# Ethical Standards for Artificial Intelligence Implementation as a Guarantee of Sustainable Enterprise Development[1]

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***Abstract.*** *Artificial intelligence (AI) technologies open wide opportunities for optimizing business processes and increasing the competitiveness of companies. However, at the same time, their implementation gives rise to ethical issues that require a systematic analysis and solution to ensure the sustainable development of enterprises. The main ethical challenges are questions of justice, responsibility, transparency of algorithms and data privacy. In addition, an important point is to regulate the interaction between AI and workers to avoid negative social consequences, such as massive job cuts and de-skilling of personnel. The relevance of the study is determined by the need to integrate ethical standards into the business strategy of enterprises using AI to ensure long-term sustainability and minimize risks associated with human rights violations and negative impact on society and the environment. Despite the growing interest of the scientific community in the ethical issues of the use of AI, there is an insufficient number of studies that consider the impact of these technologies on the sustainable development of companies. This paper conducts a systematic review of the scientific literature, based on data from the Scopus database, using bibliometric tools, particularly the VOSviewer software. The study showed that companies that adhere to ethical principles such as fairness, transparency and social responsibility contribute not only to their own sustainable development but also make a positive contribution to preserving the environment and increasing social welfare. The research findings point to the need to develop clear ethical standards and regulatory mechanisms to ensure the ethical, safe and fair use of AI in business. This will help to build long-term sustainable development strategies, increase public trust in technology, and reduce the risks of legal and reputational losses for businesses.*

***Keywords:*** *artificial intelligence, ethical issues, sustainable development, enterprises, efficiency, business processes, social responsibility.*

***JEL Classification:*** *Q01, L32, H21*

## 1 Formulation of the Problem

Artificial intelligence (AI) has become an integral part of modern society, transforming not only business operations but also everyday life. It offers powerful tools to improve efficiency and productivity across various sectors, including finance, healthcare, manufacturing, and marketing. Enterprises increasingly use AI to optimize operational processes, boost performance, and reduce costs. However, the rapid implementation of AI technologies presents serious ethical challenges that must be addressed to ensure long-term sustainability. Automation may lead to significant job displacement, affecting employees' livelihoods and violating the principles of social sustainability. Responsible AI adoption requires a balance between technological advancement and safeguarding human employment and dignity.

The use of AI for surveillance and control raises privacy concerns and may infringe on basic human freedoms, contradicting core values of sustainable development. Furthermore, the opacity

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and complexity of AI algorithms can result in biased outcomes, discrimination, and a lack of accountability, especially when systems make erroneous decisions with harmful consequences. These issues undermine public trust and can compromise the legitimacy and sustainability of enterprise operations.

To mitigate such risks, the development and implementation of clear ethical standards for AI use is essential. These standards should promote fairness, transparency, responsibility, and human-centered design. Addressing these challenges is not only a matter of corporate ethics but a prerequisite for achieving the sustainable development of enterprises.

**2 Analysis of the Recent Research and Publications**

Analysis of current research and publications on the ethical use of artificial intelligence in business shows a growing interest of scientists and a variety of research areas. Scientists from the United States (Shneiderman, 2020; Budhwar, Chowdhury etc., 2023; Munoko, Brown-Liburd, Vasarhelyi, 2020) are conducting the most active research on this topic. Exploring the ethical implications in organisations is essential to understanding how to responsibly implement AI, addressing issues such as privacy, bias, and accountability, while undertaking re-institutionalization and indeed considering the ESG (environmental, social, and governance) footprint of AI suppliers (Chowdhury, Budhwar, Wood, 2024).

Ethical considerations are of paramount importance for the implementation of Generative AI in marketing. Ethical implications include transparency in communicating with consumers about the use of AI-generated content and potential manipulation of information. Companies need to ensure that the use of ChatGPT, for example, meets customer expectations and that personal data is protected and not misused. As a result, businesses should be aware of the moral implications of using ChatGPT in marketing and take precautions to ensure that their procedures are transparent and ethical (Gupta, Nair, Mishra, Ibrahim, Bhardwaj, 2024).

Also, modern studies determine that the technologies of the fourth industrial revolution have a significant impact on creating a sustainable environment, by optimizing the management of natural resources and reducing the harmful impact of production on the environment. AI significantly contributes to the creation of a sustainable environment by integrating technologies to reduce emissions and implement energy-saving solutions in various industries (Shabur, 2024). Scientists (Buchelt, Ziębicki, Jończyk, Dzieńdziora, 2021) emphasize the role of AI in strategic management, contributing to the optimization of processes and the development of strategies of employers in medical institutions, which is an important aspect of social sustainability. Other researchers (Chandeth, Shostakovska, Tsymbal, Vlasova, 2020) indicate the importance of implementing AI technologies in quality control systems, which allows companies to minimize resource losses and ensure sustainable development.

