

ERP SYSTEMS AND THEIR ROLE IN CORPORATE SUSTAINABILITY MANAGEMENT

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Abstract: ERP systems play a crucial role in the sustainable development of an organization as a result of the many functions and modules that these systems offer. Thus, more and more organizations tend to implement these systems to ensure that the activity carried out is sustainable. The purpose of ERP systems is to integrate a multitude of business processes to ensure the correct collection, analysis and reporting of data. By leveraging real-time data and analytics, ERP systems empower companies to make informed decisions that align with sustainability goals.

The article discusses how ERP systems facilitate the tracking of resource consumption, waste management, and carbon emissions, thereby enabling organizations to identify areas for improvement and implement sustainable practices. Additionally, the article addresses the challenges companies face in implementing ERP systems for sustainability management, including data integration issues and the need for organizational change.

Integration of ERP systems within organizations allows better compliance with regulatory requirements and enhances transparency in reporting to stakeholders. Thus, the stakeholders are much more satisfied with the data processed with these systems, as well as with the reports prepared by accounting professionals. Organizations that implement ERP systems have sustainability initiatives, demonstrating measurable improvements in operational efficiency and reduced environmental impact.

Sustainability refers to the ability to meet present needs without compromising the ability of future generations to meet their own needs. Sustainable practices in business can lead to reduced environmental impact, improved community relations, and enhanced profitability.

The case study proposed in this article is based on a bibliometric analysis using VOS viewer application using a sample of 286 Web of Science indexed articles published between years 2010 and 2024, used with the aim of highlighting the advantages of implementing ERP systems on the organization's sustainability management.

ERP systems are not only a tool for operational efficiency, but also a catalyst for the sustainable transformation of organizations, helping to create a greener and more responsible future.

Key words: ERP systems, corporate sustainability, management, progress, opportunities

JEL: M21, M41, Q01.

1. Introduction

In this paper, we tried to highlight the main role of ERP systems in an organization from the point of view of development and adoption of decisions in a sustainable way. According to Al-Abrow et al. (2018), ERP systems are defined as that information system that ensures the replacement of redundant and manual processes with automated processes. Thus, more and more organizations were motivated to implement ERP systems in order to comply with data collection and analysis, saving time and resources. Providing precise and updated information, these ERP systems ensure the consolidation of the reputation towards the interested parties, but also an organizational culture oriented towards

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sustainability (training of employees in the field of sustainability and their involvement in ecological projects) (Anaya et al., 2023).

The implementation of ERP systems ensures competitiveness and responsibility of organizations towards the environment, "valuing the best practices and benefiting from numerous organizational advantages" (Anaya et al., 2023).

The main purpose of this paper is to explore how ERP systems contribute to the management of corporate sustainability, highlighting not only the economic benefits, but also the social and ecological impact of these solutions.

2. ERP systems and corporate sustainability management – literature review and case study

Chofreh et al. (2018) consider the implementation of ERP systems a complex process because it requires a wide range of knowledge regarding management and technology. It is also necessary to know the organizational architecture to ensure that the modules correspond to the main departments of the organization.

The plan regarding the implementation of an ERP system to ensure sustainability involves 3 stages presented in figure 1:

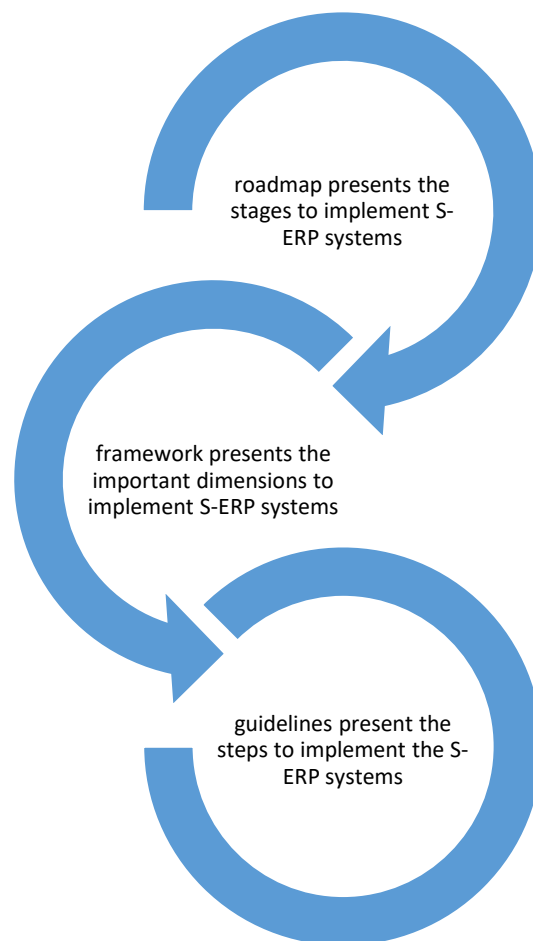


Figure 1. Implementation stages of sustainable ERP systems (S-ERP systems)

Source: Chofreh et al., 2019; Hack and Berg, 2014

Table 1. Relationship between "Sustainable development" (SD) and the main concepts of the paper

