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THE E-CONSUMER AS PART OF A CIRCULAR ECONOMY

E-KONSUMENT JAKO CZĘŚĆ GOSPODARKI OKRĘŻNEJ

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Abstract: The article is related to the problem of the transition of today's economic system towards a circular economy model. This transformation is becoming a necessity due to environmental limitations. An interesting issue is the role of ICT in this matter, especially internet technologies. According to the presented analysis, these technologies do have capabilities to support consumer activities, which are consistent with the principles of a circular economy. This support can be essential for changing consumer's attitudes and making their consumption patterns more sustainable. Nevertheless, there are some technical, social and economic barriers which may occur during this process. Literature analysis and critical analysis were used as research methods. The article concludes that, despite many barriers, the potential of internet technologies for circular economy support is very promising.

Keywords: circular economy, e-consumer, internet technologies.

Streszczenie: W artykule poruszono kwestię transformacji modelu ekonomicznego w kierunku gospodarki okrężnej. Transformacja ta staje się koniecznością ze względu na ograniczenia ze strony środowiska naturalnego. Rozpatrywana problematyka skupia się wokół potencjału technologii internetowych. Podjęto próbę wykazania, że technologie internetowe mają potencjał wspierający zachowania konsumenckie spójne z zasadami gospodarki okrężnej. Zawarto również analizę potencjalnych barier technicznych, społecznych i ekonomicznych, ważnych dla powszechnego wykorzystania technologii internetowych w tym celu. Jako metod badawczych użyto analizy literatury przedmiotu oraz analizy krytycznej. Artykuł wieńczy konkluzja, że mimo wielu występujących barier potencjał technologii internetowych dla wsparcia realizacji gospodarki okrężnej jest bardzo obiecujący.

Słowa kluczowe: gospodarka okrężna, e-konsument, technologie internetowe.

1. Introduction

Sustainable development is declared by most European countries as the basis for shaping the socio-economic system. Its framework was determined by the need to ensure a balance between the development paths of economic, social and environmental factors (Brundtland, 1987). Large scale economic development has been noted since these assumptions were formulated. Social development is a matter of sharp debate due to the growing economic disparities in the societies of developed countries and the intensification of the phenomenon of so-called ‘precarization’ of employment (Standing, 2011). However, the deteriorating condition of the environment taking the form of an environmental crisis is an indisputable issue. The most noticeable manifestations of this crisis are: climate change (Stanton and Ackerman, 2009) and widespread pollution of the environment with plastic and its derivatives (Connors, Dyer, and Belanger, 2017).

These phenomena point to two facts. First, development policies regarding the implementation of sustainable development were only declarative, they strongly favored economic activity by explicitly ignoring social and environmental issues. Secondly, the growing environmental crisis entails significant economic costs, thus demonstrating the validity of the concept of the limits of economic growth formulated by The Club of Rome (Meadows, Meadows, Randers, and Behrens, 1972). Despite the still massive criticism of this concept, many publications confirm that this view is justified (Hall and Day, 2009; Turner, 2008). These premise have become the basis for the revision of current economic policies, giving rise to the concept of a circular economy.

Along with the development of the environmental crisis, the sphere of economic activity has changed significantly, in particular the consumption patterns. One of the most important changes is the emergence of the e-consumer, who satisfies his/her consumption needs by using Internet technology (Jaciow, Wolny, and Stolecka-Makowska, 2013). These technologies are used by groups of consumers with different purchasing patterns. The purpose of the article is the initial identification of contact points between the currently available Internet technologies and consumer characteristics adapted to the specifics of the circular economy. In the future, such identification may be helpful for developing solutions promoting the implementation of circular management principles.

2. The shift from a linear to a circular economy

In the classic economy model, resource consumption is linear. The product life cycle begins with obtaining the necessary raw materials. Then, there is the stage of production, using and subsequent utilization of the end-of-life product (Esposito, Tse, and Soufani, 2018). This model has some characteristic features such as:

- universal availability of raw materials enabling the trouble-free supply of production facilities,

- favouring the purchase of newly manufactured products,
- low disposal costs, resulting in the unprofitable recovery of recyclable materials,
- large market share of single-use products,
- relatively short product life.

