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ARTIFICIAL INTELLIGENCE (AI) AS A TRANSFORMATIONAL CATALYST IN GLOBAL BUSINESS MANAGEMENT

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Abstract

Artificial Intelligence (AI) is currently being seen as a strategic management capability that is revolutionizing in global business management. Although previous studies have reviewed AI application in isolated managerial processes, there are few research studies that consider an integrative perspective to connect strategy with operations, human resources, marketing, and sustainability. The given research fills this gap with the assistance of a systematic literature review and analysis of secondary data (Global industry and policy reports (2018-2025) Sources: World Economic Forum, OECD, IMF, UN, McKinsey). The paper is based on the Resource-Based View, Dynamic Capabilities Theory, and socio-technical systems thinking to create a conceptual framework that relates AI capabilities, such as data assets, algorithms, computational infrastructure, and human-AI governance, with organizational outcomes. The results show that AI can improve the quality of decisions, agility, and sustainable value creation provided hard governance and managers intent are in line. The research will add to management literature by theorizing AI as an interdisciplinary, dynamic managerial ability and provide useful recommendations on responsible AI adoption.

The results can be taken as practical information to guide managers, policy makers and organizations that want to use AI in a responsible way to attain sustainable competitive advantage.

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Keywords: Artificial Intelligence; Global Business Management; Dynamic Capabilities; Strategic Decision-Making; Sustainability.

1.Introduction

The business world has shifted rapidly due to the accelerated pace of digitalization, growing market uncertainty, and the sustainability pressures experienced by the worldwide business system. Artificial Intelligence (AI) has become one of the key emerging digital technologies that have taken a centre stage in transforming the managerial decision-making process, organization structure, and competitive approaches. The estimates provided in the global market indicate that AI industry grew to about USD 20 billion in 2018 and is projected to grow to nearly USD 200 billion by 2023 and above USD 300 billion by 2025, indicating a continuous annual growth rate of more than 30. This growth highlights the increasing role of AI as a technology that underlies business in modern business administration.

Regardless of its transformational power, the adoption of AI is not uniform across regions, industries, and the size of organizations. The maturity level of AI in large multinational enterprises and technology-driven business sectors is rather high, whereas the small and medium-sized businesses and companies in emerging economies are rather limited. In North America, AI is used by more than 60% of people, whereas in Europe, the figure is under 50% and in most emerging economies the use is under 30%. Some of the typical obstacles are lack of AI-qualified talent, lack of quality data, high implementation expenses, governance and ethical issues, and regulatory unknowns. Moreover, the ever-increasing energy demands of AI infrastructure and its environmental factors have also become a sustainability issue, making it even more difficult to adopt at large scale.

Academically, current studies on AI in business management are disjointed. Much of the literature writes about functional-level uses, e.g. marketing analytics, automated supply chains, or HR analytics, without considering simultaneous transformations across interrelated levels of management. Consequently, there is a lack of theoretical and empirical knowledge on AI as a comprehensive transformational driver in organizations and especially with long-term strategic capabilities and value creation sustainability.

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The thesis of this paper is that the concept of AI can be understood not only as a technological innovation but as a dynamic managerial skill included in complex socio-technical systems. The interdisciplinary approach assumes that the work incorporates the findings of management science, information system, operations management, human resource management, marketing, and sustainability research to come up with an overall picture of AI-led revolution in the management of global businesses. Based on this, this paper seeks to come up with an integrative framework that will present AI as a transformational managerial potential and not as an autonomous technology.

