility, privacy, and security.

In the word co-occurrence graphs (Fig. 5), we observe that the term "ethics" is strongly linked to concepts such as "privacy," "security," "transparency," and "regulation." This network of relationships reinforces the necessity for solid regulation to mitigate the inherent risks of AI, as defended by Zhang et al. (2022), who emphasizes the importance of establishing effective regulatory frameworks to ensure responsible AI usage. Similarly, Shiroishi et al. (2019) stress the relevance of human oversight in automated decision-making based on AI, ensuring that this technology operates ethically and remains centered on human values.

The word co-occurrence graph (Fig. 6) further reinforces the importance of terms like "risk" and "privacy," highlighting that transparency in algorithmic processes and the protection of personal data are essential for ensuring the responsible adoption of AI. Ullrich and Diefenbach (2023) add an important perspective, arguing that as AI assumes automated decision-making roles, it must be regulated in a way that ensures its algorithms respect social norms and protect privacy and security. In addition, Quandt (2022) emphasizes that the interaction between humans and AI is fundamental to building a "Good AI Society," where ethical models must be robust enough to mitigate risks and ensure that AI operates within acceptable boundaries.

This combination of technological innovation and the protection of individual rights emerges as essential to maximizing the social benefits of AI while minimizing its risks. In conclusion, the analysis of the results reinforces the need for the application of solid ethical principles in the adoption of AI, ensuring that this technology is developed responsibly and respects the privacy and security rights of users. Building a "Good AI Society" requires a collective effort that combines technological innovation with transparency and fairness in technological processes, as advocated by Floridi et al. (2018), Zhang et al. (2022), Shiroishi et al. (2019), Ullrich & Diefenbach (2023), and Quandt (2022).

RQ3 How can Artificial Intelligence support evidence-based policy-making in Society 5.0, ensuring the preservation of human values and ethical considerations in the decision-making process?

The data analysis demonstrates a clear connection between Artificial Intelligence (AI) and the importance of ensuring that decision-making processes are guided by ethical principles and grounded in evidence. Through the word frequency list (Fig. 4), we observe that the term "ethics" stands out prominently, reflecting the interviewees' concern with the application of ethical values in the implementation of AI. This concern aligns with conclusions in the literature, where authors such as Floridi et al. (2018) and Quandt (2022) argue that AI should be developed and used based on well-defined ethical principles, preserving the role of human judgment and promoting the creation of a "Good AI Society."

The word co-occurrence graphs (Figs. 5, 6) reinforce this concern, highlighting terms such as "privacy," "regulation," "transparency," and "ethics," frequently associated with AI. These terms reveal that interviewees consider it crucial that AI-supported decisions are transparent and properly regulated. The relationship between terms such as "AI," "privacy," "use," and "ensure" in the co-occurrence networks emphasizes the need to safeguard individual rights, especially concerning the protection of personal data. This theme is extensively discussed by authors like Floridi et al. (2018), Zhang et al. (2022), and Ullrich and Diefenbach (2023), who advocate for the establishment of robust regulatory frameworks to ensure the responsible use of AI, mindful of its socio-economic and cultural impact.

The literature also underscores the urgent need for effective regulatory mechanisms capable of mitigating the risks associated with AI in decision-making processes, particularly in critical areas such as justice and healthcare (Floridi et al. 2018; Shiroshii et al. 2019). In the data analyzed, the co-occurrence of terms such as "regulation," "risk," "technology," and "ethics" shows that the interviewees are aware of the dangers of uncontrolled AI implementation, expressing a clear concern about the need to ensure transparency and fairness in algorithmic decision-making. The co-occurrence of terms like "data" and "use" reinforces the view that AI has the potential to be a powerful tool for data-driven decision-making, particularly in areas like governance and public policy. As argued by Shiroshii et al. (2019)

and Quandt (2022), AI can contribute to more effective policy-making, provided that the data is managed ethically and transparently. However, the interviewees also express concerns about the integrity of the data used, highlighting the importance of ensuring its accuracy and completeness, a concern equally reflected in the literature.

