

Corporate Social Responsibility in the Age of Artificial Intelligence

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Abstract

The present paper aims to determine the main impact of artificial intelligence (AI) tools and practices on corporate social responsibility (CSR). The center of the interest of the study is how emerging technologies have an influence on areas such as environment, society (health, education, smart cities and peace, justice, and strong institutions) and economy. The study shed light on the influence of artificial intelligence to corporate social responsibility actions by optimizing resources, enhancing access to services that are essential for living, and facilitating sustainable innovation. For this purpose, a literature review and a secondary data analysis were involved. At the same time, the paper is also approaching the topic of the risks of AI implementation. Among this, the study presents the privacy threats, cybersecurity or the ethical dilemmas in relation with the use of data.

Keywords: Sustainability, corporate social responsibility, artificial intelligence.

JEL classification: M31, D31, Q56.

Introduction

Digitalization can be considered the topic of the day, having the power to reshape all of our interactions, businesses and information and its impact is also affecting the society and economy. The concept of artificial intelligence (AI) is an emblematic part of digitalization which is already integrated into various aspects of our lives, having the capacity to analyze a lot of data, automate different tasks and solve complex problems. Taking this into account, artificial intelligence offer new opportunities for innovation and efficiency and the same time, it reshapes the concept of CSR in the digital world.

The notion of sustainability was brought to light in 1987, when the Brundtland Commission defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Nishant, Kennedy and Corbett, 2020). Corporate Social Responsibility (CSR) is definitely not a new term - it is defined as "how firms integrate social, environmental and economic concerns into their values, culture, decision-making, strategy and operations in a transparent and accountable way, thereby establishing better practices within the firm, creating wealth and improving society" (Oduro, Bruno and Macario, 2021).

The term artificial intelligence concept implies, "The study of intelligent problem solving behavior and the development of intelligent computer systems. In essence, AI encompasses the operational processes of machines that would require intelligence if performed by humans" (Mhlanga, 2021). In short, AI refers to the impact created by replicating human intelligence in computers (Zhao and Farinas, 2023). Nowadays, the topic of artificial intelligence is more and more present in almost every business sector or industry, offering the possibility to make a transformation for our lives and work and holding great promises for the economy and society (Goralski and Tan, 2020).

The most important benefits of AI that can be take into consideration are related to the automation of work, avoiding repetitive tasks, coordination of computers or others resources a to solve complex problems and even the possibility to discover key insights from enormous

amounts of data (Nishant, Kennedy and Corbett, 2020). These benefits are of interest for both public and private sectors. For instance, through AI, governments have the opportunity to respond to cybersecurity risks and in the same way, companies can benefit from it, automating investment decisions or creating customer support driven by AI (Truby, 2020).

1. Research Questions

In the context of analyzing the impact of artificial intelligence (AI) on corporate social responsibility (CSR), this research aims to answer the following questions: 1) *How can AI influence sustainability in areas of environment, society and economy?* 2) *What are the risk associated with the usage of AI in terms of CSR?* By addressing these questions, the paper will provide a robust understanding of the potential of AI to support responsible and sustainable development, while highlighting the importance of implementing appropriate measures to address emerging challenges.

2. Research Methods

The methodology of this research is based on conducting a review of the existing scientific literature, aiming to explore the impact of AI on CSR. This approach involved the critical analysis of relevant work in the field, including empirical studies, theoretical articles and systematic reviews, to identify key trends and conclusions of AI in the fields of environment, society and economy.

3. Literature Review

Sustainability and Corporate Social Responsibility

Sustainability is pushing companies to employ digital technologies in all fields of activity. To realize their environmental responsibilities, organizations can use advanced technologies such as AI, ML (Machine Learning), predictive analytics and IoT (Internet of Things). They should also integrate sustainability into their digital plans. Digital tools for tracking and sharing data can help identify and address environmental problems early (Rosario and Dias, 2022). Also, other studies (Feroz, Zo, Chiravuri, 2021; Goralski and Tan, 2020) talk about how digital technologies (including AI, big data analytics, mobile technologies, IoT and social platforms) bring significant improvements to society and industry. They are increasingly being used to enhance environmental sustainability, with companies developing new products and platforms to this end.

