The Strategic Role of AI in Business Process Transformation and ESG Commitment

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This paper explores the impact of Artificial Intelligence (AI) on business process optimization, emphasizing its role in fostering sustainable management aligned with ESG (Environmental, Social, and Governance) principles. The study adopts a mixed-methods approach, combining quantitative survey data (n = 152) with qualitative insights from semi-structured interviews with professionals from diverse industries. The results reveal that AI implementation enhances operational efficiency, supports informed decision-making, and contributes to productivity gains. Key benefits include cost reduction, improved customer experience, and reallocation of human tasks to more strategic activities. Despite initial resistance from employees, proper training and change management proved crucial in ensuring successful adoption. The study also highlights challenges such as high implementation costs and ethical concerns. Findings suggest that AI can support long-term sustainable practices by enabling real-time data analysis, process automation, and predictive capabilities. Limitations include the geographical scope constrained to Portugal and the relatively small interview sample. This research provides valuable implications for managers aiming to integrate AI into existing systems to enhance competitiveness while supporting sustainability goals. It adds to the growing body of literature on the intersection of AI, ESG, and sustainable business strategy.

Keywords:
artificial intelligence, business process optimization, sustainable management, ESG, digital transformation, decision-making

JEL:
M15, O33, Q56

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1 Introduction

Artificial Intelligence (AI) is changing how organizations operate, offering tools to improve efficiency, reduce costs, and support faster, data-driven decisions. In a highly competitive and sustainability-focused environment, AI emerges not only as a technological solution but also as a strategic ally for aligning business performance with Environmental, Social, and Governance (ESG) goals (Wamba-Taguimdje et al., 2020; Alavi et al., 2024).

Recent studies show that AI can enhance ESG-related practices by improving resource efficiency, monitoring supply chains, and enabling transparency and personalization (Leszkiewicz et al., 2022). Firms adopting AI report better performance and agility (Ruiz-Real et al., 2021). However, most existing literature focuses on technical or ethical dimensions (Sadiku et al., 2020), with limited empirical evidence on how AI is integrated into business processes to support sustainable management. The human impact of AI—on roles, culture, and internal processes—also remains underexplored (Godkänt et al., n.d.).

This paper addresses that gap by examining how AI contributes to optimizing business processes while supporting ESG-aligned strategies. Using a mixed-methods approach, it analyses how AI impacts productivity and identifies which business areas benefit the most from its implementation.

Drawing on data from Portuguese companies, this paper provides practical insights into the dual role of AI as both an efficiency tool and a driver of sustainable transformation.

The remainder of this paper is structured as follows: Section 2 details the methodology; Section 3 presents and discusses the results; and Section 4 concludes with key implications and future research directions.

2 Theoretical Background / Literature Review

The integration of AI into business processes has been the focus of increasing scholarly attention due to its capacity to transform organizational performance and strategic decision-making. AI refers to computational systems capable of performing

tasks that typically require human intelligence, such as pattern recognition, learning, and decision-making (Pina Campos et al., 2022).

Business process optimization, on the other hand, is defined as the continuous improvement of organizational efficiency and effectiveness through automation and data analytics (Leszkiewicz et al., 2022). The convergence of these two areas suggests that AI can significantly enhance process automation, reduce operational costs, improve quality, and increase decision speed and accuracy (Wamba-Taguimdje et al., 2020).

Several studies have emphasized AI's ability to detect inefficiencies, automate repetitive tasks, and provide strategic recommendations through data-driven insights (Bharadiya et al., 2023; Mihai & Pica, n.d.). From customer experience to inventory management and fraud detection, AI applications are becoming increasingly embedded in organizational operations (Sadiku et al., 2020).

However, these advancements are not without challenges. High implementation costs, employee resistance, lack of specialized professionals, and data privacy concerns remain barriers to widespread AI adoption (Godkänt et al., n.d.; Oliveira, 2024). Ethical issues and regulatory requirements are particularly relevant when AI applications involve personal data or affect customer interactions (Soni et al., n.d.).

The literature emphasizes the importance of aligning AI strategies with ESG principles to ensure ethical and transparent deployment in business transformation (Ruiz-Real et al., 2021; Paula Da Silva et al., n.d.). Recent research by Wei and Zeng (2025) highlights how AI and big data analytics enhance ESG compliance by bridging disclosure gaps and improving risk assessment. Leveraging real-time data, AI supports more transparent and sustainable decision-making.

This study provides evidence of how firms adopt AI, manage related challenges, and perceive its effects on efficiency and sustainability.

3 Methodology

This study applies a mixed-methods approach to explore the role of AI in business process optimization and its contribution to sustainable management. Two research questions guide the analysis: (Q1) How does AI affect productivity in business processes?

(Q2) Which business processes benefit most from AI? A quantitative survey collected 152 valid responses from professionals working in organizations that have adopted or plan to adopt AI. Most respondents were aged 18–35 and held higher education degrees. The questionnaire focused on perceived AI impact on efficiency, decision-making, and strategic value. Data were analysed using SPSS (v.29).

To deepen understanding, five semi-structured interviews were conducted with professionals from diverse sectors. These interviews examined real-life AI applications, focusing on performance improvements, process changes, and employee adaptation. Qualitative data were analysed through content analysis using NVivo software.

4 Results

Quantitative analysis

From the 209 collected responses, 152 were retained for analysis. Respondents were active professionals in organizations that have already implemented or plan to implement AI, ensuring data relevance to the study's objectives. The majority were aged 18–35 (64.5%) and held higher education degrees (83%). Most were employed (80.3%) and represented diverse sectors including IT, manufacturing, finance, health, and tourism. Company sizes ranged from microenterprises (13.2%) to large firms (24.3%), with a balanced distribution across SMEs.