Based on the results and the literature review, this study reinforces the idea that AI, when used ethically and regulated, can support more informed and efficient decision-making. However, to ensure that AI adoption is safe and beneficial for society, it is essential to implement solid ethical principles and create regulatory frameworks that ensure transparency and protect fundamental rights. The data suggests that both organizations and governments must adopt oversight mechanisms that guarantee the ethical use of AI, with particular attention to privacy and transparency in decision-making processes. The creation of public policies that balance AI's potential with the preservation of human values will be essential to ensure that AI contributes positively to society. Responsible AI use must be a priority, with the implementation of clear regulations that limit the risks of decision automation and ensure adherence to fundamental ethical principles.

RQ4 What are the main challenges and opportunities in the development of Artificial Intelligence, and how can society ensure that AI is used in a way that benefits humanity?

The evolution of Artificial Intelligence (AI) has brought with it various challenges and opportunities that need to be balanced to ensure that this technology contributes positively to society. One of the main challenges identified is the ethical and social risk associated with its implementation. Manyika (2022) emphasizes the need to ensure that AI does not exacerbate existing inequalities or create new forms of social exclusion, but rather is used as a tool for the common good.

The analyzed data supports this concern. In Fig. 1 (word frequency list), terms such as "AI," "life," "impact," "intelligence," and "society" appear frequently, reflecting the central concerns regarding AI's application, particularly in terms of its direct impact on people's lives. This finding aligns with the approaches of Floridi et al. (2018), who stress the importance of grounding AI development in solid ethical principles. Furthermore, the recurrence of terms like "technology" and "development" in the analysis suggests a positive perception of the opportunities that AI can bring, especially regarding technological advancements and improvements in quality of life.

However, authors such as Zhang et al. (2022) warn of the risks that AI may pose, namely the loss of jobs and the need to create new roles for which workers are not yet prepared. This concern is evident in the analyzed data, particularly in Fig. 2 (word co-occurrence—life), where terms like "society," "change," and "risk" are strongly associated with AI. These findings reflect fears that technological innovations could cause significant disruptions in the labor market and contribute to the increase of social inequalities. On the other hand, Manyika (2022) highlights that the opportunities created by AI are vast, particularly in fields such as healthcare, education, and digital infrastructure. Automation and advanced data analysis have the potential to revolutionize the way essential services are provided to the population. In Fig. 3 (word co-occurrence), terms such as "benefit," "society," and "change" stand out, reflecting the perception that AI can bring significant advancements, provided it is used responsibly and regulated appropriately. Fosso Wamba et al. (2021a, b) reinforce this idea by arguing that AI can be a positive force in areas such as healthcare and justice, if it is accompanied by ethical and responsible regulation.

In addition, Makridakis (2017a, b), when discussing the impact of the AI revolution, compares it to the Industrial and Digital Revolutions, predicting major transformations and new challenges, which underscores the need to prepare society for the imminent changes in the labor market. Ullrich and Diefenbach (2023) complement this analysis by stressing the importance of public policies and regulatory structures that ensure the conscientious adoption of AI, promoting social well-being.

In conclusion, the main challenges and opportunities in AI development are directly related to society's ability to balance technological advances with the promotion of social and ethical equity. Figure 3 illustrates this issue well, highlighting terms such as "technology," "life," "risk," and "change," which emphasize the importance of a regulatory and educational approach that ensures AI is used for the benefit of all humanity. The data analysis confirms the theoretical concerns of authors like Manyika (2022) and Floridi et al. (2018), who argue that AI must be developed based on clear ethical principles to avoid amplifying social inequalities and promote collective well-being. Authors such as Makridakis (2017a, b) and Fosso Wamba et al. (2021a, b) also emphasize the need for workforce retraining to address the changes brought by AI. This alignment between theory and data highlights the importance of careful and adaptive regulation. In practice, the implementation of AI requires a collaborative effort between companies, governments, and civil society organizations to develop policies that maximize the benefits of this technology and minimize its risks. As Manyika (2022) points out workforce retraining, and digital inclusion are essential to ensure that AI advancements benefit society in a fair and inclusive way.

RQ5 How is automation driven by Artificial Intelligence reconfiguring the labor market, and what are the ethical implications of these changes for organizations and society?