Artificial intelligence in CSR – a double-edged sword

In terms of business sustainability, artificial intelligence (AI) is like a coin with two sides. On the one hand, artificial intelligence can make a real contribution to solving difficult social and environmental problems. But on the other hand, it could also bring new problems such as biases and ethical issues (Zhao and Farinas, 2023). AI has advantages such as utilizing big data and creating new value for businesses through authenticity, augmentation and automation. In the corporate environment, AI can improve the effectiveness and efficiency of corporate social responsibility programs. Companies and stakeholders will benefit from the advantages of AI in terms of economic value and solutions to promote business resilience to sustainability threats and social challenges. However, we need to be cognizant of the potential risks and concerns associated with the use of AI to ensure that it aligns with human values (Zhao and Farinas, 2023). Artificial intelligence (AI) is revolutionizing corporate social responsibility (CSR) by improving data analytics, predicting risks, providing supply chain transparency, personalizing stakeholder engagement, automating tasks, and enabling real-time monitoring. AI-enabled CSR strategies enable companies to make informed decisions, minimize risks, involve

stakeholders effectively, and scale initiatives efficiently, driving positive change for society and the environment (The CSR Journal, 2024).

Areas of action

Environment

Artificial intelligence for sustainability research covers diverse areas and topics, focusing on environmental issues. Here, the areas of biodiversity, water, energy, and transportation are mainly impacted by AI (Nishant, Kennedy, and Corbett, 2020). Many sectors and industries are using technologies (big data analytics, IoT, mobile technology, social media or artificial intelligence) to implement sustainable solutions. Such an approach is smart water management system that can utilize AI to identify waterborne diseases (Rosario and Dias, 2022), offering a tracking system in real time and a support for decision making and enhancing productivity and reducing cost for water utilities (Goralski and Tan, 2020).

When it comes to actions for climate, AI can help to a better understanding of climate changes and the impact of it, supporting low-carbon energy systems and offer an improvement for the health of ecosystems. For instance, the oil spills in the ocean can be instantly detect by algorithms or desertification and land degradation can be supervised by AI techniques. It is also important to note that the use of non-carbon-neutral energy sources could thwart efforts to combat climate change, given that AI applications require a large amount of energy. (Vinueza et. al., 2020). Overall, by using these digital tools, companies, governments and other organizations can work towards a more sustainable future (Rosario and Dias, 2022).

„All these environmental impacts are expected to escalate considerably, with the global AI energy demand projected to exponentially increase to at least 10 times the current level and exceed the annual electricity consumption of a small country like Belgium by 2026” (Harvard Business Review, 2024).

At the same time, IT is the essential infrastructure for improving public and private services, including governance efficiency, business innovation, cultural development, and sustainability. The vast data generated by IoT can be analyzed by AI to support the governance, culture, and functioning of a smart city (Nishant, Kennedy and Corbett, 2020). Digital technologies are changing how pollution is monitored and managed. They're making a big difference in dealing with issues like air pollution, carbon emissions, wastewater treatment, disaster response, and climate change. Artificial intelligence is being used more and more to control environmental pollution because it's good at dealing with complex environmental problems. Similarly, big data is crucial in getting large-scale green vehicles on the road and supporting low-carbon transportation, which helps cut down on CO2 emissions. For example, using big data to set carbon dioxide emission limits for decision-making units can reduce environmental harm at a lower cost (Feroz, Zo and Chiravuri, 2021).

Society

Health

Digitalization and digital technologies are key to improving access to healthcare and promoting well-being. Quality of life is a subjective perception, which includes physical, mental and social well-being, and mobile apps and computers facilitate communication between patients and healthcare providers. Implementing eHealth gives individuals the power to manage their health, improve their well-being, and prevent future health problems. Internet of Health Things (IoHT) applications contribute to improving the quality of life of patients with chronic conditions, and those involved in e-health achieve positive results similar to those

in traditional care. The utilization of telemedicine and digital resources aids in diminishing medical resource usage and expediting care attention (Mondejar et. Al., 2021).

As Secinaro et al., (2021) discuss, artificial intelligence (AI) is transforming healthcare across several fronts. It enhances health services management by providing real-time updates, coordinating patient information, and predicting outcomes, especially crucial during the COVID-19 pandemic. Predictive medicine benefits from AI's ability to identify disease patterns, predict outcomes, and personalize treatments. In clinical decision-making, AI accelerates processes and improves cost-effectiveness. Moreover, AI aids in patient data management and diagnostics, analyzing vast data sets, aiding in diagnostics, and supporting surgical procedures and rehabilitation. Overall, AI revolutionizes healthcare by streamlining processes, improving outcomes, and advancing patient care.

