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# E-COMMERCE SECTOR IN THE CIRCULAR ECONOMY DEVELOPMENT – HAZARDS AND PROSPECTS

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## SEKTOR E-COMMERCE W ROZWOJU GOSPODARKI OKRĘŻNEJ – ZAGROŻENIA I PERSPEKTYWY

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**Abstract:** This article touches upon the issue of the interaction between the specificity of the e-commerce industry and the principles of the circular economy. The circular economy is currently the preferred economic model in the European Union, which covers all market participants, i.e. producers, distributors and consumers. At the same time, a strong increase in the popularity of e-commerce platforms has been recorded among consumers. This situation warrants taking up an analysis of the contact points between the circular economy and e-commerce concepts. The purpose of the article was to analyse the opportunities and threats related to the functioning of e-commerce platforms in the conditions of transformation towards a green economic order and circular economy. A desk study was applied as research methods with the use of literature on the subject and SWOT analysis. The result of the analyses is a systematized form of opportunities and threats related to the functioning of e-commerce platforms in a circular economy.

**Keywords:** e-commerce, circular economy, SWOT analysis, Internet technologies.

**Streszczenie:** Artykuł porusza kwestię interakcji między specyfiką branży e-commerce a zasadami gospodarki okrężnej. Gospodarka okrężna jest obecnie preferowanym w Unii Europejskiej modelem ekonomicznym obejmującym wszystkich uczestników rynku: producentów, dystrybutorów i konsumentów. Jednocześnie odnotowywany jest silny wzrost popu-

larności platform e-commerce wśród konsumentów. Sytuacja ta uzasadnia podjęcie analizy na temat punktów styecznych koncepcji gospodarki okrężnej i handlu elektronicznego. Celem artykułu jest analiza szans i zagrożeń związanych z funkcjonowaniem platform e-commerce w warunkach transformacji w kierunku „zielonego” ładu gospodarczego i gospodarki okrężnej. Jako metody badawcze zostały użyte *desk study* z wykorzystaniem literatury przedmiotu i analiza SWOT. Wynikiem analiz jest usystematyzowana postać szans i zagrożeń związanych z funkcjonowaniem platform e-commerce w warunkach gospodarki okrężnej.

**Słowa kluczowe:** e-commerce, gospodarka okrężna, analiza SWOT, technologie internetowe.

## 1. Introduction

The development of information and communication technologies, in particular the Internet, has resulted in a permanent change in the sphere of consumer behaviour. Consumers appreciate the undeniable advantages of on-line shopping, such as: lower prices of products, the possibility of making purchases around the clock, saving time and the option of comparing product offers from various sellers (Jaciow, Wolny, and Stolecka-Makowska, 2013). At the same time, consumers are increasingly aware of the various categories of environmental risks and ethical issues related to consumption (Buerke, Straatmann, Lin-Hi, and Müller, 2017; Romero-Hernández, and Romero, 2018). Examples of such attitudes include the increasing awareness of industrial breeding of animals, illegal harvesting of wood and exploitation of natural resources, animal experiments, working conditions in manufacturing facilities, etc. Publicly available Internet portals play a huge role in disseminating this knowledge. The increased awareness of consumers may be the cause of change of their attitudes. These changes may relate to eating habits, avoiding the purchase of specific companies' products, as well as changes in general consumption patterns. Changes of this nature may show varying degrees of compliance with the principles of the circular economy. Behaviour such as choosing refurbished products over new ones or preferring high durability and serviceability products are imperative in terms of implementing circular economy patterns among consumers (Hazen, Mollenkopf, and Wang, 2017). Nevertheless, the question of how to encourage consumers to adopt this type of pattern remains a problem. Certainly, the necessary condition is to create the possibility of implementing the aforementioned patterns. The second condition is to provide incentives that perform an additional motivational function. Likewise, on-line platforms may have incentive functions to encourage or discourage the adoption of this type of attitude. The aim of the article was to evaluate the opportunities and threats related to the implementation of circular economy mechanisms in the e-commerce segment.

## 2. Circular economy concept

Economic growth constitutes a notable priority in economic policy. The non-financial costs of this growth and the accompanying phenomena have not often been taken into account. It was not uncommon to depreciate the importance and scale of changes in the environment, to question the sustainability of the economic impact on the environment, or to postpone the need to solve the issues associated with these changes. However, this approach turned out to be short-sighted, and the ignored environmental problems began to significantly interfere with economic processes. The most tangible example of this type of interaction is global climate change, *inter alia* affecting the conditions of running agricultural activity (Popkiewicz, Kardaś, and Malinowski, 2018, p. 352). In light of the increasing scale of negative phenomena at the interface between the economy and the environment, the continuation of the linear model of production and consumption based on the principle of “take-make-dispose” is increasingly contested (Geisendorf and Pietrulla, 2017). It is emphasized that the assumptions underlying this model were unrealistic and unjustified from the very outset, which resulted in significant environmental damage that now reaches a global scale (Esposito, Tse, and Soufani, 2018).