The study of the ethical principles of the implementation of artificial intelligence in business processes used a bibliometric analysis of scientific publications indexed by the Scopus scientometric database (Scopus), in which articles were filtered by the keywords "artificial intelligence, ethics, business". For further data analysis, 380 articles from 2007 to 2024 were selected by the analytical platform VOSviewer. Using the capabilities of the VOSviewer software, 51 keywords were divided into 6 main clusters using the method of relationship density (Figure 1).

Each cluster represents a research topic, and the size of the circle representing a keyword reflects its frequency of mention. In the figure, the clusters are marked in red, green, blue, yellow, purple and blue colors. The first and largest cluster contains 13 categories and brings together a body of research that focuses on the technical aspects of AI and its impact on business, ethics, technology, and society. This cluster covers the keywords: artificial intelligence, big data, blockchain, ChatGPT, deep learning, digital transformation, economics, ethical considerations, technology. The second largest cluster covers 11 categories and focuses on the ethical aspects of automation and the use of data in business. The authors explore the impact of AI on employment, privacy, and human well-being. At the core of this cluster are the keywords: automation, data privacy, employment, ethical principles, philosophical aspects, privacy, regulation, transparency. The main array of scientific publications included in the third cluster for the analyzed period focuses on the ethical principles of the development and use of AI, such as responsibility, transparency and justice. It contains keywords: AI ethics, business ethics, ethical technology, laws and legislation, risk assessment. The fourth cluster is built on 8 categories and deals with ethical issues related to AI decision-making, such as bias and discrimination. This cluster covers the keywords: decision making, ethical issues, information management, machine ethics, robotics. The fifth cluster covers 6 terms: business,

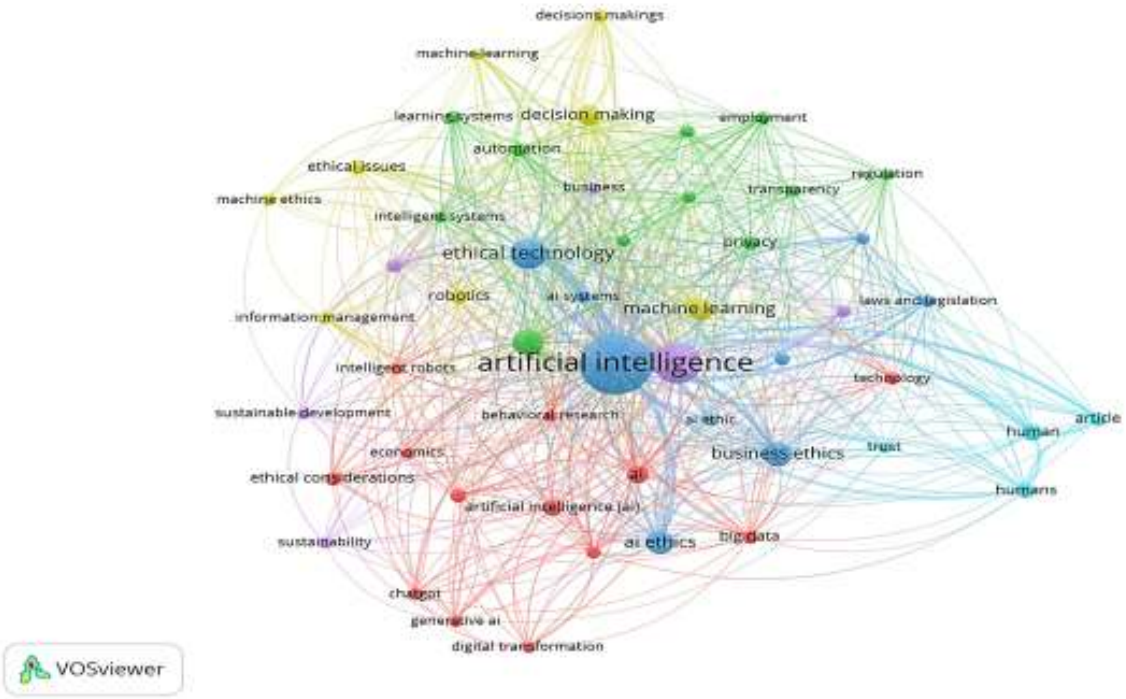


**Figure 1** The bibliometric map of the keywords to the topic

*Source: built by the authors based on the Scopus database*

ethics, innovation, sustainability, sustainable development, and contains research on the potential of AI to promote ethical and sustainable business development. The scientific articles of the sixth cluster cover general topics related to the ethical use of AI. The authors investigate the impact of AI on human relations, trust, and society, keywords article, human, trust.