Similarly, Guo et al. (2020) show that the use of AI in healthcare improves the diagnosis, treatment, and management of diseases, providing benefits to both patients and professionals in the field. AI accelerates diagnosis and increases accuracy, creating valuable opportunities for improving disease management and patient care. This progress suggests that AI is becoming crucial for the development of the healthcare sector, with the potential to transform the delivery and receipt of healthcare.

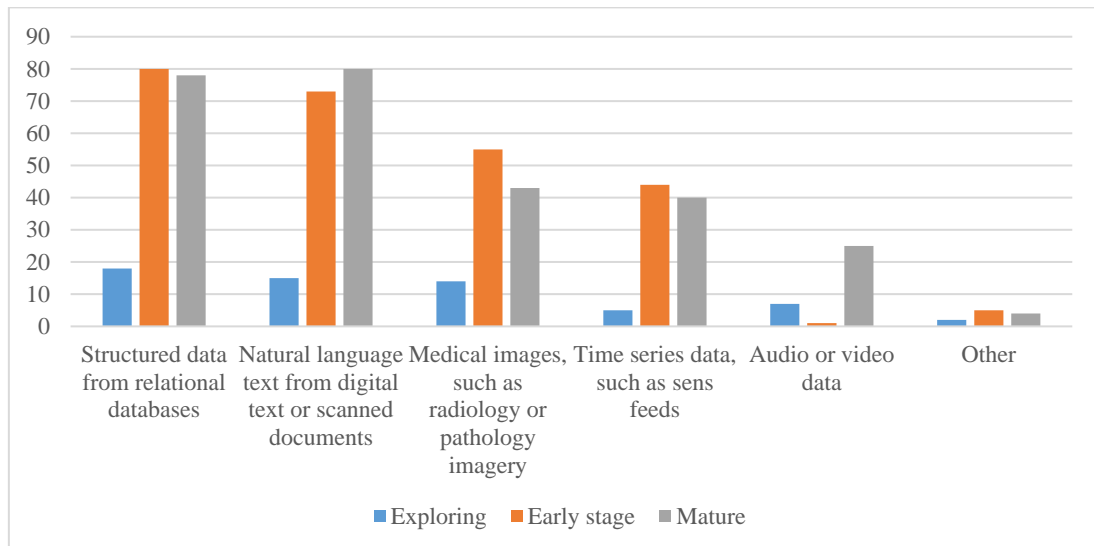


Figure 1. Share of applications of AI models on health data worldwide as of 2021, by adoption stage
Source: Statista, 2024

The figure above shows that the maturity level in the use of data types by respondents, divided into three stages: exploration, early stage and maturity. Structured data from databases and digital texts are the most advanced, with 80% of respondents in the maturity stage. Medical images are at an intermediate level, with 55% at maturity state, showing that this type of data is used, but with some challenges. Time series data are also used quite often, but the distribution between states is more balanced, suggesting greater complexity. Audio/video and other data types are the least mature, with only 25% and 5% at the maturity states. Overall, structured data and digital text are the most used, followed by medical images and time series, and audio/video remain the least developed.

Education

The integration of artificial intelligence in education (AIED) offers promising opportunities for optimizing learning applications and supporting students. However, the implementation of these solutions represents a significant challenge for researchers and

professionals, requiring both technical skills and knowledge from various fields. The development of intelligent tutoring systems and adaptive learning systems requires programming skills and the ability to simulate human intelligence. Therefore, it is crucial to have a detailed understanding of the possibilities and limitations of AI technology to ensure the effective implementation of these applications and to explore important issues in the field of AIED (Hwang et al., 2020). Also, the use of AI-assisted assessment in education is a key opportunity for meaningful transformation. Instead of traditional assessments, which focus on final results, AI facilitates the implementation of continuous feedback systems, integrated directly into the learning process. This opens up new possibilities for monitoring gradual progress and allows for the creation of personalized learning paths. Therefore, AI has the potential to revolutionize the way we approach assessment in education (Cope, Kalantzis, & Searsmit, 2021). Smart learning analytics supports educators in adapting content to students' progress and performance, giving them the chance to track their progress and compare themselves with their peers. It helps teachers identify gaps in students' knowledge and skills, encouraging them to develop their skills at a pace adapted to their needs. Additionally, the system includes services that respect student consent, ensuring data privacy and control over how it is used (Yang et al., 2021).