Hence, the circular economy model was proposed as an alternative to the linear model of production and consumption. The major difference from the linear model is taking into account the need to minimize the environmental impact. This is an issue that in the case of the linear model was not considered at all (the environment was treated as an abstract creation with a kind of ‘infinite capacity’ both in terms of the source of raw materials and the place where waste was deposited). This concept can be found more and more often in numerous publications. In the literature on the subject, many definitions of the circular economy can be found that accentuate various aspects. Without going deeper into the differences between individual definitions, the practical aspects of the circular economy can be described as follows (Zink and Geyer, 2017, p. 594):

- extending the life of products by increasing the time of their use,
- re-use of product components,
- processing and re-use of materials recovered from the product in order to use them as raw materials for production.

The last two rules mentioned above can be applied to the commercial (manufacturing) sector. The first principle can definitely be included in the sphere of consumer behaviour. The consumer, as the final recipient of manufactured goods, occupies a particularly vital place in the circular economy model.

In the consumer behaviour, in the case of the circular economy, the application of the 5R principle plays a crucial role. This principle consists in hierarchically ordered activities (Circlewaste, 2021): refuse, reduce, reuse, repurpose, and recycle. In the subject literature, one can also increasingly find more elaborate versions of the discussed principle. Principle concepts arise, which can even reach up to

11 points (Corona, Shen, Reike, Carreón, and Worrell, 2019). The justification for the increasingly complex versions of the hierarchy of behaviour is the need to specify and clarify the original form of the principle, which outlines the general framework. Yet, creating more and more sophisticated versions of the principles does not seem justified when they are to be addressed to a wide group of recipients, primarily consumers.

### 3. Development of the e-commerce sector

Throughout Europe, the e-commerce industry is characterized by the very rapid pace of development. The main infrastructural barrier, i.e. the need to have access to the Internet, no longer plays an imperative role in most European countries. In 2019, 82.5% of European consumers had broadband access to the Internet, and this share is systematically growing (Ecommerce Europe, 2021). The dynamic development of the e-commerce sector is usually explained by the number of benefits that this sector can offer to consumers. These benefits can be viewed in economic, organizational and cognitive terms. The economic benefits are related to the direct financial profit of the consumer. This profit is feasible owing to factors such as: lower product prices compared to traditional sales channels, the possibility of using the free delivery option and discounts obtained in promotional campaigns and loyalty programs. Organizational benefits are related to amenities such as: no need to move in order to make a purchase and delivery of the bought goods to the indicated place. Cognitive benefits are linked with the possibility of reaching a very wide product offer (usually much richer than in the case of stationary sales), but also the opportunity of interacting with sellers and a broad range of other customers. These interactions, often carried out via social media, generally concern viewpoints on the purchased products and experiences related to their use (Meilatinova, 2021). The phenomenon of this type of interaction is defined as social commerce (Busalim, Ghalban, and Hussin, 2021). Research conducted among Polish e-consumers indicates that the most important factors that encourage on-line purchases are (Gemius, Izba Gospodarki Elektronicznej, 2020):

- the option of making a purchase 24 hours a day,
- no need to travel to the point of sale,
- no time limits (opening hours do not apply),
- lower price level compared to stationary sales.

Considering the level of development of the e-commerce sector, it becomes justifiable to take into account the issue of the impact of this industry on the environment. Such an assessment, due to the indirect impact of the generated effects, is much more complex than in the case of other industries. The negative impacts primarily include the generation of post-packaging waste and emissions related to the transport of consignments (Tokar, Jensen, and Williams, 2021). On the other hand, the positive effects include (Cao, Deng, and Li, 2021):

- reduction of paper consumption owing to electronic document circulation,
- optimization of the use of storage facilities, resulting in reduced energy consumption,
- optimization of logistic chains, thanks to which it is possible to cut fuel consumption and related emissions.

In addition, it is pointed out that the e-commerce industry clearly reduces the demand for buildings, which is related to the reduction of resources and energy used for construction and maintenance purposes (Tokar et al., 2021). The issue of the influence of the e-commerce sector on energy consumption has not been unequivocally resolved. Some studies presented the relation between the development of this sector and the increase in energy consumption (Dost and Maier, 2017), while others indicate the opposite direction (Cao et al., 2021).