Automation driven by Artificial Intelligence (AI) is profoundly transforming the labor market, as evidenced by the data analysis results. The word frequency list graph (Fig. 7) highlights the high frequency of terms such as "work," "task," and "replace," demonstrating the direct impact automation has on labor activities. This transformation aligns with the studies of Manyika (2022), which emphasize how AI has been replacing repetitive and low-cognitive-value tasks, freeing workers from these roles so they can focus on more strategic and creative activities.

The word co-occurrence network (Fig. 8) reinforces this perspective, suggesting that, in addition to eliminating certain tasks, AI is also creating new job opportunities, particularly by amplifying more complex cognitive processes. Terms like "competence," "create," and "work" emerge as central, underscoring the importance of professionals acquiring new skills and continuously reskilling to adapt to this new labor paradigm, as advocated by Zhang et al. (2022). The literature highlights the significance of developing new skills and adapting workers to new roles, ensuring that automation contributes to innovation and sustained growth rather than social exclusion.

However, the data also reveals ethical concerns related to automation. The word co-occurrence graph (Fig. 9) highlights terms such as "ethics," "worker," and "replacement," reflecting fears that the changes brought about by AI may exacerbate inequalities in the labor market. Manyika (2022) emphasizes that while AI can create new opportunities, there is also the risk of intensifying inequalities, particularly in sectors more vulnerable to automation. Thus, organizations and governments bear the responsibility of implementing policies that ensure a fair and inclusive transition. In addition, Zhang et al. (2022) warn of the duality of AI, which can both create and destroy jobs, with medium-skilled workers being the most susceptible to replacement. This ethical concern, especially the impact of AI on medium-level workers and the potential increase in inequalities, is shared by the interviewees, who recognize the urgency of developing public policies for reskilling and continuous training.

AI-driven automation is profoundly altering the labor market by replacing routine tasks and requiring the development of new skills. Although automation offers opportunities for economic growth and innovation, it also poses significant ethical challenges. To ensure a fair transition, it is essential for organizations and governments to implement policies that promote worker reskilling and ensure that automation benefits all sectors of society, as advocated by Manyika (2022) and Zhang et al. (2022).

5.2 Research findings

The findings from this study not only contribute to the academic discourse on the impact of Artificial Intelligence (AI) but also have significant practical implications. Theoretically, the insights derived challenge and extend existing frameworks on AI's role in society, the economy, and management by illustrating how AI-driven changes are interconnected across these domains. These findings suggest a need for revising current theories to incorporate a more holistic view of AI's capabilities and consequences, potentially prompting new hypotheses about the integration and regulation of AI technologies.

Practically, the results have immediate relevance for policymakers and organizational leaders. For instance, the identification of key areas where AI impacts decision-making and operational efficiencies can guide targeted investments in AI technologies and training. Moreover, the nuanced understanding of AI's ethical implications informs the development of more robust governance frameworks that ensure AI is implemented responsibly and sustainably. Businesses can leverage these insights to anticipate shifts in the market and adjust their strategies accordingly, ensuring they remain competitive in an increasingly AI-integrated world. For policymakers, the detailed exploration of AI's societal impacts provides a foundation for crafting legislation that balances innovation with privacy, equity, and security considerations (Table 5).

5.3 Research implications

5.3.1 Theoretical implications

Refinement of AI integration models: Our findings suggest that existing models of AI integration in organizational and societal contexts may underestimate the complexity of interactions between AI and human decision-making processes. The research highlights the need for new theories that account for the adaptive behaviors of both individuals and institutions in response to AI advancements. This could lead to the development of more dynamic models in change management and technology adoption studies.

Expansion of ethical frameworks: The nuanced understanding of ethical challenges presented by AI, as revealed through our interviews, contributes to the theoretical discourse on AI governance. Our study underscores the necessity for expanding ethical frameworks to include considerations of socio-technical alignments that are not merely compliance-based but also culturally and contextually sensitive.

Influence on socio-economic theories: By identifying specific socio-economic impacts of AI, such as changes in employment patterns and economic inequality, our research challenges and contributes to traditional economic theories about technological disruption. This could influence future research on economic resilience and the development of policies aimed at mitigating the adverse effects of AI.