„75% of higher education leaders believe that AI will play a critical role in shaping the future of their institutions” (Shalwa, 2024).

Smart cities

Technology plays a key role in shaping smart cities, contributing significantly to their progress through innovative uses. In the context of these cities, information and communication technologies (ICT) are used to automate various processes, aiming to improve the quality of life in urban environments. At the same time, integrated intelligence technologies are applied to optimize municipal infrastructure and ensure more efficient governance, involving the community in the administration of the city. Various modern technologies and innovative methods enable the development of smart service models that increase efficiency and improve operations in sectors such as health, transportation, energy, and education (Herath and Mittal, 2022). In smart city projects, areas such as smart transport, cybersecurity and smart grids are of particular importance. Big Data analytics and the use of techniques based on artificial intelligence (AI), machine learning (ML) and deep reinforcement learning (DRL) profoundly influence these sectors, increasing the efficiency and scalability of smart city projects. For example, modern intelligent transport systems (ITS) rely heavily on ML and DRL techniques to develop autonomous vehicles, ensure the security of connected vehicles, optimize passenger transport, and guarantee safe travel. Cybersecurity is a fundamental aspect for achieving the ideal concept of a smart city, having an essential role in this context. In order to implement the security plan presented in the figure, it is necessary to develop a robust, dynamic and comprehensive cybersecurity plan for all components of the proposed architecture. The impact of AI, ML, and DRL-based techniques on cybersecurity is significant and has influenced almost all sectors of a smart city (Ullah et al., 2020).

Table 1. Smart cities dimensions for AI applications

Dimension	Examples
AI for governance	urban planning, tailored subsidy provision, disaster prevention and management
AI for living and livability, safety, security and healthcare	smart policing, personalized healthcare, noise and nuisance management and improved cyber security

AI for education and citizen participation	locally accurate, validated and actionable knowledge supporting decision-making.
AI for economy	resource (cost and time) efficiency and improved competitiveness through, sharing services, efficient supply chains and customer tailored solutions
AI for mobility and logistics	autonomous and sustainable mobility, smart routing and parking assistance, supply chain resiliency and traffic management
AI for infrastructure	optimized infrastructure deployment, use and maintenance, including waste and water management, transportation, energy grids, and urban lighting
AI for the environment	biodiversity preservation, urban farming and air quality management.

Source: European Parliament, 2021

Peace, justice, and strong institutions

The use of technology and big data in maintaining peace and security offers significant opportunities for improving conflict prevention and peacebuilding approaches. However, the deployment of these technologies faces challenges related to limited internet access in conflict-affected areas and ethical data privacy dilemmas (Wahlisch, 2020). Artificial intelligence systems have a considerable impact on human rights, expanding the state's obligations in this area. As the use of data and algorithmic systems becomes more frequent, respect for human rights can no longer be restricted to data protection and non-discrimination alone. Automated systems are used in various fields, such as banking, insurance, education and armed conflicts, influencing democratic processes. The use of algorithmic technologies can influence human rights in various areas, such as education, social assistance, and democracy (Završnik, 2020).

„Some estimates suggest that 69% of the work done by legal assistants can be automated by existing technology, including AI. The same is true for between 16% and 21% of the work done by judges. Through natural language processing (NLP) for example, algorithms can get to work to review documents and contracts, validate, and find relevant ones. Not only does this reduce the amount of time required to process cases, it also decreases the cost of providing legal services” (Capgemini, 2021).

Economy

In theory, the use of digital technologies plays a crucial role in stimulating economic growth, according to the World Bank (2015). One of the ways in which these technologies contribute to economic growth is by transforming the way transactions are carried out, especially through e-commerce and online business, which facilitates the flexibility of banking operations and improves communication, which ultimately leads to increased productivity and economic development (Myovella, Karacuka, & Haucap, 2020). Advances in artificial intelligence (AI) have also led to lower costs in traditional automation and the introduction of intelligent automation, which not only provides a new virtual workforce but also contributes to economic development. An enhancement in labor activity and productivity and in the quality of capital is noticed through the relation between real workers and machines (Qin et al., 2023).

