

ETHICAL MANAGEMENT OF ARTIFICIAL INTELLIGENCE IN GLOBAL BUSINESS: COMPETITIVENESS, RISKS AND REGULATORY FRAMEWORKS

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ABSTRACT

Artificial intelligence (AI) has become a primary engine for global business success, redefining how companies handle management, marketing and logistics. While AI brings significant productivity and efficiency, it also raises serious ethical concerns regarding fairness, transparency, accountability, and privacy. This paper examines how AI is used in different business functions and analyzes five major global frameworks for responsible AI governance: OECD AI Principles, UNESCO Recommendation on the Ethics of AI, EU Artificial Intelligence Act, NIST AI Risk Management Framework, and ISO frameworks. With special emphasis on the three tiers of human oversight (HITL, HOTL, HIC) as a universal mechanism for ethical control.

Key words: artificial intelligence, global business, ethical management, AI regulation, competitiveness, human oversight

INTRODUCTION

Contemporary global business operates at the intersection of rapid technological advancement and rising ethical expectations (Xia et al., 2026; Hill & Hult, 2022). Artificial Intelligence (AI) has become a key driver of competitiveness across industries, powering predictive analytics in supply chains, automated financial risk assessment, algorithmic hiring, and personalized marketing (Davenport & Ronanki, 2022; Chatterjee et al., 2023). While AI enables faster and more accurate decision-making, it also raises serious ethical concerns regarding responsibility, algorithmic discrimination, transparency, and the protection of human rights in an environment where technology often outpaces regulation (Raghavan et al., 2022; Jobin et al., 2019). Corporations must navigate a fragmented regulatory landscape. In response, several key instruments have emerged: the OECD’s flexible soft-law principles, UNESCO’s global ethical framework, the EU AI Act’s stringent rules with extraterritorial reach, and the practical tools provided by NIST and ISO/IEC 42001 (OECD, 2024; UNESCO, 2021; European Commission, 2024; NIST, 2023). With that, ethical AI governance is no longer merely a reputational issue, but a strategic necessity with significant legal, sustainability, and long-term competitive implications (Ebers, 2024; Veale & Zuiderveen Borgesius, 2024; Ismail & Ahmad, 2025).

METHODOLOGY

The subject and the problem of the research

Research addresses the growing tension between the rapid adoption of artificial intelligence in global business operations (management, marketing, logistics, and supply chains) and the associated ethical risks, including algorithmic bias, lack of transparency, accountability issues, and privacy concerns.

Although AI enhances efficiency and competitiveness, its unregulated or poorly governed use can lead to discriminatory outcomes, loss of stakeholder trust, and legal non-compliance, particularly in a fragmented global regulatory environment.

Research goals

The main goal of this paper is to provide a systematic overview of AI applications in key business functions, to identify major ethical challenges, and to analyze how five influential global frameworks (OECD AI Principles, UNESCO Recommendation, EU AI Act, NIST AI RMF, and ISO/IEC 42001) together with the three levels of human oversight can support responsible and competitive AI implementation. The study also aims to demonstrate, through selected case studies, that ethical AI governance represents a source of sustainable competitive advantage rather than a limitation.

Research questions

Based on the analyzed literature and frameworks, this paper seeks to answer the following questions:

- RQ1: What are the key benefits and ethical risks of applying artificial intelligence in management, marketing, and logistics within global business?
- RQ2: How do the major international regulatory and ethical frameworks address these risks, and in what ways do they complement each other?
- RQ3: What roles do the three levels of human oversight (HITL, HOTL, and HIC) play in ensuring responsible AI management while maintaining organizational competitiveness

Research method

This study adopts a theoretical and exploratory research approach. It is based on a systematic literature review, combined with critical analysis, synthesis, and deductive reasoning. The research systematically examines scholarly literature, official regulatory documents, and industry reports on artificial intelligence applications in business and associated ethical governance frameworks.

AI IN DIFFERENT BUSINESS FUNCTIONS AND ITS IMPACT ON COMPETITIVENESS

Artificial intelligence has emerged as a strong tool in global business for enhancing efficiency, lowering costs, and obtaining competitive gain. It is applied in various functions that yield measurable benefits but creates new ethical and other problems too.

AI in Management

Artificial intelligence is transforming management by enabling more data-driven and less intuitive decision-making in risk assessment, resource allocation, and strategic planning. Its greatest impact is visible in human resource management, particularly recruitment. Unilever, for example, implemented AI tools such as HireVue and Pymetrics. This resulted in significant cost and time savings (over 70,000 hours), faster hiring, and improved workforce diversity (Hu, 2023; Unilever reports). However, these systems carry significant ethical risks. AI tools analyzing facial expressions, voice, and language can inherit and amplify biases from training data, potentially leading to discrimination based on gender, race, age, or socio-economic status (Raghavan et al., 2022; Andrieux et al., 2024). Therefore, transparency, regular bias audits, and mandatory human oversight are essential for ethical implementation.

