Olena Sadchenko

Doctor of Economic Sciences, Full Professor, Head of the Department of Marketing and Business Administration, Odesa I.I. Mechnikov National University; Full Professor, prof. dr hab., Higher School of Economics and Humanities ORCID: https://orcid.org/0000-0003-4914-6249

Inna Gaivoronska

Candidate of Economic Sciences, Docent, Associate Professor at the Department of Marketing and Business Administration, Odesa I.I. Mechnikov National University ORCID: https://orcid.org/0000-0001-9708-1828

Veronika Shmagina

Candidate of Economic Sciences, Docent, Associate Professor at the Department of Marketing and Business Administration, Odesa I.I. Mechnikov National University ORCID: https://orcid.org/0009-0003-9553-8208

Садченко Олена Василівна

Одеський національний університет імені І.І. Мечникова; Вища школа економіки і гуманітарних наук

Гайворонська Інна Віталіївна, Шмагіна Вероніка Валеріївна Одеський національний університет імені І.І. Мечникова

INTEGRATION OF ESG PRINCIPLES IN PRODUCTION: OPPORTUNITIES FOR SUSTAINABLE DEVELOPMENT, CIRCULAR ECONOMY AND MARKETING

ІНТЕГРАЦІЯ ESG-ПРИНЦИПІВ У ВИРОБНИЦТВІ: МОЖЛИВОСТІ СТАЛОГО РОЗВИТКУ, ЦИРКУЛЯРНОЇ ЕКОНОМІКИ ТА МАРКЕТИНГУ

Summary. In the context of global environmental and social challenges, the integration of ESG principles into production processes is becoming a strategically important area for the sustainable development of enterprises. This study analyzes the impact of an ESG-oriented approach on improving the efficiency of resource use, reducing the carbon footprint and forming circular business models. Particular attention is paid to the synergy of ESG principles and the concept of a circular economy that promotes a closed cycle of production and consumption. The role of marketing in promoting sustainable practices, including green marketing and brand-oriented strategies aimed at increasing consumer loyalty, is also considered. The study identifies key tools and methods for integrating ESG approaches into industrial production, taking into account the possibilities of digitalization and innovative technologies. Strengthening corporate governance - transparency, anti-corruption, compliance with sustainable development standards. Today ESG principles in production are not just a trend, but a strategic necessity for competitiveness, investment attractiveness and long-term business development. Advantages of circular economy: reduction of raw material costs - reuse of materials, reduction of waste - recycling, secondary production, stability of supply – dependence on new natural resources is reduced, compliance with regulatory requirements – companies avoid fines for environmental pollution. Marketing promotes sustainability: creating awareness - educating consumers on environmental practices, promoting circular goods - stimulating demand for recycled and sustainable products, creating an emotional connection with the brand – supporting global initiatives (e.g. nature protection), enhancing the company's reputation – compliance with ESG standards.

Keywords: cESG principles, green marketing, marketing convergence, marketing strategies, management, circular economy, sustainable development.

Анотація. У статті розглядаються основні питання ESG-принципів у виробництві, маркетингу в умовах сталого розвитку та циркулярної економіки. Це дослідження фокусується на впровадженні ESGпринципів (екологічні, соціальні та управлінські аспекти) у виробничі процеси з використанням технологій Індустрії 4.0. В умовах глобальних екологічних та соціальних викликів інтеграція ESG-принципів у виробничі процеси стає стратегічно важливим напрямом для сталого розвитку підприємств. Дане дослідження аналізує вплив ESG-орієнтованого підходу на підвищення ефективності ресурсокористування, зниження вуглецевого сліду та формування циркулярних бізнес-моделей. Особлива увага приділяється синергії ESG-принципів та концепції циркулярної економіки, що сприяє замкнутому циклу виробництва та споживання. Також розглядається роль маркетингу у просуванні стійких практик, включаючи зелений маркетинг та бренд-орієнтовані стратегії, спрямовані на підвищення споживчої лояльності. В результаті дослідження визначаються ключові інструменти та методи інтеграції ESG-підходів до промислового виробництва з урахуванням можливостей цифровізації та інноваційних технологій. Посилення корпоративного управління – прозорість, боротьба з корупцією, відповідність стандартам сталого розвитку. Сьогодні ESG-принципи у виробництві є не просто трендом, а стратегічною необхідністю для конкурентоспроможності, інвестиційної привабливості та довгострокового розвитку бізнесу. Переваги циркулярної економіки: зниження витрат на сировину – повторне використання матеріалів, зменшення кількості відходів – переробка, вторинне виробництво, стабільність постачання – залежність від нових природних ресурсів скорочується, відповідність регуляторним вимогам – компанії уникають штрафів за забруднення довкілля. Маркетинг сприяє сталому розвитку: формування обізнаності – навчання споживачів екологічним практикам, просування циркулярних товарів – стимулювання попиту перероблені та екологічні продукти, створення емоційного зв'язку з брендом – підтримка глобальних ініціатив (наприклад, захист природи), зміцнення репутації компанії – відповідність ESG-стандартам.