One benefit of AI that companies can take advantage of is replacing human workers and reducing the need for labor by integrating artificial intelligence technologies into their production and business processes. This change means an increased productivity and it is not

translated only into improved quality but also into reduced productions cost which support economic growth. (Qian et al., 2023).

„45% of total economic gains by 2030 will come from product enhancements, stimulating consumer demands. This is because AI will drive greater product variety, with increased personalization, attractiveness and affordability over time” (PwC, 2018).

Risks of AI in CSR

Despite the fact that, on a short-term basis, AI technology can bring economic benefits, on the long-term, it can also involve some certain threats like ethical problems, unemployment risks (Zhao & Farinas, 2023) or privacy (Qin et al., 2023) and security concerns (Truby, 2020).

Cybernetic risk

Artificial intelligence technologies used for environment involve enormous datasets from different source, each with different formats and structures. Increased cybersecurity risks and the complexity of data management require skills in navigating data standards and integration protocols. While isolated approaches can reduce cyber risks to some extent, they are often ineffective and may not deliver the desired results. Careful integration is crucial to prevent hackers from accessing critical data (Nishant, Kennedy, & Corbett, 2020). As artificial intelligence and related technologies progress, proposals for regulating them have also increased in recent years (Galaz et al., 2021).

Labor force

New technologies and artificial intelligence bring risks and can create situations where some win and others lose. For instance, employees who perform repetitive tasks and without a digital component could be replaced or face stagnant or even declining incomes. Income gaps between different categories of workers could increase due to changes in skills requirements. On the one hand, with proper management, artificial intelligence has the potential to stimulate productivity and increasing income, and also to create a way to more socially inclusive and environmentally responsible initiatives. On the other hand, the misuse of AI tools can have negative consequences and generate a backlash against them (Goralski & Tan, 2020).

Ethical risks

Artificial intelligence faces significant challenges in managing complex decision-making situations such as emotions, habits or beliefs. In present, there are many concerns regarding the way in which AI will influence the human control and generate unknown social risks (Guan, Dong, & Zhao, 2022).

Personal privacy

Among the negative effects of AI is also the privacy issue. Organization must be very vigilant when it comes to usage of private data of users. A responsible and social conscious way to use AI that check and reduce the associated risk is mandatory (Zhao and Farinas, 2023).

„AI will be one of the leading components in innovation, competitiveness, and productivity. But, as there are exponential values to the technology, so are the ethical and societal risks - a technological negative spill-over. Unintended consequences of AI, like discrimination, privacy intrusion, lost autonomy, social exclusion, and deep fakes, must be avoided. These consequences will violate Human Rights as well as have severe negative financial and reputational impacts. Organizations must stand accountable for how their use of data and AI affects

people and society. Business models need to take account of the “tech-spill” to ensure sustainable profits and financial growth. Sustainable AI is hence a natural component in CSR and ESG reporting. The screening and risk assessment of these unintended ethical and societal risks will be an important step to embrace AI in a responsible and ethical way – to create innovations humans can trust. Also, in the wake of the organization’s actions to get ready for the upcoming EU regulation on AI, this is a moment to see the positive effects on competitiveness from the proposed EU regulation on AI” (European Commission, 2022).

Conclusions

The accelerated integration of digitalization into multiple aspects of our lives is reconfiguring the way we interact, conduct business and access information, generating promises to increase efficiency, connectivity and innovation across the economy and society. Artificial Intelligence (AI) is at the heart of this transformation, representing an example of the profound impact of digital technologies. With its ability to automate processes, analyze huge amounts of data, and solve complex problems, AI opens up new possibilities for innovation and optimization, while also redefining the concept of social responsibility in the digital context.

However, as AI develops, it becomes essential to implement it in a responsible and ethical way to support its continued progress. In the absence of this approach, there is a risk that its efficiency and ethical standards will be affected. The spread of AI also brings with it new challenges, such as privacy breach risks and algorithmic bias trends, which requires a careful framework of accountability and oversight. By adopting regulations that encourage the responsible use of AI and carefully monitoring and managing related risks, we can exploit its potential to generate positive social impact while minimizing possible negative effects.

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