AI in Marketing

AI has transformed marketing by enabling hyper-personalization through analysis of customer behavior and preferences, leading to higher conversion rates and loyalty (Chatterjee et al., 2023). Netflix's algorithms, for example, account for ~80% of streamed content (Gomez-Urbe & Hunt, 2015), while Coca-Cola's 2023 'Create Real Magic' GPT-4 and DALL-E campaign turned users into co-creators with strong engagement. However, AI misuse can backfire, as seen when Mango faced backlash in 2024 for using hyper-idealized AI models that promoted unrealistic body standards and

raised authenticity and job displacement concerns. These examples highlight the importance of ethical guidelines and transparency in AI-driven marketing

AI in Logistics and Supply Chains

AI delivers some of the most measurable benefits in logistics and supply chain management. It optimizes routes, predicts disruptions, and automates warehouse operations using real-time data on traffic, inventory, and demand. Amazon Robotics (formerly Kiva) significantly reduced order preparation time and warehouse operating costs (Wurman et al., 2021). DHL has significantly improved warehouse performance through AI-powered automation and robotics. For example, deployments of autonomous mobile robots (AMRs) have achieved up to 50% higher order accuracy in specific implementations, while broader automation initiatives have delivered gains in space utilization and productivity (e.g., DHL Supply Chain with Locus Robotics and related case studies; DHL Trend Reports on AI and robotics, 2023–2024). Nevertheless, heavy reliance on AI and connected systems increases vulnerabilities such as cyberattacks and data breaches.

Major global frameworks

To address the ethical challenges identified in the previous sections, the international community has developed several influential frameworks for responsible AI governance. These frameworks do not compete with one another, instead, they form a complementary ecosystem that provides organizations with ethical foundations, legal obligations, and practical implementation tools. This paper analyzes the five most significant ones, all of which are directly relevant to global business competitiveness because they help companies manage risks, ensure regulatory compliance, build stakeholder trust, and maintain a sustainable competitive position in increasingly regulated markets.

The first one is the OECD AI Principles, which was first adopted in 2019 and updated in May 2024. It represents the most widely supported soft-law framework in the world. It is endorsed by 47 jurisdictions including the European Union. It is built around five core value based pillars: (1) inclusive growth, sustainable development and well-being; (2) respect for human rights, democratic values and the rule of law; (3) transparency and explainability; (4) robustness, security and safety; and (5) accountability. The update which was in 2024, strengthened provisions on generative AI data governance, incident reporting, and post-deployment monitoring, reflecting the rapid evolution of large-scale models. Because to their flexibility, the principles serve as a universal reference adaptable to both developed and emerging economies (OECD, 2024).

The second one is The UNESCO Recommendation on the Ethics of Artificial Intelligence. This was adopted in November 2021, being the first global normative instrument, binding all 194 UNESCO member states. It is based on four core values, but unlike the OECD's voluntary approach, it is officially recognized as formal international ethical standard, obliging members to integrate the principles into their own laws and policies. It is also expected to report back periodically on the implementation. The four values are; respect for human rights and dignity, peace and justice, cultural and linguistic diversity, and environmental sustainability. More specifically it is supported by concrete principles, including proportionality, safety, privacy protection, accountability, transparency, explainability, human oversight, sustainability, awareness-raising, and non-discrimination.

This framework is particularly valuable for global businesses because it explicitly links AI ethics to broader societal goals such as cultural diversity and environmental protection, areas that are increasingly important for corporate reputation and long-term sustainability (UNESCO, 2021, 2024). On July 12, 2024, the EU AI Act (Regulation (EU) 2024/1689) was published in the Official Journal and will enter into force on August 1, 2024. This Act is the first-ever comprehensive and legally binding horizontal regulatory framework on AI in the world.

It implements a rigorous risk-based system that categorizes AI systems into unacceptable risk (prohibited), high risk, limited risk, or minimal risk category. Systems that pose unacceptable risk will be banned altogether.

An example of this is government social scoring, an even worse example is real-time remote biometric identification of people in public places (with an escape hatch). High-risk systems are defined as Artificial Intelligence technologies used for recruitment, credit scoring, education, and systems and critical infrastructure. They must meet the most stringent obligations, which include risk assessment, high quality data sets, technical documentation, human oversight, transparency, and conformity assessment prior to placement on the market (including CE marking). Systems that have limited risk (like chatbots and generative AI) should make it clear when a user is engaging with such AI. The Act has a global reach which states that any provider or deployer impacting the EU citizens through their AI system shall fall under the Act. For global companies, compliance with the EU AI Act has become an effective global standard in that meeting its requirements will often satisfy expectations in other jurisdictions (European Commission, 2024).