The results of the bibliometric analysis demonstrated the dynamic growth of research on the ethical use of AI in business, which indicates the importance and relevance of the topic for society and companies.

## 3 Highlighting Previously Unresolved Parts of the General Problem and Formulating the Goals of the Article

Despite the growing body of research on the ethical implications of artificial intelligence (AI), gaps remain in understanding how ethical AI implementation can directly influence the sustainable development of enterprises. Existing studies primarily focus on technical advancements or general ethical considerations, often overlooking the connection between AI ethics and long-term organizational sustainability. Consequently, enterprises may adopt AI technologies without fully accounting for their ethical responsibilities, which can jeopardize both social and environmental sustainability goals.

Previous research has identified key ethical challenges such as transparency, fairness, accountability, and privacy concerns. However, there is insufficient emphasis on developing clear ethical standards that businesses can practically apply to ensure responsible AI integration. Moreover, while international guidelines such as UNESCO's Recommendation on the Ethics of Artificial Intelligence (UNESCO's Recommendation on the Ethics of Artificial Intelligence) provide a solid foundation, their practical implementation within enterprise contexts requires further exploration. This gap in the literature calls for a comprehensive analysis that bridges existing knowledge with actionable strategies for sustainable enterprise development.

The aim of this study is to identify and assess ethical issues related to AI use that may affect enterprises' ability to achieve sustainable development goals. To address unresolved aspects of the problem, the research employs a comprehensive approach to analyze ethical considerations of AI implementation and their impact on enterprises' long-term sustainability. Through a systematic review and analysis grounded in UNESCO's ethical framework, this study establishes a robust scientific basis for exploring how ethical AI governance can contribute to achieving enterprise sustainability objectives. The research adheres to the principles of scientific objectivity, impartiality,

and thoroughness, ensuring that the outcomes not only fill existing knowledge gaps but also provide actionable insights for businesses seeking to align AI implementation with sustainable development goals.

**4 Presentation of the Primary Research Material**

The rapid development of artificial intelligence has opened many possibilities in various areas of life, such as improving diagnostics in health care, facilitating communication between people through social networks, and increasing work efficiency through automated tasks. However, this implementation of AI is accompanied by serious ethical challenges that require immediate solutions to ensure the sustainable development of both business and society. Ethical dilemmas arise because AI systems can introduce and reinforce prejudice, degrade environmental conditions, and threaten human rights. Using AI to monitor or control people can violate their rights to privacy and freedom. Also, AI can negatively affect social sustainability, especially in cases where work processes are automated without due attention to the protection of workers' rights, which can lead to mass unemployment and social conflicts (Zavrazhnyi, Kulyk, 2023).

In various sectors of the economy, ethical challenges of AI relate to sustainability. In the healthcare sector AI improves the diagnosis of diseases, but there is a risk of violation of patient privacy. AI algorithms help in market analysis and lending but can contribute to discriminatory decisions. This violates the principles of fair access to financial resources, which are necessary to ensure sustainable economic development. Although AI improves the effectiveness of marketing campaigns, it can be used to manipulate consumer behavior, which contradicts the ethical principles of sustainable consumption and production. AI can reduce waste and increase the efficiency of production processes, which has a positive impact on environmental sustainability. However, at the same time, there is a social problem of job cuts, which can have negative consequences for the social stability of communities.

Aware the importance of addressing these issues, UNESCO adopted the first global standard on AI ethics, the "Recommendation on the Ethics of Artificial Intelligence" which was adopted by all 193 UNESCO Member States in November 2021. An important stage in the implementation of artificial intelligence systems in business processes is the assessment of ethical risks. This assessment aims to ensure that the use of AI is ethical, does not harm users or society, and does not harm the environment. To assess the ethical risks of artificial intelligence, we suggest using the following categories:

1. Red Lines – No-Go Cases. These are scenarios or applications of AI that are ethically unacceptable. They violate fundamental ethical principles or could lead to serious consequences for personal freedom, society, or the environment. Examples include developing AI systems that discriminate against certain groups of people, using AI to create autonomous weapons, using AI to manipulate or control people's behavior.