Ключові слова: принципи ESG, екологічний маркетинг, конвергенція маркетингу, маркетингові стратегії, менеджмент, циркулярна економіка, сталий розвиток.

Problem statement. Modern industrial production faces challenges related to environmental degradation, depletion of natural resources and growing public demand for responsible business conduct. In this regard, the ESG (Environmental, Social, Governance) concept acquires a key importance, suggesting the integration of environmental, social and governance principles into the strategic development of companies. Despite the recognition of the importance of ESG principles, many companies face problems with their effective implementation. The main barriers include: lack of unified standards and methodologies to assess ESG indicators and their impact on economic results; high costs of environmental modernisation and transition to a circular economy; lack of awareness and resistance to change on the part of businesses and consumers; the gap between strategic sustainability goals and real business processes, which leads to a superficial approach (greenwashing). Greenwashing is a marketing practice in which companies create a false or exaggerated impression of their environmental responsibility in order to attract sustainabilityoriented consumers, investors or partners.

Greenwashing marketing has certain features, such as vague or unsubstantiated claims – using the words 'eco-friendly', 'natural', "green" without supporting facts, lack of transparency – hiding the real environmental impact of the company's activities, exaggerating the importance of environmental initiatives – presenting minor improvements as breakthrough achievements, focusing on one 'green' characteristic while ignoring other harmful aspects of production, use of visual elements (green colour, natural materials only in industrial conditions), and the use of green packaging. Companies often use brands that claim biodegradable packaging but use materials that decompose only under industrial conditions. Car manufacturers advertising low emissions but hiding real test data (as in the Dieselgate scandal). Businesses that promote one-off tree-planting campaigns but continue to engage in environmentally harmful production. Greenwashing hinders the development of truly sustainable businesses, misleads consumers by reducing trust in environmentally responsible brands, and slows the real transition of businesses to sustainable practices. Can lead to legal and reputational risks for companies.

Today, the oil and gas concern Shell is also trying to position itself as a pro-environmental organisation, so a photo of the Australian Great Barrier Reef appeared on their website with the caption 'Shell cares about the planet's biodiversity'. But in fact, this is greenwashing, as the concern is engaged in the exploration, production, refining, transportation and marketing of oil and natural gas. The extraction of natural resources is inherently unecological, not to mention the emergencies that can be associated with it. In particular, Shell is responsible for the largest oil spill ever in freshwater, which occurred on 15 January 1999 [7].

Therefore, it is important to evaluate ESG initiatives not only on the basis of companies' claims, but also on concrete evidence of their environmental responsibility.

In addition, the circular economy, as one of the key strategies for sustainable development, requires profound changes in production and logistics processes, which also involves a number of organisational and technological difficulties [5].

Thus, it is necessary to investigate the mechanisms of effective integration of ESG-principles into industrial production, identify key tools and strategies for transition to the circular model, and assess their impact on sustainable development and competitiveness of enterprises.

