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INVESTMENT FRAMEWORK FOR CIRCULAR PACKAGING MANAGEMENT IN SUSTAINABLE BUSINESS DEVELOPMENT

In the current conditions of economic instability and post-war recovery, the issue of sustainable development has become critically important for Ukrainian enterprises. Businesses are required not only to restore their production capacity but also to adapt to modern environmental and economic standards in order to remain competitive in both domestic and international markets.

At the global level, these challenges are addressed through the Sustainable Development Goals (SDGs), which include 17 interconnected objectives aimed at ensuring balanced economic, social, and environmental development [1]. These goals form a strategic framework for transforming both national economies and business practices. However, their implementation is largely dependent on the ability of enterprises to adapt their operational models in accordance with sustainability principles.

At present, most enterprises operate within a traditional linear economic model based on the principle of "take-make-waste" [2]. This model involves the extraction of natural resources, production, consumption, and disposal, without returning materials to the production cycle. Although it has historically supported industrial growth, it is increasingly considered inefficient due to resource depletion and growing environmental pressure.

In order to move towards more sustainable practices, it is necessary to consider industry-specific characteristics. Among various sectors of the economy, the food and beverage industry is particularly relevant due to its high level of material consumption, intensive use of packaging, and significant environmental impact. Production processes in this sector generate substantial volumes of packaging waste and require continuous resource input, which makes it highly sensitive to sustainability challenges.

To provide a practical illustration of these processes, it is appropriate to analyze them at the level of a specific enterprise. In this study, PJSC "Obolon", one of the leading beverage producers in Ukraine, is considered as a case study [3]. The company's operations involve extensive use of packaging materials, which form a significant share of its production costs and directly affect both economic performance and environmental impact.

Taking into account the characteristics of the selected industry and enterprise, particular attention should be paid to the Sustainable Development Goals that are most relevant at the microeconomic level. In this context, Goal 9 (Industry, Innovation and Infrastructure), Goal 12 (Responsible Consumption and Production), and Goal 13 (Climate Action) are of primary importance, as they directly relate to technological modernization, efficient use of resources, and reduction of environmental impact [1].

In response to these challenges, the circular economy has emerged as an effective alternative to the traditional linear model. It is based on the concept of closed-loop systems, where materials are reused, recycled, and maintained within the production cycle for as long as possible [4]. In the context of packaging management, circular approaches allow enterprises to reduce material costs, minimize waste, and improve overall operational efficiency.

The implementation of a circular packaging management model should be considered as a structured investment system that integrates multiple interconnected components. In this context, investments are not limited to a single process but are distributed across the entire lifecycle of packaging circulation.

Firstly, financial resources must be allocated to the organization of collection systems, ensuring the return of used packaging from consumers and partners. Secondly, investments are required for the development of reverse logistics infrastructure, including transportation, sorting points, and route optimization. Thirdly, a significant share of funding should be directed toward cleaning, processing, and preparation technologies, which enable the reuse of packaging materials within the production cycle.

In addition, investments are needed in organizational and management systems, which ensure coordination between departments and maintain the continuity of circular flows. Supporting elements such as communication campaigns and digital monitoring systems also play a critical role, as they increase return rates and improve transparency and efficiency of operations.

Thus, the investment structure can be conceptually divided into five key directions: collection, logistics, processing, management, and system support. The effectiveness of the circular model depends on the balanced allocation of financial resources across all these components.

The investment support of circular packaging management should be considered as a structured financial system, where all available resources are distributed within a unified framework. For analytical purposes, the total volume of investments is conditionally taken as 100%, which allows determining the proportional allocation of financial resources across key components of the circular model.

In practice, enterprises may rely on a combination of internal and external funding sources. The structure of such financing is not random but is formed based on financial stability, risk level, and accessibility of capital. Internal funds typically constitute the largest share, approximately 50-60% of total investments, as they ensure financial independence, flexibility in decision-making, and lower exposure to external risks. This source allows enterprises to initiate projects without additional financial pressure and maintain operational stability.

At the same time, external financing plays a crucial complementary role. Bank loans and partner investments may account for around 20-25% of total funding. Their involvement enables enterprises to scale projects, invest in infrastructure, and accelerate implementation processes. However, such sources are associated with financial obligations and require careful risk management.

Public support programs and government initiatives may provide an additional 10-15% of funding, mainly through partial compensation or incentives for environmentally oriented projects. Despite their advantages, these instruments are often limited by bureaucratic procedures and accessibility constraints.

International financial institutions and grant-based funding can also contribute approximately 10-15%, particularly for innovative and sustainability-focused initiatives. These sources are strategically important, as they not only provide financial support but also facilitate access to modern technologies, international expertise, and best practices [5; 6].

Thus, the proposed structure represents a balanced investment model, where each source performs a specific function within the overall system. The combination of internal stability and external expansion opportunities ensures both flexibility and long-term efficiency of the circular model implementation.

From a macroeconomic perspective, investment processes in Ukraine are increasingly influenced by international recovery initiatives. The evolution of investment approaches can be traced through a series of international conferences. The Lugano Conference (2022) defined the conceptual principles of recovery, focusing on transparency and sustainability. The London Conference (2023) emphasized financing mechanisms and private sector involvement. The Berlin Conference (2024) shifted attention toward practical project implementation, while the Rome Conference (2025) focused on long-term reconstruction and integration into European economic systems [7].

These developments create a favorable environment for attracting external investments and integrating circular economy principles into business practices. For industrial enterprises, including those in the beverage sector, circular packaging systems represent not only an environmental initiative but also a strategic investment direction. In particular, for enterprises with high packaging intensity, such as beverage producers, investments should be directed toward collection systems, reverse logistics, processing technologies, and digital monitoring. These components form the operational basis of the circular model and ensure the continuity of resource flows.

However, the implementation of such systems is associated with certain risks. These include financial risks related to insufficient funding or high borrowing costs, operational risks linked to logistics inefficiencies, and behavioral risks associated with low return rates of packaging from consumers. In addition, macroeconomic instability and limited access to financial resources may also affect investment decisions. Therefore, the effectiveness of circular investments depends not only on the volume of funding but also on its structure, coordination, and risk management. A balanced combination of funding sources, supported by international initiatives and internal financial capacity, allows enterprises to ensure both economic efficiency and sustainability.

In conclusion, the transition to circular packaging management should be viewed not only as an investment or operational decision, but as a comprehensive strategic shift toward sustainable business development. The analysis confirms that the traditional linear model is no longer sufficient under current economic and environmental conditions. In contrast, circular economy principles provide enterprises with an opportunity to optimize resource use, reduce environmental impact, and improve long-term efficiency.

At the same time, the successful implementation of circular systems depends on a well-structured investment framework, which ensures the availability of financial resources and supports the transformation process. A balanced combination of internal and external funding sources allows enterprises to minimize risks while maintaining flexibility and financial stability. Thus, the integration of circular economy principles, supported by effective investment mechanisms, enables enterprises to not only enhance their economic performance but also contribute to the achievement of Sustainable Development Goals. Ultimately, such transformation creates conditions for building a more resilient, environmentally responsible, and competitive business model, which is essential for long-term development in both national and global contexts.

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