2. High-Risk Cases. These are scenarios or applications of AI that have potential ethical risks, but do not reach the level of red lines. Examples: using AI to process sensitive data such as medical records or financial information, using AI to automate decisions that can have a significant impact on people's lives, developing AI systems that may be biased or dishonest.

3. Standard Use Cases. These are scenarios that comply with ethical principles and do not present significant ethical risks. Examples: using AI to improve customer service, applying AI to automate routine tasks, developing AI systems to assist in research and development.

Depending on the results of the assessment, the company's management can decide to allow, refuse or amend a particular scenario or application of AI. Let's consider two examples of the implementation of artificial intelligence in business processes.

1. The first example is the identification of a part on the conveyor, the part arrives at the workstation, a worker in the factory takes a photo of the part and gets an automatic classification based on this image that is detected by the algorithm. After this classification, it is possible to find the material number in the master code table and use this automatically categorized part for the next step, such as quality control, or to get information from it, or find out which manual to take to repair or check something.

2. The second AI use case is intelligent sorting of candidate CVs, which uses two AI algorithms: optical character recognition to extract digital information from documents and business entity recognition to extract important information from those documents. After receiving the information and finding out whether the candidate is suitable for the position or not, it is possible to use the digital assistant to schedule a job interview and then continue the hiring process from there.

From the perspective of AI ethics risk, the first case is a non-critical process, while the second raises much more ethically relevant issues.

The algorithm receives personal information of candidates, it makes suggestions on how to work with this information, how to obtain it, and how to continue the process. And this means that from an ethical point of view, there is a certain risk of discrimination or injustice towards certain groups of candidates, not being open and possibly limiting certain degrees of freedom of candidates. We are dealing with data privacy issues, so from an ethical point of view this process poses much more challenges than the pure digitization process described in the first example. It's important to understand that compliance with all ethical recommendations and attentiveness to the process makes it completely acceptable. This means that the process must be carefully implemented so that it is ethically compatible and acceptable to both the candidate and the company.

The principles and approaches to AI ethics management include both general values and specific measures to ensure compliance with these standards in the areas of the company's activity. The implementation of artificial intelligence into production processes should be done in a way that minimizes bias and injustice. Providing the ability to override system decisions emphasizes the importance of avoiding automated decision-making without human intervention. This ensures that the AI system remains flexible and open to human influence and keeps it accountable. Choosing appropriate governance mechanisms, where a person can monitor the process and intervene, when necessary, is important to ensure that the system operates according to ethical standards and business needs. The system should be thoroughly tested to ensure not only the expected behavior, but also the absence of unintended bias or discrimination. AI implementation must be done in a way that protects data privacy and ensures security. The development and use of AI should be based on principles of transparency and openness to minimize risks and maximize benefits (Zavrazhnyi, 2023).

The implementation of ethical principles ensures that AI systems comply with moral values. For example, the principle of fairness implies that an insurance model should evaluate all claims impartially, regardless of the insured's place of residence. Insurance, financial, and banking companies have already developed guidelines for training AI algorithms on various data sets and protecting user data. Defining ethical boundaries and safeguards ensures that customers receive fair and unbiased results, highlighting the potential of AI when developed responsibly. Understanding the ethics of AI is not limited to preventing harm or bias, there are questions about who is responsible for the failures of AI systems, how to ensure accountability not only for the results but also for the process of creating such systems, and whether it is possible to understand how AI takes decision.

Implementation of AI ethics principles into business processes gives reason to expect responsible use of this technology. Responsible use of AI will foster trust in the technology, drive innovation, and ensure long-term success. The principles of AI ethics are universal and can be applied to any field. For example, in finance, AI algorithms used to provide loans or make investment decisions must

**Table 1** Ethical analysis of the use of AI

| Aspect | Identification of parts on the conveyor | Intelligent resume orting |
|---|---|---|
| Business task | Automation of parts identification to improve quality control and optimize next steps | Automating resume sorting and processing to improve recruiting efficiency |
| Advantages | Improved quality control;<br>optimization of next steps;<br>reduction of errors;<br>improvement of efficiency | Reducing resume sorting time;<br>identifying potential candidates;<br>improving candidate matching |
| Disadvantages | High cost of initial implementation | Possibility of discrimination and bias;<br>violation of confidentiality;<br>limitation of freedom and transparency for candidates |
| Ethical risks | Low | High |
| Measures to minimize risks | A transparent process with clear user control | Use of unbiased datasets;<br>algorithm transparency and appealability;<br>privacy protection measures |
| Examples of use | Sorting parts by size, shape or color;<br>detection of product defects | Sort resumes by keywords, skills,<br>or experience;<br>identifying potential candidates |