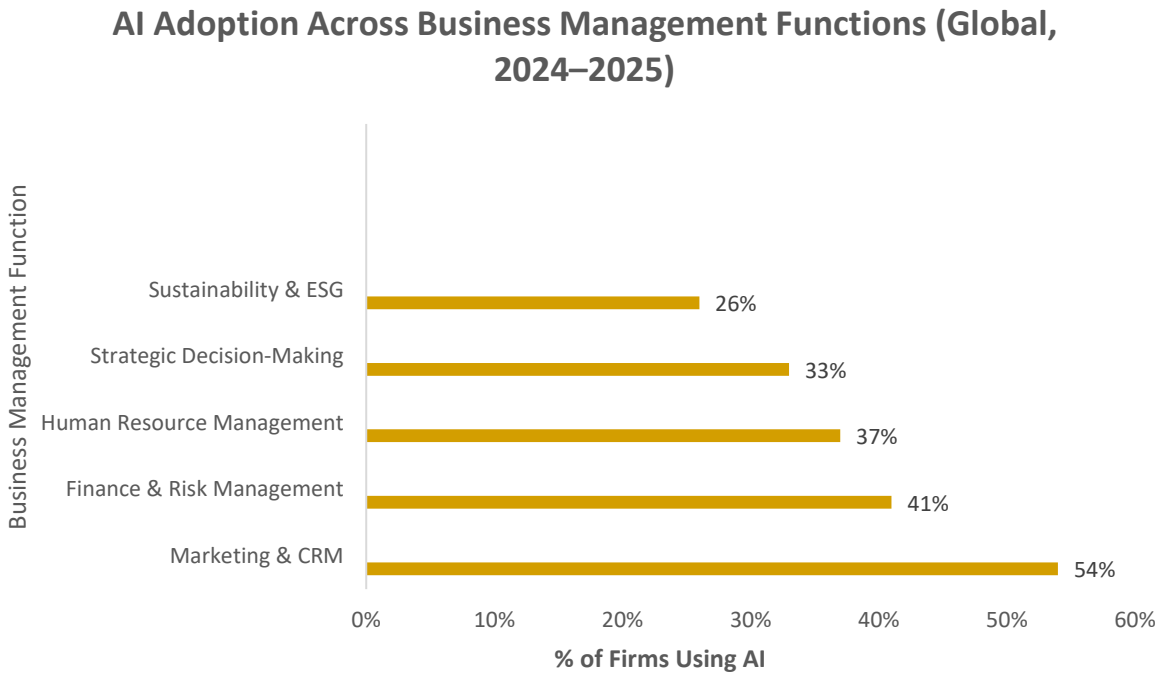

Figure. 1 AI Adoption by the Main Business Management Functions (Global, 2024-2025).
Source: World Economic forum, OECD, McKinsey global Institute, and the United Nations Reports (2018-2025) data assembled.

2. Literature review and theoretical background.

2.1 Evolution of Artificial Intelligence in Business

The development of artificial intelligence in business has been undertaken in several phases of technology. The initial use of AI was mostly rule-based expert systems, which were based on

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logical rules that were defined in advance and used to automate regular and structured managerial processes. Julien Issa (2023) in his master thesis on the artificial intelligence in business management demonstrated that the initial systems were not capable of learning and were not adaptable, which restricted their application in dynamic and uncertain business settings (Julien Issa, 2023).

The new generation of AI is essentially different in that it is machine learning based, deep learning based, and data intensive algorithms that can learn on its own using large data sets. According to Isa (2023), AI systems have been able to identify patterns, predict and act in the same way as humans because of the development of computational power, cloud computing, and the availability of big data. Therefore, AI has become not only an operational instrument but also a strategy in organizations.

Management-wise, AI is being more conceptualized as an organizational strategic resource. One of the most recent examples is a thorough bibliometric study where Popa, Ștefan, Josan, Mircioiu, and Căruceru (2025) use AI as the primary contributor to organizational adaptability, agility, and resilience. Their review of 107 high-impact papers establishes that AI is beneficial to the managerial decision-making process by alleviating information asymmetry, enhancing the accuracy of analytical performance, and responding faster to strategic challenges in unstable business contexts.

2.2 AI in Core Management Functions

2.2.1 Strategic Decision-Making

Artificial intelligence plays a critical role in enhancing strategic decision-making through advanced AI-based decision support systems (DSS). Empirical evidence presented by S. Shankar (2025) in a large-scale study of 500 small and medium-sized enterprises shows that organizations using AI-supported strategic planning tools experience 30–40 percent reductions in decision-making time and cost, while achieving higher forecasting accuracy compared to traditional planning methods.

Similarly, Francis Pol Lim (2025) highlights that AI-powered forecasting and scenario analysis tools enable managers to process complex environmental data in real time, thereby reducing

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uncertainty and cognitive bias in strategic choices. These findings confirm that AI augments managerial judgment rather than replacing it, particularly in high-uncertainty and competitive contexts.