Relationship	Description
SD - systems	Facilitates sustainable development with the help of ERP systems that offer a series of functions that allow more efficient management of resources
SD - management	Involves strategies and practices that ensure the responsible use of resources. ERP systems support sustainable management by providing data and analytics that help make informed decisions.
SD - performance	Evaluating the impact of the organization's activities on the environment and society. ERPs enable real-time performance monitoring and reporting, thus facilitating continuous improvement.
SD – corporate social responsibility (CSR)	The responsibility of companies to act ethically and to contribute to the welfare of society. ERP systems can integrate CSR initiatives into business processes, ensuring transparency and accountability.
SD - framework	Provides guidelines for the implementation of sustainable strategies
SD - governance	Sustainable governance refers to the structures and processes by which organizations are run. ERP systems contribute to better governance by ensuring regulatory compliance and facilitating reporting.
SD – environmental policy	Environmental policies are essential for promoting sustainable development. ERPs can help organizations implement and monitor these policies, ensuring that environmental standards are met.
SD - implementation	Implementing sustainable development requires a well-structured plan. ERP systems facilitate this implementation by automating processes and providing tools for resource management.
SD – ERP implementation	Implementing ERP systems in the context of sustainable development involves integrating the principles of sustainability into the design and use of these systems. It ensures that organizations can track and improve their impact on the environment and society.
SD - impact	The impact of sustainable development refers to the long-term effects of the organization's activities on the environment and the community. ERPs enable the assessment and reporting of this impact, helping organizations adjust their strategies to maximize social and environmental benefits.

Source: Author's own creation, 2024

ERP systems play a crucial role in corporate sustainability management, facilitating the integration and implementation of sustainable development principles in all aspects of business operations. This interconnection between key words emphasizes the importance of a systemic approach in promoting sustainability in the business environment.

3. Conclusions

As a result of digital and climate changes, managing corporate sustainability has become an essential priority for organizations around the world. Thus, the optimal solution adopted by the organizations was the ERP system which plays a crucial role in facilitating this transition towards more sustainable business practices.

The most important function of the ERP system is to centralize and analyze data from various departments of the organization, allowing better visibility on the resources used, carbon emissions and other environmental performance indicators.

The implementation of an ERP system facilitates compliance with environmental regulations and international sustainability standards, automating reporting processes and avoiding financial penalties, thus protecting the organization's reputation. At the same time, ERP systems can provide analysis of resource consumption trends, allowing a more rigorous analysis of suppliers that meet sustainability standards.

In conclusion, ERP systems are an essential tool in managing corporate sustainability. By centralizing data, facilitating compliance, optimizing the supply chain, supporting innovation, and promoting internal collaboration, ERPs significantly contribute to creating more environmentally and socially responsible organizations. As companies continue to face sustainability challenges, the adoption and integration of ERP systems will become increasingly important. Investing in these technologies will not only help organizations meet their sustainability goals, but will also help build a more sustainable future for society as a whole. Thus, ERPs are not only a tool for streamlining business processes, but also a catalyst for positive change in the direction of sustainability.

Bibliographical references

1. Al-Abrow, H., Alnoor, A., Abdullah, H. (2018). Socio-technical approach, decision-making environment, and sustainable performance: role of ERP systems, *Interdisciplinary Journal of Information, Knowledge and Management*, 13, 397-415, <https://doi.org/10.28945/4149>
2. Anaya, L., Flak, L., Abushakra, A. (2023). Realizing sustainable value from ERP systems implementation. *Sustainability*, 15, 5783, <https://doi.org/10.3390/su15075783>
3. Chofreh, A.G., Goni, F.A., Klemes, J.J. (2018). Sustainable enterprise resource planning systems implementation: A framework development, *Journal of Cleaner Production*, 198, 1345-1354, <https://doi.org/10.1016/j.jclepro.2018.07.096>
4. Chofreh, A.G., Goni, F.A., Klemes, J.J., Malik, M.N., Khan, H.H. (2019). Development of guidelines for the implementation of sustainable enterprise resource planning systems, *Journal of Cleaner Production*, <https://doi.org/10.1016/j.jclepro.2019.118655>
5. Hack, S., Berg, C. (2014). The potential of IT for corporate sustainability, *Sustainability*, 6, 4163-4180, doi:10.3390/su6074163
6. Huang, S.Y., Chiu, A.A., Chao, P.C., Arniati, A. (2019). Critical succes factors in implementing Enterprise Resource Planning Systems for sustainable corporations, *Sustainability*, 11, 6785, doi:10.3390/su11236785
7. Simmonds, D., Tadesse, A.F., Murthy, U. (2018). ERP systems implementation and sustainability performance rating and reputation, *ERP and Sustainability Reputation*, 5, 1-5
8. Stindt, D., Nuss, C., Bensch, S., Dirr, M. (2014). An environmental Management Information System for closing knowledge gaps in corporate sustainable decision-making, *Thirty Fifth International Conference on Information Systems, Auckland, IS Design Science*, 1-18
9. Wahab, N.A.B.A., Nor, R.B.M. (2023). The role of Enterprise Resource Planning (ERP) systems in facilitating sustainable business practices, AI, IoT and the Forth Industrial Revolution Review, 13(7), 29-39