Analysis of recent research and publications. The literature review aims to highlight the key theoretical and practical aspects of ESG principles in production, marketing in the context of sustainable development and the circular economy.

The convergence of marketing in the context of sustainable development on the example of entrepreneurship is the subject of very few, if any, scientific works. There are separate studies on ESG principles and marketing, but there are no works that combine all these concepts.

The convergence of marketing approaches and sustainability principles are interrelated phenomena that can significantly affect the success of enterprises. The combination of innovative technologies and sustainable practices in marketing strategies contributes to improving performance and meeting the needs of consumers who prefer environmental friendliness and social responsibility.

We would like to note the works of such scientists: Kostyuchenko V., Pashchenko I., Sakovec I. [1], Mathis S., Stedman C. [8], Livoshko T. [2], Tkachenko A.M., Kolesnik E.O. [5], Matos P. [9] etc.

There is a lot of research on ESG principles, circular economy and sustainable development, but there are practically no works that would combine all these areas into one system.

The purpose of the article. The purpose of this study is to describe the integration of ESG principles into manufacturing, to introduce sustainability marketing opportunities with ESG principles in mind and to examine these principles in the circular economy.

The objectives of the research are: to consider the concept of ESG; to identify the main directions of ESG in industrial production; to study the peculiarities of integration of ESG-principles in production as a strategic necessity for business; to evaluate the effectiveness of integration of sustainable development, circular economy and marketing; to develop recommendations for the creation of sustainable business models.

Summary of the main research material. The purpose of this study is to describe the integration of ESG principles in production, the introduction of marketing opportunities for sustainable development based on ESG principles, and the consideration of these principles in the circular economy.

Presentation of the main material of the research. Today, companies are facing serious challenges such as shrinking natural resources, climate change and increasing demand for environmentally responsible brands. In this context, the principles of sustainable development, circular economy and green marketing become key elements of strategy for businesses focused on long-term development and competitiveness.

The ESG (Environmental, Social, Governance) concept began to emerge in the second half of the 20th century, when the global community faced environmental, social and governance challenges requiring new approaches to doing business.

1. Prerequisites for the emergence of ESG: 1960–1970s. – The emergence of the environmental movement. The Club of Rome's report 'Limits to Growth' (1972) was published, emphasising the risks of uncontrolled consumption of resources. Companies began to think about the environmental impact of their activities. 1980s – Development of the concept of corporate social responsibility (CSR). Businesses begin to incorporate social and environmental aspects into their strategies. 1992 – Earth Summit in Rio de Janeiro, where the UN agenda on sustainable development (Agenda 21) is adopted. The role of business in sustainable development is actively discussed [1; 2; 9].

2. Formation of ESG as a separate concept 2004 – The concept of ESG was first used in the UN report 'Who Cares Wins'. The document emphasises the importance of integrating environmental, social and governance factors into business strategies. 2006 – Launch of the UN-backed Principles for Responsible Investment (PRI), prompting investors to consider ESG factors. 2015 r. Adoption of the UN Sustainable Development Goals (SDGs), which became a global benchmark for businesses in ESG transformation. 2020s. – Implementation of green standards and regulatory requirements such as ESG reporting, EU taxonomy, carbon regulation. ESG becomes a key element of business strategies.

3. ESG in manufacturing: impact on industry. Introduction of resource-saving technologies and transition to a circular economy. Focus on social responsibility – working conditions, workers' rights, inclusiveness. Strengthening corporate governance – transparency, anti-corruption, compliance with sustainability standards. Today, ESG principles in production are not just a trend, but a strategic necessity for competitiveness, investment attractiveness and long-term business development.

ESG (Environmental, Social, Governance) is a concept of sustainable development, which takes into account three key aspects in the activities of industrial enterprises: Environmental – minimising the negative impact on the environment. Social – ensuring fair labour conditions, protecting the rights of workers and society. Governance – Improving practices. These principles help to integrate non-financial indicators into business strategy and contribute to the achievement of sustainable development, improving both the results of companies and their impact on society and the environment [8; 11]. Main directions of ESG in industrial production

1. Environmental aspect (E – Environmental) – optimising resource consumption – reducing energy, water, raw materials, reducing CO_2 emissions and waste – switching to renewable energy sources, carbon neutrality, circular economy – reuse of materials, recycling, avoiding disposable products, green logistics – reduing transport emissions, optimising supply chains. Evaluate how the company manages its environmental impact.