2.2.2 Operations and Supply Chain Management

The application of AI in operations and supply chain management has produced some of the most measurable performance improvements. According to empirical findings reported by Shankar (2025), firms adopting AI-driven demand forecasting and predictive analytics achieve productivity gains of approximately 34 to 40 percent, alongside a 27 percent reduction in routine operational task time.

Operation AI uses are demanding forecasting, inventory optimization, predictive maintenance and logistics routing. Empirical research documents on efficiency of costs, service levels, and flexibility of operation.

2.2.3 Human Resource Management

In the domain of human resource management, AI is increasingly used for resume screening, performance evaluation, skill gap analysis, and personalized employee training. Research conducted by Shankar (2025) reveals that AI adoption in HR functions improves recruitment efficiency and objectivity, particularly during the initial screening stages.

However, the literature also highlights critical ethical and organizational challenges. Shankar (2025) reports that 77 percent of non-adopting firms cite concerns related to algorithmic bias, lack of transparency, and potential workforce displacement. Complementing this view, Popa et al. (2025) stress the importance of human-in-the-loop governance mechanisms to ensure ethical accountability and maintain trust in AI-supported HR decision-making.

AI is applied in HRM in the fields of screening of recruits, performance analysis, identification of skill gaps, and individualized learning. Although AI is more effective and objective, issues of bias, transparency, and labour displacement are still salient.

2.2.4 Marketing and Customer Management

AI-driven marketing analytics have significantly transformed customer relationship management. A detailed study by Nkemdirim Mbah (2025) demonstrates that AI-powered

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chatbots and customer analytics systems can handle 70 to 80 percent of routine customer queries, leading to 20 to 30 percent reductions in customer service operating costs.

AI-based analytics allow segmentation of the customers, sentiment, recommendation systems and dynamic pricing. These applications have also been linked with increased customer satisfaction and better revenue performance.

2.2.5 Sustainability and Corporate Responsibility

An emerging body of literature highlights AI's growing role in promoting sustainability and corporate responsibility. According to Popa et al. (2025), AI systems contribute to sustainability by optimizing energy consumption, reducing emissions, and improving the accuracy of environmental, social, and governance (ESG) reporting.

The literature is growing to indicate that AI can be used to enhance sustainability through optimizing resource consumption, minimizing emissions, and enhancing the collection of ESG information. Nevertheless, massive AI systems have a contradicting disadvantage in terms of energy consumption.

2.3 Theoretical Progress: AI Over and above the traditional IT Capabilities.

Although previous studies have looked into information technology as a strategic resource, artificial intelligence is not similar to the traditional IT systems. In contrast to fixed digital capabilities, AI systems have characteristics of learning, adaptation, and autonomy, and allow organizations to feel, grasp, and adjust resources using a dynamical nature. The comprehension of AI in terms of Dynamic Capabilities is that AI is not only efficient in terms of its operations, but it also promotes strategic renewal through constant updating of decision models. This paper builds upon the existing theory by putting AI as a developing managerial capacitance in socio-technical systems instead of an independent technological resource.

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3. Research Gap

An adequate analytical overview of the literature indicates the following gaps:

Identified Gap	Explanation
Functional Fragmentation	AI studies are concerned with single functions.
Strategic–Operational Disconnect	Poor connection between AI insights and strategy.
Sustainability Under specification	Environmental and social impacts under-explored.
Lack of Integrative Framework	Likeness of managerial models

Thus, the interdisciplinary research is evidently required, which defines AI as a cohesive managerial quality that impacts various organizational dimensions at the same time.

4. Research Objectives

- To generalize the interdisciplinary literature on the use of artificial intelligence in global business management.
- To analyse the secondary data on the trend of AI adoption and Atmospheric management results in the period of 2018- 2025.
- To build a conceptual model integrating AI capabilities and the performance outputs of the organization.
- To examine issues of governance, ethical and sustainable implications of AI-driven management practices.