Table 5 Main theoretical and practical contributions

Authors (year)	Main topics	Theoretical/practical contribution
Makridakis (2017a, b)	The impact of the AI revolution on job structure and employment opportunities	The AI revolution transforms the structure of work, necessitating constant upskilling of professionals while creating new employment opportunities
Floridi et al. (2018)	Ethical principles for building a "Good AI Society"	Proposes that AI development should be anchored in robust ethical principles, ensuring respect for privacy, security, transparency, and fairness
Shiroishi et al. (2019)	Human oversight in AI-based decision-making processes	Emphasizes the importance of human oversight to ensure that AI operates ethically and remains focused on human values
Fosso Wamba et al. (2021a, b)	AI as a force for good in sectors such as healthcare and justice	AI can be a positive force in sectors like healthcare and justice if accompanied by ethical and responsible regulation
Zhang et al. (2022)	AI creates new roles and demands continuous workforce reskilling	AI generates new functions within an automated economy, highlighting the importance of ongoing workforce reskilling to ensure a fair transition
Quandt (2022)	Interaction between humans and machines in the AI era	AI not only replaces repetitive tasks but also amplifies human capabilities, fostering closer collaboration between technology and professionals
Manyika (2022)	The role of AI in replacing repetitive tasks and its potential to exacerbate inequalities	While AI offers new opportunities, it also risks amplifying inequalities, particularly in sectors more vulnerable to automation
Ullrich and Diefenbach (2023)	Ethical challenges and the need for reskilling in response to automation	Highlights the need for responsible technology design and strategies that enable workers to develop skills necessary to remain competitive in an AI-driven labor market

Source: Own elaboration

5.3.2 Practical implications

Policy development and regulation: The insights into the diverse impacts of AI on different sectors provide a solid empirical basis for developing targeted policies. Policymakers can use these findings to craft regulations that promote beneficial uses of AI while protecting against potential harms. For example, the creation of AI impact assessments could become a regulatory standard before the deployment of new AI technologies.

Strategic organizational changes: For business leaders, the detailed analysis of AI's influence on management practices offers a roadmap for strategic implementation. Organizations might consider new training programs to equip their workforce with the necessary skills to work alongside AI technologies effectively, thereby enhancing productivity and innovation.

Public awareness and education: Given the broad societal implications of AI identified, there is a clear need for public education initiatives that enhance understanding of AI technologies and their potential impacts. This could help in managing public expectations and promoting an informed dialog about the benefits and risks of AI, fostering a more AI-literate society.

Ethical AI deployment: Our findings emphasize the importance of ethical considerations in AI deployment, suggesting that organizations should adopt transparent and accountable AI practices. This includes the development of internal ethical guidelines that govern AI use and the active involvement of stakeholders in discussions about how AI is used within the organization.

6 Conclusion

This study aimed to analyze the impact of Artificial Intelligence (AI) in the realms of society, economy, and management, with particular emphasis on the role of professionals and the broader transformative processes in these areas. The primary conclusion drawn is that AI is significantly reshaping the labor market, society, and economy, by replacing routine tasks and enhancing the capacity for more complex cognitive processes. However, the widespread adoption of this technology raises significant ethical and social concerns, particularly in terms of privacy, transparency, responsibility, and the growing need for workforce reskilling.

The results obtained demonstrate that, despite the opportunities offered by AI—such as increased efficiency

and the creation of new roles—this technology may also exacerbate inequalities in the labor market. AI not only eliminates traditional jobs but also requires continuous skills development to allow workers to adapt to an increasingly automated labor paradigm. It is, therefore, essential to strike a balance between the benefits of automation and the preservation of ethical and human values, which are crucial for a fair transition.

Theoretically, this research reinforces the need to establish regulatory frameworks that ensure the ethical and equitable implementation of AI. The protection of human rights, such as privacy and security, must be at the core of public policies and business strategies for the adoption of this technology. In addition, the concept of a "Good AI Society," which balances innovation with the protection of individual and collective rights, emerges as a key objective to mitigate the inherent risks of widespread AI use.