2. Social (S – Social) – safe and comfortable working conditions – reducing injuries, meeting safety standards, protecting workers' rights – fair wages, promoting inclusion and equality, corporate social responsibility (CSR) – investing in local communities, philanthropy, responsible consumer engagement – producing safe, ethical and quality products. Reflect the company's attitude towards its employees, customers and society.

3. Governance (G – Governance) – transparency and accountability – open ESG reporting, compliance with corporate governance standards, ethics and anticorruption – anti-bribery, conflicts of interest, fair competition, sustainable supply chains – co-operate only with responsible suppliers, risk management – climate, social and governance risk assessment. Evaluate the quality of corporate governance, transparency and ethics.

Why do manufacturing companies need ESG principles if some items only make products or services more expensive?

- Increased investment attractiveness - companies with an ESG strategy attract more sustainable investments.

- Competitive advantage - eco-products and social responsibility become important factors of choice for consumers.

– Reduced regulatory and financial risks – compliance with international regulations and requirements reduces the likelihood of fines. Efficiency and profitability – reducing resources and energy costs leads to lower production costs.

Implementation of ESG principles by defining a clear ESG strategy with measurable goals, integrating ESG factor analysis into decision-making processes, and creating transparent ESG compliance reports to attract investors.

Integrating ESG principles into production is not just a tribute to fashion, but a strategic necessity for business. Companies implementing sustainable practices receive economic benefits, consumer loyalty and long-term competitiveness. And in these conditions, in order to understand and sort out the true motives of manufacturers, a marketing strategy and tactics are needed.

Marketing convergence is the process of bringing different types of marketing closer together. Marketing convergence involves combining traditional and innovative approaches to achieve sustainable results. This includes the integration of digital technologies, social media and new forms of communication to effectively promote products and services. In particular, businesses can use convergent marketing to attract a wider audience and increase awareness of their products [3; 4].

Modern business faces challenges related to the depletion of natural resources, climate change, and growing consumer demands for environmental responsibility of brands. In this regard, the concepts of sustainable development, circular economy and marketing are gaining strategic importance for companies seeking long-term success.

1. Opportunities for sustainable development. Sustainable development is a concept aimed at harmonious development of the economy, society and the environment without harming future generations. Companies following the principles of sustainable development receive a number of advantages: economic benefits – cost optimisation through resource saving, increased production efficiency, innovation and competitiveness – introduction of environmentally friendly technologies and new business models, access to financing – sustainable companies attract ESG investors and receive preferential credit terms, social loyalty – consumers increasingly choose brands focused on the principles of sustainable development.

Sustainable development tools in business: use of renewable energy sources (solar panels, wind power), implementation of lean production principles and waste minimisation, development of green finance (green bonds, sustainable investments).

2. Opportunities for the circular economy. The circular economy is a model based on a closed-loop production cycle in which waste is turned into a resource. It helps to minimise the environmental footprint and maximise the value of the product. Benefits of circular economy: reduced raw material costs – reuse of materials, reduced waste – recycling, remanufacturing, stability of supply – dependence on new natural resources is reduced, regulatory compliance – companies avoid pollution fines.

Popular circular economy models: cradle-tocradle manufacturing – creating goods that are 100% recyclable.

Service model – moving from selling goods to renting them (e.g. carsharing, tech subscriptions).

Recycling and upcycling – recycling materials into new value-added products.

Example: IKEA aims to be 100% circular by recycling materials and offering furniture repair and resale services.

3. Marketing opportunities in sustainable development and circular economy. Sustainability marketing (green marketing) are strategies that focus on promoting eco-products and ethical business practices.