5. Research Design and Methodology

5.1 Research Design

This research design is descriptive and explanatory because the study entails a systematic review of the literature and analysis of secondary data. The given approach is relevant because AI implementation has a global character and there is high-quality secondary information in industries and areas.

5.2 Data Collection Methods

Two main sources were used to collect data:

i. Systematic Literature Review (2018–2025)

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Peer-reviewed journal articles that were selected in Scopus, Web of science, and Google scholar and concerned the use of artificial intelligence in business management, operations, human resource management, marketing, and sustainability.

ii. Secondary Industry and Policy Data (2018-2025)

Reports by international consulting firms, technology research organisations and international policy institutions reporting on the levels of AI adoption, maturity models, and business impact.

5.3 Data Analysis Technique

Thematic analysis was qualitative in nature and was used to determine common concepts and mechanisms and managerial implications in the literature reviewed. A total of about 65 peer-reviewed journal articles pertaining to the years 2018-2025 were systematically analysed.

Synthesis of quantitative secondary indicators was done; that is, AI adoption rates, maturity levels, and functional deployment patterns were used to determine global trends in industries and across the regions. The findings set in both qualitative and quantitative analyses were combined to come up with a comprehensive conceptual framework of the connection between AI capabilities and managerial and organizational results.

5.4 Scope of the Study

- Temporal Scope: 2018-2025
- Geographical Location: International to both developed and emerging economies.
- Unit of Analysis: Organizations that have embraced artificial intelligence in their mainstream business management functions.

6. AI-Business Management Integrative Framework.

6.1 Framework overview

The proposed concept of integrative framework represents artificial intelligence as a multidimensional managerial ability consisting of four mutually dependent pillars that together affect the most significant areas of business management, i.e., strategy, operations, human resource management, marketing, and sustainability.

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The first pillar, which is data assets, is the quality, diversity, accessibility, and governance of organizational data that supports effective implementation of AI. The second pillar is algorithms and models and contains predictive, prescriptive, and generative AI methods, which convert data into actionable managerial information. The third pillar is computed and digital infrastructure which incorporates cloud computing, edge technologies and system integration platforms which can support scalable implementation of AI. The fourth pillar is human-AI interaction and governance that embodies managerial capabilities, organizational practices, ethical protective measures, and regulatory compliance measures that determine responsible AI utilization.

These pillars help bring about various organizational results when well incorporated. The adoption of AI can help organizations to improve the speed and quality of their decision-making processes (both strategic and operational), increase efficiency and flexibility in supply chains and manufacturing processes, engage customers more personally and respond to the market in marketing, reskills and augment their workforce, and achieve sustainability in terms of resource efficiency and waste reduction.

With a systems-oriented view, the theory focuses on dynamic feedback loops where AI-based decision-making can produce new data and learning in organizations. This learning in its turn enhances AI capabilities in the long run as long as, there are proper mechanisms governing it, and integration of the functionality.

6.2 Illustrative examples

i. Demand Forecasting: AI-based forecasting systems have demonstrated the ability to achieve significantly better forecast accuracy (by up to 20-40) than conventional forecasting systems, with major inventories of supply chains lowering the level of inventory and operation cost.

ii. Recruitment and Talent Management: The 30 or 50% of recruiting time saved with AI-based resume-screening and assessment systems are used to hire, and the similarity of role-fit predictions. However, empirical studies caution that ethical risks exist on the biases that are introduced in training data and clear and responsible governance procedures must be developed.

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iii. Marketing Personalization: AI-based recommendation engines and mobile digital pricing optimizers are increasing conversion rates and lifetime value of the customer, especially when combined with an effective customer data platform and real-time analytics.

7. Empirical Evidence based on the trend of AI adoption around the world.

This section provides the most important findings based on the secondary data sources and published literature in 2018-2025. It is aimed at finding visible patterns to the adoption of artificial intelligence in business management and determining its impact on the performance outcome of organizations.

7.1 The AIs Adoption Trends in Global Business.

The secondary data, which is the world business survey and industry report, represents a gradual rise of the adoption of AI in the organizations spread worldwide throughout the time. As observed, AI has been on an upward trend since 2020 owing to the efforts in digital transformation, competition and the creation of data infrastructure.