*Source: compiled by the authors*

**Table 2** Key principles of AI ethics

| Principle | Description | Example |
|---|---|---|
| Privacy | User data must be protected and used only for authorized purposes | The system anonymizes data before analyzing and trending, protecting users' identity. Users can opt out of data collection and personalized recommendations |
| Bias/Fairness | The AI system must not discriminate against users or groups of users | The system uses a variety of data sources to train its algorithms, ensuring that it recommends a wide range of movies, not just mainstream ones |
| Transparency | The operation of the AI system and its impact on users must be clear | The system openly discloses its technology partners who have access to user information. The system implements a feature that allows users to understand why a certain movie was recommended |

*Source: compiled by the authors*

be fair and transparent to avoid discrimination. The development and operation of autonomous vehicles should be based on ethical principles that guarantee safety, transparency and responsibility.

Companies that successfully implement artificial intelligence analyze how the results of the implementation affect efficiency, automate routine processes, and expand opportunities for innovation. They gain an additional opportunity to create products and services that better meet the needs of users. However, ethical issues related to the use of artificial intelligence are becoming increasingly important in today's business environment. By integrating ethical principles into the development and use of artificial intelligence, businesses can maintain consumer trust, reduce risks of legal problems and reputational losses, and promote innovation and long-term value creation. An important step is the creation of artificial intelligence ethics committees at enterprises. They should be responsible for the development and implementation of an ethical policy on the use of artificial intelligence in the company and provide advice and guidance on ethical issues related to artificial intelligence. Thus, ethical principles that consider the social, economic and environmental consequences of the use of AI are key to ensuring the sustainable development of companies in today's world. By following these principles, companies can minimize risks and contribute to the creation of innovative solutions that meet the requirements of sustainable development.

**5 Conclusions**

Based on the results of the research, it can be concluded that artificial intelligence accelerates innovation, increases the productivity and efficiency of business processes, but at the same time raises important ethical challenges that can have a significant impact on the sustainable development of companies (Sotnyk, Zavrazhnyi, Kasianenko, etc., 2020; Sotnyk, Zavrazhnyi, 2017). By integrating ethical principles into the development and use of AI, companies gain the

**Table 3** Applying the principles of AI ethics in various fields

| Branch | Principles of AI Ethics | Examples |
|---|---|---|
| Finance | Justice, transparency, accountability | The AI algorithms used to grant loans must not discriminate against any group of people. AI algorithms used to make investment decisions must be transparent and accountable |
| Autonomous vehicles | Security, transparency, responsibility | The development and operation of autonomous vehicles must be based on principles that guarantee the safety of people and the environment. AI algorithms used in autonomous vehicles must be transparent and accountable |
| Health care | Accuracy, reliability, confidentiality | AI algorithms used to diagnose diseases or make treatment decisions must be accurate and unbiased. Patient health data must be protected in accordance with ethical standards and applicable law |
| Education | Inclusiveness, impartiality, transparency | AI systems must be designed so that they can be used by learners with different abilities and needs. Content used in AI systems should be unbiased and inclusive. AI systems should be used in a way that promotes learning and student development |

*Source: compiled by the authors*

opportunity to ensure long-term economic, social and environmental sustainability. Environmental sustainability is that companies can use AI to reduce resource consumption and reduce emissions by implementing optimized production and supply management processes. This not only improves operational performance, but also helps reduce environmental impact, supporting sustainability goals. Social sustainability depends on how companies implement AI without compromising employment and social stability. The use of AI must be accompanied by measures to retrain workers, as well as responsible management of automation to avoid social inequality. Economic sustainability is achieved through the integration of ethical standards in business strategies, which allows to ensure long-term economic growth and increase the competitiveness of companies. Businesses that adhere to the principles of sustainable development can strengthen their position in the market by increasing the level of trust from investors, partners and consumers. Thus, the responsible and ethical use of AI becomes a necessary condition for ensuring the sustainable development of companies in the conditions of digital transformation.

Despite the obtained results, there are several issues that need to be resolved. Further research should focus on the role of AI in promoting the circular economy, particularly how the technology can contribute to waste minimization, resource reuse and increased sustainability of production processes.

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