Marketing promotes sustainability by: creating awareness – educating consumers about green

practices, promoting circular goods – stimulating demand for recycled and sustainable products, creating an emotional connection to the brand – supporting global initiatives (e.g. nature protection), and enhancing the company's reputation – meeting ESG standards.

Effective sustainability marketing tools are: ecolabelling (Fair Trade, FSC, EU Ecolabel) - confirms the sustainability of products, digital marketing and transparency – using blockchain technology supply chains, to track crowdfunding and crowdsourcing - engaging consumers in the of development environmentally responsible products, gamification and eco-challenges creating engaging content that motivates conscious consumption. A company like Patagonia actively uses sustainability marketing, promoting clothing made from recycled materials and encouraging customers to repair old items instead of buying new ones.

Fair Trade is a global movement and certification system to support sustainable production, fair labour conditions and economic development for producers, especially in developing countries. The core principles of Fair Trade are: fair pay and decent working conditions, producers receive a fair price for their products to avoid exploitation, workers are guaranteed safe working conditions, protection from discrimination and respect for human rights, and prohibition of child and forced labour. Fair Trade organisations adhere to International Labour Organisation (ILO) standards and exclude any form of forced labour.

Production processes should minimise the negative impact on the environment. Fair Trade encourages organic farming, reducing carbon footprints and avoiding hazardous chemicals. Part of the profits from sales are allocated to projects that contribute to the development of education, health and social infrastructure. Companies are required to maintain transparent reporting, ethical business practices and supply chain traceability.

For producers: guaranteed minimum prices allow farmers and small businesses to plan for the long term. For brands: participation in Fair Trade enhances a company's reputation, attracts informed consumers and facilitates access to international markets. For consumers: buying certified goods allows them to contribute to social justice and sustainable development.

Demand for ethically certified products continues to grow, especially in developed countries. Companies are implementing Fair Trade as part of ESG strategies, and governments are increasing their support for responsible consumption and production initiatives. Fair Trade is not just a business model, but a global tool for sustainable development that combines social justice, environmental responsibility and economic efficiency.

FSC (Forest Stewardship Council) is an international non-profit organisation that promotes

responsible forest management worldwide – is an international non-profit organisation that promotes responsible forest management worldwide. FSC certification confirms that wood and wood products are produced in accordance with environmental, social and economic standards for sustainable forest management [6].

FSC certification is based on 10 key principles, including: respect for the rule of law – certified companies must comply with national and international regulations, rights of local communities and indigenous peoples – forest management must not infringe on the rights of people living in the area, sustainable use of forest resources – management must take into account long-term forest regeneration and biodiversity, protection of ecosystems – logging that leads to forest degradation, destruction of water bodies is prohibited.

FSC certifications are: FSC Forest Management (FM) – confirms that forests are managed in a sustainable manner. FSC Chain of Custody (CoC) – ensures traceability of the chain of custody from the forest to the end user. FSC Controlled Wood – signifies that products contain wood that is free from illegal logging and labour rights violations.

FSC certification reduces deforestation, promotes forest regeneration and biodiversity protection, FSCcertified companies gain access to international markets where the sustainability of products is valued, and provides a guarantee that the paper, furniture or packaging they buy is made without harming nature. FSC is a global standard for responsible forest management that helps conserve forests, ensure their sustainable use and support people's rights. FSC labelling on products confirms that they are environmentally and socially responsible.

EU Ecolabel is the official ecological labelling of the European Union, introduced in 1992. It confirms the high level of environmental safety of products at all stages of their life cycle – from raw material extraction to utilisation. The main objective is to encourage sustainable production and consumption of goods and services.

The labelling covers a wide range of goods and services including: clothing and textiles, household chemicals and cosmetics, electronics and household appliances, paper products, travel services, flooring and furniture. To receive the EU Ecolabel, products must meet strict criteria in the following areas: environmental impact (reduction of CO_2 and other greenhouse gas emissions, minimisation of water and air pollution, energy and water efficiency, consumer safety and health, limitation of toxic and harmful substances, sustainable use of resources, use of recycled and renewable materials, minimisation of waste and packaging, resistance to wear and tear and product life, high standards of reliability and functionality

Manufacturers apply to the relevant authority in the EU country where the products are manufactured or

sold. The procedure includes laboratory tests, certification and production audits. The EU Ecolabel promotes sustainable development and is a valuable tool for companies striving for environmental responsibility.