Fig. 1: Adoption of AI in Organizations (Growth 2018-2025)

The current data indicates that the majority of organizations are actively implementing AI technology in their daily operations, making the McKinsey (2018-2025) model a highly applicable choice to identify the main challenges in deploying AI within an organization.<|human|>As of now, most organizations are already using AI technology in their daily activities, and thus the McKinsey (2018-2025) model would be an excellent option to determine the primary issues related to the implementation of AI in an organization.

Interpretation: Figure 1 shows that AI is used most in strategic planning and operations management since organizations are more concerned with efficiency and ability to anticipate. Reduced usage in functions related to sustainability suggests the beginning of AI and ESG goal integration, but it is not developed, which means that such managerial innovations are essential in the future.

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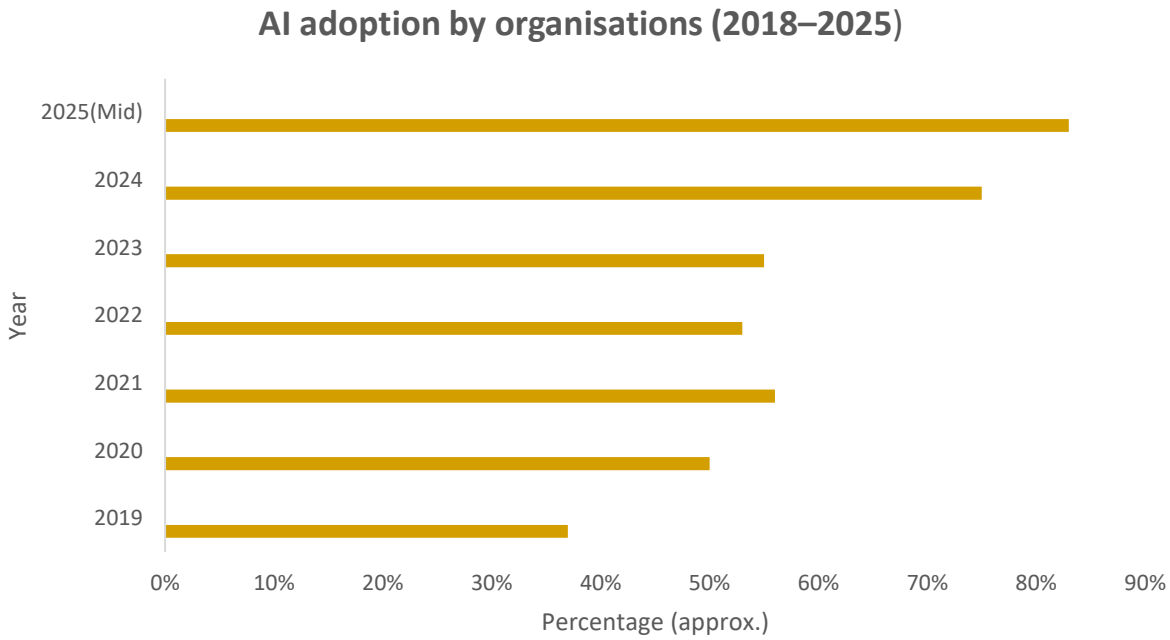

7.2 Measurable benefits

An overview of industry reports and scholarly case studies indicates that a number of uniform organizational advantages are linked to the adoption of artificial intelligence in the management of businesses. Such advantages can be felt most significantly in the organizations that can implement AI in many functional domains and not in a few pilot projects.

First, efficiency improvement is obtained by means of automatization of repetitive operations and faster processing of core business procedures that lead to the decrease of processing time and enhancements in operational throughput. Secondly, AI-powered personalization, dynamic pricing, and the increase of the products in correlation with the preferences of the customers are seen as the sources of revenue improvement. Third, predictive maintenance systems, fraud detection algorithms and anomaly identification systems help reduce risks and enhance the resilience of the organization and the reliability of decisions.

Nevertheless, it is always shown in the evidence that there are no automatic financial returns on AI investments. The quality of data, integration of systems and capabilities of the managers and the general organizational preparedness play central roles in the realization of quantifiable benefits.

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These were the results of associations observed in the previous research and industry analysis and not the real causal relationships.