From a practical standpoint, the research reveals that organizations face significant challenges, particularly with respect to workforce reskilling and the management of risks associated with automated decision-making. The implications for business management are profound, requiring concrete policies that ensure a fair and inclusive transition for all sectors of society. Human oversight must continue to play a fundamental role in AI adoption, ensuring that automated decisions respect ethical principles and individual rights.

Moreover, it is important to highlight that public policies play a crucial role in ensuring the ethical and fair implementation of AI. Collaboration between the public and private sectors is essential to develop regulations that safeguard fundamental rights and promote the responsible integration of this technology. In addition, the need for continuous education and reskilling programs is one of the greatest challenges to be faced. AI's impact on the labor market, particularly in sectors such as healthcare, education, and justice, requires professionals to continuously acquire new skills to remain competitive in an increasingly automated market. In this sense, the ability of societies and organizations to adapt to the revolution brought by AI will largely depend on how effectively policies are implemented and how education and technological skills development are promoted.

The impact of AI on businesses and society must be approached holistically, considering both the benefits in terms of productivity and innovation and the ethical and social challenges that accompany this technological revolution. The conclusions of this study emphasize the importance of developing public policies and organizational strategies that maximize the benefits of AI, while minimizing its risks and promoting a more just and balanced future.

6.1 Limitations

Although this study has achieved the proposed objectives, it is important to highlight some limitations. First, regarding the formulation of the problem and the research objectives, the broad impact of Artificial Intelligence (AI) across the fields of society, economy, and management presents a significant challenge. The complexity inherent in this subject, with its multiple dimensions and interactions, necessitated a delimitation of the topics addressed. This approach, while necessary, may not have captured the full range of AI's effects and implications across all possible areas and contexts, resulting in a study that is more focused on certain dimensions while less comprehensive in others.

Regarding the sample size, a substantial amount of data was collected, providing a comprehensive and diverse perspective on the topic. However, despite this significant volume of information, the sample may not fully represent the entire diversity of possible perspectives, given that the subject of AI continues to evolve rapidly, generating new challenges that may not have been addressed by the interviewees or the book under analysis. In this sense, it would be beneficial for future research to expand investigations into other geographic areas and different sectors of society.

In terms of data availability and reliability, it is essential to consider that, despite efforts to ensure the timeliness and relevance of the information, the rapid pace of AI development may render some data quickly outdated. In addition, the perceptions and opinions gathered from the interviews reflect the subjective experiences of the interviewees, which may introduce a degree of bias in the final conclusions. Although this does not compromise the overall results, it represents a factor to be considered when interpreting the data and the implications derived from it.

Finally, regarding the lack of previous research on the subject, a gap was identified in consolidated academic research on the long-term effects of AI, particularly concerning its ethical and social dimensions. This absence hinders the ability to compare the results of this study with similar works and limits the possibility of constructing a more complete and consolidated view of AI's impact on the social, economic, and managerial contexts. As such, it is suggested that future research should aim to bridge this gap by further exploring the ethical and social implications of AI over time.

Acknowledgements The author would like to thank ISCTE Executive Education for facilitating the interviews and providing access to the panel of national and international experts.

Author contributions T.R. contributed to the design and execution of the qualitative data collection process and performed the text-mining analysis using KH Coder. He also prepared the initial draft of the manuscript. L.F.P. conceptualized the research framework, coordinated the project, and supervised all stages of the manuscript's development. He contributed to the formulation of research questions, reviewed the

manuscript critically for intellectual content, and approved the final version for submission. J.C.C. contributed to the literature review and theoretical framing, ensuring alignment with the research objectives. He also supported the discussion of results and provided critical feedback on the manuscript draft. R.V.S. contributed to the methodological framework, particularly in structuring the analysis of the societal and economic impacts of AI. He also reviewed and refined sections of the discussion and conclusion. A.S. provided oversight on the ethical considerations of the study, coordinated the integration of multidisciplinary perspectives, and contributed to the editing and final formatting of the manuscript. All authors reviewed the manuscript, provided feedback, and approved the final submission.

Funding Open access funding provided by FCT|FCCN (b-on). This work was supported by Fundação para a Ciência e a Tecnologia, Grant UIDB/00315/2020.

Data availability Data will be made available on reasonable request.

Declarations

Conflict of interest There is no conflict of interest in this research.

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