#### **4. SWOT analysis of e-commerce platforms for the implementation of the circular economy**

The advancement of the e-commerce sector in recent years has become the basis for changing consumer behaviour. Changing the behaviour is also an integral component when it comes to implementing a circular economy. In this case, it becomes imperative to establish in what aspects both models remain consistent. One of the key consumer behaviour in a circular economy is the use of those products and materials that already exist, which allows for a more effective use of already existing goods by extending their lifetime, whilst reducing the amount of generated waste, especially the most problematic, namely hazardous and large-size. Here the major impediment was the organization of the form of purchase and sale. Although popular in some countries, the solutions based on stationary sales have a limited range of influence. The proliferation of on-line commerce has brought about considerable changes in this matter. The availability of various tools applied for servicing the electronic market (auction and advertising websites as well as e-commerce platforms) translated into a number of benefits for both the demand and supply side. An opportunity has been created for traders (both companies and individual sellers) to reach a wide range of potential customers. In turn, for buyers, this means the opportunity to take advantage of a comprehensive product offer.

Creating the possibility of making transactions without spatial restrictions is the greatest advantage of on-line sales platforms, and at the same time an element that is consistent with the concept of a circular economy. The variety of goods offered by many commercial and private sellers makes the purchasing process more complex and complicated, but also generates certain risks. The detailed SWOT analysis for e-commerce platforms in the context of the development of a circular economy is shown in Table 1.

**Table 1.** SWOT analysis for e-commerce platform role in the development of a circular economy

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Including unique, non-serial products in the product offer.</li> <li>• Support for local entrepreneurs from the SME sector.</li> <li>• Reduction of the waste stream directed to the waste management system.</li> </ul>	<ul style="list-style-type: none"> <li>• No possibility to offer customers a guarantee for the purchased goods.</li> <li>• No possibility for the customer to physically assess the condition of the purchased goods.</li> <li>• No possibility to satisfy all consumption needs.</li> <li>• Potential losses in the manufacturing sector due to the reduced level of demand for new products.</li> <li>• Skipping of customers covered by digital divide.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Reduction of the scale of environmental impact owing to increasing the share of goods from the secondary market.</li> <li>• Possibility to reach a wide range of customers.</li> </ul>	<ul style="list-style-type: none"> <li>• The need for goods from the second-ary market to compete with a very wide range of newly produced goods.</li> <li>• Security of making transactions and deliveries.</li> <li>• Possibility of occurring defects and faults in the products offered.</li> <li>• No trust of customers towards sellers.</li> <li>• Fear of customers of gaining the reputation of people with low financial status.</li> <li>• Possible customer concerns regarding the legality of the goods origin.</li> <li>• The availability of the options of buy-ing/selling depends on the decision of the website owners.</li> <li>• The amount of the transaction com-mission may be changed at any time.</li> <li>• Sales commissions and shipping costs can discourage customers from sell-ing/buying.</li> </ul>

Source: own study.

The first stage undertaken by the consumer is searching for a product offer that meets his/her requirements. This process – in the case of the secondary market – is more demanding than in the primary market. Searching for products that meet the requirements, and their further selection, are associated with the wasted time and attention on the part of the customer. In the next stage, the customer needs to assess the risk associated with the purchase of a specific product. This risk may include the following:

- the presence of defects and signs of wear disclosed by the seller that may adversely affect the product's life,
- the probability of hidden defects that are undisclosed or unknown to the seller,
- no after-sales services offered by the seller.

Bearing in mind the above conditions, it becomes clear that the consumer will refrain from the purchase and focus on other offers. This situation becomes even more likely if the same sales platform offers a wide selection of new goods.

## 5. Conclusion

E-commerce platforms have become a vital form of retail trade, and their market share is systematically expanding. It is evident that in light of this trend, they will become an important element determining the future shape of the retail market. In the context of the transition towards a circular economy, their role can be evaluated as positive, nonetheless burdened with a significant risk. The performed analysis revealed that if e-commerce platforms are used as catalysts for changes in consumer behaviour, certain threats prevail. These can be roughly classified as technical, organizational and psychological hazards.

Technical threats largely focus on privacy protection and transaction security. This issue – even though clearly important – is not critical. This is due to the fact that it applies to all activities on e-commerce platforms, including those that do not fit into the framework of the circular economy. Organisational risks are related to the legal conditions determining the scope of customer support for a particular platform. Taking into consideration the generally higher risk level in the case of secondary market transactions, the level of support offered by the platform administration ought to be at least no worse than that of the primary market. The fundamental category comprises the psychological factors. Their image consists in various concerns regarding both the honesty of the sellers and the quality of the offered goods, but also the social perception of consumer decisions. It should be stated that these concerns are partially justified. Yet again, in this case, the administration of a given platform, especially the level of customer support provided, and consistency in the enforcement of sales rules, plays a major role.

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