7.3 Challenges and limits

Although the adoption rates continue to rise, there are still a number of structural and organizational limitations that limit the efficiency and the scalability of AI projects. The problem of data quality and system integration is still evident because the old legacy systems and fragmented data architecture inhibit the performance of models and interoperability. There is also a lack of talent and leadership as a significant obstacle, as there is a deficit of AI-proficient staff, as well as a lack of executive sponsors to support a large-scale adoption. Furthermore, the uncertainty regarding regulatory aspects of data protection, algorithm responsibility, and AI regulation make matters more complicated in terms of compliance and managerial risk.

All these restrictions, taken together, can be used to describe why a large percentage of AI projects fail to transition beyond experimental or pilot-phase deployment.

8. AI, responsible management and sustainability.

Artificial intelligence can be used to assist organizational goals of sustainability in the economic, environmental, and social levels. Optimization in the operations can help to reduce the use of energy and waste of materials due to better forecasting and predictive maintenance, as well as demand-sensitive production. AI design and analytics tools also complement circular economy efforts with the help of notifying material efficiencies and reuse potentials, as well as optimum lifecycle management approaches.

Meanwhile, the AI use comes with significant sustainability trade-offs. The large-scale AI models are linked to energy-inefficiency, electronic waste, and carbon footprint of computing infrastructure. Consequently, the benefits of AI to sustainability would be dependent on responsible model design, energy-saving infrastructure, and governance systems that will moderate the maximization of benefits against environmental costs.

9. Implications of governance, ethics and policy.

The results of this work also suggest that successful scaling of artificial intelligence in the business management setting should be supported by the introduction of effective and

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responsible AI governance mechanisms. On the managerial level, organizations have to focus on transparency, explainability and accountability in AI-assisted decision-making. The impact of the ethical risks needs to be minimized by such practices as systematic documentation, auditing bias, and accountability structures that will be well defined and ensure that the rules are followed.

Policymaking Governments and regulatory bodies are very critical in the creation of responsible AI ecosystems. The policy makers are supposed to promote the creation of interoperability standards, facilitate the provision of digital infrastructure to the society and develop balanced regulation frameworks that do not harm the interest of society but promote innovation and growth of competition.

10. Future Research Directions

The paper is based on references to the secondary literature and industry reports till 2025. Since the current technological development in the field of artificial intelligence is quite rapid, the proposed conceptual framework still needs to be proven and developed empirically in the future.

Future research needs to underline longitudinal firm-level research, which investigates the correlation between AI maturity and the organizational performance outcomes. The pattern or use of AI could be further investigated by cross-country comparative research on how institutional and regulatory contexts influence the adoption of AI. There is also a need to conduct further research on how AI systems impact the environment life-cycle and studies on behaviours looking at managerial trust, reliance, and decision-making processes in AI-supported environments.

11. Limitations

The current research has a number of limitations. First, it is rooted entirely in secondary literature and industrial reports that were published until 2025, and both might be impacted by the publication lag in a fast-changing area. Second, differences in methods of measurement used in industry reports can restrict the comparability of results. Lastly, the presented integrative framework is theoretic in character and has not been empirically tested, which makes it necessary to provide quantitative and qualitative tests in the future.

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12. Contributions of the Study

The research work builds on management theory because it conceptualizes artificial intelligence as an interdisciplinary managerial capability that is dynamic, as opposed to a technology in isolation. Managerially, the paper will offer an answer on how to harmonize AI investments and governance frameworks, human capacities, and sustainability objectives. In policy terms, the results emphasize the need to have equal regulations that allow innovation and ethical and responsible use of AI.

13. Conclusion

Artificial intelligence is a major force of change in the management of businesses worldwide and it impacts on strategic decision-making, business operations, customer relationship, and sustainability programs. This study shows that the successful implementation of AI potential is not only about the ability of technology but also about solid data base, anthropocentric management and leadership. Organizations can use AI in the quest to generate long-term value that is sustainable and responsible by taking an interdisciplinary approach, which would combine technical, managerial, and ethical factors. The framework presented offers a basis to the upcoming empirical studies and informed management practice in the changing environment of AI-based business management.

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