Table 1 summarizes the perceived impact of AI. Participants reported high satisfaction (M = 4.08), effectiveness (M = 4.01), and positive expectations for future impact (M = 4.15). AI was seen as instrumental in improving decision-making (M = 3.98), process transformation (M = 4.00), and personalization (M = 4.09). These results confirm that AI is valued not just for efficiency, but also for strategic and customer-related functions.

Table 1: AI Implementation Impact, descriptive statistics

Item	Question	Mean (M)	Std. Dev. (DP)
IMPCT1	Impact of AI implementation on decision-making	3.98	1.02
IMPCT2	Satisfaction with current AI solutions	4.08	0.90
IMPCT3	Effectiveness of implemented AI solutions	4.01	0.91
IMPCT4	Impact of AI implementation on business process transformation	4.00	0.86
IMPCT5	Effectiveness of strategies for overcoming AI implementation barriers	4.00	0.90
IMPCT6	Expectations regarding AI's future impact on process optimization (next 5 years)	4.15	0.86
PERS	Importance of personalization in customer experience	4.09	1.06

Source: own elaboration. Scale Notes: IMPCT1: Scale from 1 (No impact) to 5 (High impact); IMPCT2: Scale from 1 (Very dissatisfied) to 5 (Very satisfied); IMPCT3 & IMPCT5: Scale from 1 (Not effective) to 5 (Very effective); IMPCT4: Scale from 1 (No impact) to 5 (Significant impact); IMPCT6: Scale from 1 (Very low expectations) to 5 (Very high expectations); PERS: Scale from 1 (No importance) to 5 (High importance)

Qualitative Analysis

To complement the quantitative findings, a qualitative study was conducted through semi-structured interviews with five professionals from various sectors and company sizes in Portugal. This approach aimed to answer two core research questions: (Q1) How is productivity in a company affected by the use of AI in business processes? and (Q2) Which business processes are most benefited by AI implementation?

Three major thematic categories emerged from the content analysis:

1. Operational Efficiency: respondents consistently emphasized measurable improvements in key performance indicators. For example, Interviewee 1 (logistics sector) stated, "AI-based route optimization reduced our fuel costs and delivery times significantly." Another interviewee (Interviewee 3) noted,

"Our demand forecasting accuracy increased by 30% after implementing predictive algorithms."

2. Workforce Transformation: participants described how AI shifted the focus of employee tasks from routine operations to more strategic functions. Interviewee 1 mentioned, "Manual and repetitive work was drastically reduced, freeing up our staff for more analytical roles." Interviewee 4 reflected, "Although there was initial resistance, training sessions helped staff see how AI tools made their jobs more impactful and less monotonous."
3. Strategic Innovation: several interviewees reported that AI adoption encouraged a broader cultural shift within their organizations. Interviewee 2 highlighted, "Beyond efficiency gains, AI fostered a spirit of innovation in our company—we are now more open to exploring new technologies and more resilient in the face of change."

The processes most frequently cited as benefitting from AI implementation included inventory management, route optimization, demand forecasting, and customer service—particularly through the use of chatbots and virtual assistants.

5 Discussion

This study shows that AI contributes significantly to business process optimization and supports sustainable management aligned with ESG goals. The mixed-methods approach provided complementary insights into both perceived benefits and practical applications.

Survey results indicate high levels of satisfaction and effectiveness regarding AI's role in decision-making, process transformation, and strategic planning, with average scores above 4.00. These findings suggest that AI is seen not only as a tool for efficiency but also for long-term value creation, confirming previous research (Wamba-Taguimdje et al., 2020).

Interviews reinforced these results with concrete examples of improved logistics, demand forecasting, and operational cost reduction. Respondents described how AI allowed the automation of routine tasks, freeing staff to focus on higher-value

activities. This aligns with literature highlighting the human capital potential of AI (Godkänt et al., n.d.; Mihai & Pica, n.d.).

Resistance to adoption was initially present, but diminished with training and clear communication, confirming the importance of inclusive implementation strategies (Pina Campos et al., 2022). Moreover, participants described a cultural shift towards innovation, echoing findings by Bubphapant & Brandão (2024), where AI adoption fosters openness to experimentation and strategic renewal.

Overall, the results highlight AI's dual contribution: improving operational performance and enabling sustainable, future-ready business models.

6 Conclusions

This study explored how AI supports business process optimization and sustainable management. Using a mixed-methods approach, it combined survey data and interviews with professionals from Portuguese companies.

The results confirm that AI improves productivity through automation, predictive insights, and enhanced decision-making. It enables resource optimization and contributes to long-term value creation, supporting the first research question (Q1). Furthermore, processes such as logistics, forecasting, and customer service emerged as the most positively impacted, answering (Q2).

The findings also show that AI transforms workforce roles by reducing repetitive tasks and promoting strategic engagement. While initial resistance was reported, effective training and leadership helped overcome these challenges. A secondary benefit identified was a cultural shift toward innovation and ESG awareness.

This research contributes original empirical evidence on AI's role in driving both operational and sustainable performance. Its value lies in bridging the gap between AI application and ESG-aligned management in real business contexts.

Limitations include the geographic scope (Portugal) and a relatively small qualitative sample. Future research could explore long-term effects of AI adoption, cross-sector differences, and the integration of AI in ESG measurement and reporting frameworks.

In short, AI is not only improving how companies operate—it is shaping how they prepare for a more sustainable and competitive future.

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