The integration of sustainability, circular economy and marketing principles opens new markets for companies, reduces costs and strengthens reputation. In today's world, marketing strategies are becoming not just a competitive advantage, but a necessity for long-term success.

Marketing convergence refers to the integration of different marketing tools, technologies and strategies to create more effective and sustainable solutions. Marketing convergence envisages the use of digital technologies, social media, mobile platforms and other innovations to improve the efficiency of marketing campaigns and achieve steel results [3; 10].

The main elements of marketing convergence at the enterprise are:

 integration of digital technologies – using the Internet, social media, mobile applications and other digital platforms to communicate with consumers;

 data analysis – using big data and analytics to understand consumer preferences, predict behaviour and optimise marketing strategies;

 multimedia approach – using different communication channels (video, audio, text) to attract a wider audience and increase the effectiveness of marketing messages;

- interactivity - engaging consumers in active interaction with the brand through interactive campaigns, games, surveys and other forms of participation.

The convergence of the integration of ESG principles of sustainable development, circular economy and marketing reflects a strategic approach to creating sustainable business models, where key components interact to achieve maximum value with minimum resource costs.

ESG principles as a foundation for sustainable development. These principles define the long-term sustainability of companies, making them more attractive to investors and consumers. The circular economy facilitates the transition from the linear model of "production – consumption – disposal" to closed chains based on: product design for reuse and recycling, waste reduction and secondary use of resources, development of service business models (sharing economy, rent instead of ownership). The combination of ESG and the circular economy allows to minimize the negative impact of business on the environment and form more responsible production processes.

Marketing as a tool for integrating ESG and the circular economy – marketing plays the role of a link, helping companies convey the value of sustainable initiatives to consumers and partners: green marketing – promoting eco-friendly goods and services, ethical marketing – focusing on the social responsibility of brands, digital and behavioral marketing – data analysis to form sustainable consumer habits. Value-driven marketing – focusing on the values of consumers who are increasingly choosing responsible brands.

The convergence of ESG, circular economy and marketing is creating a new vector of sustainable development that will help companies gain competitive advantages, improve their reputation and engage consumers in responsible consumption patterns.

Conclusions. ESG as a strategic vector of development. Integration of ESG-principles into production processes contributes to sustainable development of companies, increasing their competitiveness and investment attractiveness. Companies oriented towards environmental, social and management standards provide long-term value for stakeholders. The application of ESG principles requires the introduction of innovative technologies, including digitalisation, automation and resource-efficient solutions. This creates opportunities to continuously improve business models, minimise costs and increase productivity.

Transitioning to a circular economy based on the principles of reuse, recycling and waste reduction enables businesses to reduce their environmental footprint and ensure sustainable use of resources. Engaging with closed-loop partners creates new business opportunities and reduces dependence on primary resources.

Marketing plays a key role in promoting ESG initiatives, building informed consumer demand and brand reputation. Companies use the principles of responsible marketing, ESG communication and green branding to attract consumers and partners who share the principles of sustainable development.

Government initiatives and international ESG standards are strengthening regulations for sustainable production. Companies adapting to ESG reporting and corporate transparency requirements gain an advantage in the global marketplace and minimise the risks associated with regulatory non-compliance.

ESG-oriented production contributes not only to economic efficiency, but also to improved social conditions, including occupational health and safety, inclusiveness and community development. These factors strengthen employee and customer loyalty, and increase investor and partner confidence.

The implementation of ESG principles is becoming an integral part of the strategy of leading companies. In the long term, companies that ignore ESG standards risk losing market positions, while sustainable business models will ensure stable growth and development in the face of global change.

The integration of ESG principles into production is not just a trend, but a strategic necessity for companies seeking to achieve sustainable development, increase competitiveness and create value for society and the environment.

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