The first international standard for artificial intelligence management systems (AIMS) is ISO/IEC 42001:2023. Launched in late 2023, it follows the High-Level Structure and PDCA (Plan–Do–Check–Act) cycle already used in other ISO management standards (like ISO 9001 and ISO 27001). According to this standard, organizations shall establish the policies, conduct risk management and opportunities assessment, assign the roles and responsibilities, determine the competence and awareness, establish operational controls for the lifetime of AI, conduct internal audits and improve continually. For global businesses, ISO/IEC 42001 certification is increasingly viewed as a competitive differentiator that demonstrates credible, auditable responsible AI practices to customers, partners, and regulators (ISO/IEC, 2023). Taken together, these five frameworks create a robust and layered governance ecosystem. OECD and UNESCO supply the broad ethical and value-based foundations that enjoy near-universal acceptance. The EU AI Act translates those values into enforceable legal obligations with global reach. NIST RMF and ISO/IEC 42001 then provide concrete operational tools and certification pathways for day-to-day implementation

A central and unifying element across all five frameworks is the requirement for appropriate human oversight of AI systems. This ensures that AI remains a supportive tool rather than an autonomous decision-maker in situations involving fundamental rights or high-stakes outcomes. International consensus recognizes three distinct levels of human involvement, each adapted to different risk profiles and operational contexts.

The Role of Human Oversight in Responsible AI Management

A central and unifying element present in all five major AI governance frameworks is the requirement for appropriate human oversight of AI systems. This principle ensures that AI functions as a supportive tool rather than a fully autonomous decision-maker in contexts involving fundamental rights or high-stakes outcomes (European Commission, 2019; Shneiderman, 2020). International consensus recognizes three distinct levels of human involvement; each adapted to different risk profiles and operational needs. The strictest level, Human-in-the-Loop (HITL), requires a human to review, validate, and formally approve every significant decision before it is executed. This level is considered essential for high-risk applications such as recruitment tools, credit scoring, and medical diagnostics, where human judgment remains the final authority (Chen et al., 2023). In contrast, Human-on-the-Loop (HOTL) allows AI systems to operate autonomously in real time while a human supervisor continuously monitors performance and retains the ability to intervene or override decisions when necessary. This model is particularly suitable for dynamic environments such as logistics, autonomous warehousing, and real-time routing.

Finally, Human-in-Command (HIC) represents the lightest form of oversight, in which humans set the overall objectives, ethical boundaries, and rules, while granting the AI significant operational autonomy within those parameters. This level is appropriate for lower-risk applications such as content

recommendation engines and personalization tools (European Commission, 2019). Proper calibration of these three levels of human oversight is fundamental for preserving ethical standards, legal accountability, and organizational trustworthiness (Enqvist, 2023; Shneiderman, 2020).

RESULTS AND DISCUSSION

The study results confirmed that artificial intelligence (AI) is a significant driver of competitiveness in modern global business. However, the long-term success of AI mostly depends on governing it ethically. Artificial Intelligence benefits the core operations of a business. According to Hu (2023), in management, companies like Unilever have cut recruitment costs and time while enhancing diversity with AI-powered tools. In marketing, hyper-personalization systems increase user engagement and retention significantly. For instance, Netflix recommendation algorithms (Gomez-Uribe & Hunt, 2016). The use of solutions like those used by Amazon Robotics and DHL in logistics and supply chains has been estimated to lead to efficiency gains of 20–50%, reduced errors, and lower costs (Wurman et al., 2021; DHL, 2023–2024). These examples showcase the significant potential of AI to improve efficiency and competitive advantage. Nevertheless, there are substantial ethical and practical risks as well. AI may create big advantages in the economy but catastrophic backlashes from it being poorly governed can rapidly escalate as evident from the following: algorithmic bias in recruitment, loss of consumer trust due to inauthentic AI-generated content (as in the Mango case). AI-generated content as happened with Mango, privacy surfacing as well as accelerating the vulnerability of supply chains to cyber-attacks (Raghavan et al., 2022). The five major global frameworks (OECD AI Principles, UNESCO Recommendation, EU AI Act, NIST AI RMF and ISO/IEC 42001) form a complementary and layered ecosystem for ethical governance. While the OECD and UNESCO lay out general ethical principles, the EU AI Act establishes legally binding requirements with global applicability, and NIST and ISO/IEC 42001 offer tools for risk management and certification. Moreover, human oversight is achieved at three levels namely, Human-in-the-Loop (HITL) and Human-on-the-Loop (HOTL) and Human-in-Command (HIC). They help companies optimally balance technology efficiency and human judgement.

CONCLUSION

This paper analyzed the application of artificial intelligence in global business with particular attention to competitiveness, ethical risks and regulatory frameworks. Regarding RQ1, AI increases efficiency, reduces costs, and improves competitiveness in management, marketing, and logistics. These potential benefits notwithstanding serious ethical risks such as algorithmic bias, lack of transparency, and erosion of consumer trust. Referring to the second question (RQ2), the five main frameworks form a strong and complementary governance system. The OECD and UNESCO provide a broad ethical framework, while the EU AI Act offers binding legal rules with extraterritorial effects, and the NIST and ISO/IEC 42001 offer practical implementation and certification tools. As for RQ3, three levels of human oversight (HITL, HOTL, HIC) are crucial to ensure responsible management of AI in organizations. They are meant to place human judgment at the centre where it is most needed and allowing efficiencies to occur in lower risk settings (European Commission, 2019; Shneiderman, 2020; Chen et al., 2023). In coming years, more effective responsible AI adoption is expected to be facilitated by greater regulatory convergence, explainable AI advancements, and improved auditing mechanisms.

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