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Designing a sustainable business model based on circular economy in the Iranian oil industry

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Abstract

The aim of the present study is to design a sustainable business model based on circular economy in the Iranian oil industry. This study is applicable in terms of purpose, and mixed in terms of implementation (qualitative-quantitative). The research community in the qualitative section includes 12 experts, based on snowball sampling, and the statistical community in the quantitative section includes 220 experts, managers, and specialists active in subsidiaries of the National Iranian Oil Company, universities, and research centers related to the oil industry and the environment. Data collection was carried out using semi-structured interviews and questionnaires. Data analysis was performed using meta-synthesis in the qualitative section and PLS in the quantitative section. The results in the qualitative section showed that 142 basic themes were categorized into 34 organizing themes and 11 overarching themes. The overarching themes are: diversification strategy, smart production and operations, strategic collaboration and partnership, value creation, resource management, risk management and resilience, dynamic capabilities, sustainability culture, innovation and technology, flexibility and organizational, establishment of international standards and requirements. The results in the quantitative section showed that all the identified factors were confirmed and the desirability of the extracted model was also confirmed. According to the research findings, the general management suggestion is that policymakers and oil industry managers establish and institutionalize the principles of the circular economy in all parts of the oil value chain by developing a comprehensive strategic framework.

Keywords:
Circular economy, business Sustainability, Sustainable culture, Value creation, Innovation and technology

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Extended Abstract

Introduction

Sustainability has increased significantly in recent years. To move towards sustainability, industries and companies need to look at everything from a holistic perspective and in order to understand the interplay between economic growth and environmental and social sustainability (Sari et al., 2024). The one-dimensional business approach to developing institutions and business units and increasing profits without considering their surrounding environment has led to negative environmental consequences such as climate pollution, global warming, reduction in animal and plant diversity, and others (Antony et al., 2023). Given the emergence of such issues, many researchers and experts believe that business units must consider measures that take into account not only the interests of shareholders, but also the interests of other stakeholders such as employees, suppliers, customers, government, non-governmental organizations, and even the environment, in order to ensure their survival in society. Such businesses are considered sustainable enterprises that, in addition to maintaining their activities at a profitable level, consider the limitations of the socio-ecological system of which they are a part (KHayatian Yazdi et al., 2016). The circular economy is a two-dimensional approach to the industrial economy that aims to recycle industrial waste to protect the environment and achieve a sustainable economy. The circular economy is more than recycling. The linear economy uses materials and ultimately throws them away. However, the circular economy seeks all the options available in this chain so that the least resources are used initially and these resources and materials have the greatest circulation in the economy, and as a result, the most added value is extracted from them during consumption, and finally the products are revived or recycled (Gomez et al., 2024). Circular business models can be defined as those that make the loops smaller, smaller, slower, denser, and dematerialized (raw materials) in order to minimize the input and output sources of waste and energy leakage. Replacing the current linear economic model with a circular economy model not only saves costs, but also significantly reduces the negative impacts of industries on the natural environment. This is why the circular economy has attracted increasing attention as one of the strongest and most recent steps towards a sustainable economy (Hengyu et al., 2019). Aiming to fill this gap, this research seeks to answer the main question: “How is a sustainable business model based on a circular economy designed in the Iranian oil industry”?

Theoretical Framework

Business Sustainability

Business sustainability refers to the ability of an organization or company to continue its activities in the long term, while maintaining a balance between economic success, environmental protection and promotion of social welfare. In fact, business sustainability means continuing to be financially, environmentally and socially acceptable (Hina et al., 2024).

Circular Economy

A circular economy is an economic system that aims to minimize waste and maximize resource use. This regenerative approach contrasts with the traditional linear economy approach, in which the production model is “receipt of raw materials, production, and disposal.” In a circular system, input resource consumption, output waste, and energy loss are minimized by closing or shrinking material and energy loops. These goals can be achieved in the long term through design, maintenance, repair, reuse, reproduction, and recycling (Marina et al., 2019).

Torabi et al. (2024) conducted a research. The results showed that the meta-synthesis method was obtained in the form of a comprehensive questionnaire, which was approved after screening by the fuzzy Delphi method in two stages, to provide the main research question, which is the circularization of the industrial innovation process in 4 stages and 12 dimensions based on the circular economy as an effective framework for expanding the results in line with the sustainable development goals in this research. The results of this study can be a basis for operationalizing circular economy strategies in the industrial innovation ecosystem and lead to new innovation opportunities in industrial organizations, especially start-ups.
Colabi (2020) examined the modeling of factors affecting business model sustainability. It has been stated that the factors affecting business model sustainability are innovation, shared value creation, participatory leadership, economic factors, and corporate governance, respectively.

Research Methodology

This study is applicable in terms of purpose, and mixed (qualitative-quantitative) in terms of implementation. The research community in the qualitative section includes 12 experts, based on snowball sampling, and the research statistical community in the quantitative section includes 220 experts, managers, and specialists active in subsidiaries of the National Iranian Oil Company, universities, and research centers related to the oil industry and the environment. Data collection was carried out using semi-structured interviews and questionnaires.

Research findings

Data analysis in the qualitative part is meta-synthesis method, and in the quantitative part is PLS. The results in the qualitative part showed that 142 basic themes were categorized into 34 organizing themes and 11 overarching themes. Overarching themes include: diversification strategy, smart production and operations, strategic collaboration and partnership, value creation, resource management, risk management and resilience, dynamic capabilities, sustainability culture, innovation and technology, flexibility and organizational, establishment of international standards and requirements. The results in the quantitative part showed that all identified factors were confirmed and the desirability of the extracted model was also confirmed. According to the research findings, the general management suggestion is that policymakers and managers of the oil industry establish and institutionalize the principles of circular economy in all parts of the oil value chain by developing a comprehensive strategic framework.

Conclusion

The present study was conducted with the aim of designing a sustainable business model based on circular economy in the Iranian oil industry. The findings of this research are in line with studies such as Mattera et al. (2021), Leal et al. (2024), Torabi et al. (2024), Colabi (2020), Sharafi et al. (2019), Tunn et al. (2019), Meike et al. (2018), Angus&Nancy (2018), Maghsoudi (2017), Parsapour et al. (2017), KHayatian yazdi et al. (2016), Benzazoua et al. (2015), and Regasa (2015) that emphasize the role of strategic collaboration and sustainable innovation in circular business models. However, while Western studies mainly focus on technical recycling or supply chain optimization in open environments, this research shows that in the context of sanctions and the monopolistic structure of the Iranian oil industry, factors such as energy diversification and ethical value leadership become more important. This shows that the circular economy in sanctioned countries is not only a technical-

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environmental issue, but also a survival strategy. The presence of “risk management and resilience” as one of the key factors is a reflection of the structural instability of the Iranian business environment.