In addition to the listed features, sometimes there may occur extraordinary situations that can be clearly classified as the disadvantages of a linear model. One of these situations is bypassing the sales stage and using the goods for recycling. This situation occurs when the predicted level of sales is not satisfactory and is most common in the clothing industry, although it may also apply to other sectors (e.g. consumer electronics).

The linear model is very attractive for producers, allowing to ensure a high level of sales. Unfortunately, this model also has a high level of external costs. These costs are associated with such phenomena as:

- large scale of obtaining natural resources, leading to the rapid degradation of sources,
- high energy consumption and associated high emissivity,
- overloading of recycling systems with waste stream, exceeding service capacity,
- waste accumulation in the environment.

In the short term, these phenomena cause a noticeable worsening of living conditions. Their accumulated impact in the long run is a widely recognized cause of the serious degradation of the biosphere on a global scale. This fact became the premise for formulating an alternative model of production and consumption, in which the circular model is most often proposed built on fundamentally different assumptions from the linear model. The main difference is that the circular model is characterized by the presence of limits on the possibility of exploiting the environment. This results in the need to re-use raw materials once obtained. The longevity of using finished products and the degree of material recovery are key parameters that allow to assess the degree of maturity of circular economy implementation (Morseletto, 2020).

The hierarchy of conduct is a very important component of the circular model. It is often referred to as 3R: reduce, reuse, recycle (Goyal, Esposito, and Kapoor, 2016; Moreau, Sahakian, van Griethuysen, and Vuille, 2017). The reduction most often refers to the area of consumer awareness. A well-developed awareness of one's own needs, and resistance to marketing techniques will result in reduced demand for products that are actually unnecessary. The next stage refers to the re-use of items still fit for use. The basic goal of this assumption is not to burden the waste management system with the necessity to process objects still useful and suitable for further use. In this situation, there is a need to allow consumers to dispose of items that they no longer wish to use. It should be noted that the form of the described consumer attitude is considered to be best suited to the goals of sustainable development (Jastrzębska, 2017). The last stage (least preferred) is recycling. The purpose of this stage is to recover as much raw material as possible to be reused in the production process and to minimize the amount of unprocessed material for disposal or storage.

The implementation of circular economy principles is envisaged on many levels (Geisendorf and Pietrulla, 2017). The important role of producers is emphasized, who are obliged to apply practices such as eco-design, use of easily recyclable materials and/or increasing energy efficiency (Corona, Shen, Reike, Carreon, and Worrell, 2019). However, no less important are organizational (shortening the path producer-consumer, giving up unnecessary packaging elements) and social changes, which include changes in consumer behaviour.

3. Internet technologies for the circular economy

The dynamic development of the e-commerce sector has brought fundamental changes to the functioning of the retail segment of the market. Territorial restrictions have been evened-out, which has significantly increased the level of competition the company has to face. The companies had to cope with a very strong competition, but at the same time gained very large opportunities in the field of promotion, marketing and sales, and these changes did not bypass consumers. Modern Internet technologies are characterized by a large variety of offered functionalities presented in such forms of services as: discussion forums, information portals, auction sites, advertising sites and social media portals. It should be noted that the e-consumer, using the above-mentioned services, is able to meet both material (most often the purchase of goods) and intangible needs (e.g. gaining knowledge about a specific issue) (Jaciow et al., 2013). In the case of some intangible needs, it is possible to meet the consumer's needs without incurring costs such as access to free information sources and downloading open source software. Material needs invariably involve the need to bear costs. As in the case of traditional trade, there is a tendency here to increase the share of non-cash transactions. However, unlike traditional trade, the range of available payment methods is much wider (Kunkowski and Polasik, 2011). The factor that distinguishes e-consumers is the chosen product range which usually does not include every-day-use items and is strongly focused on less frequently bought goods. The most frequently chosen articles by e-consumers include: electronic equipment (audio-video devices, personal computers, tablets), home appliances, books, clothes and footwear (Wolny, 2016). In addition to customers who are part of traditional consumption patterns, there are also groups with different motivations. Among the many motives that consumers follow in these groups, the following deserve special attention:

- increased awareness of environmental consumption costs,
- favouring products with a usage history ('vintage' style),
- the desire to have unique items, not mass-produced, and not available on the mass market,
- passing on items which have not been used for a long time, instead of storing or disposing of them.

These motivations in the overall approach are consistent with the assumptions of the 3R concept. These preferences are complementary to each other and create a coherent picture of the supply and demand side. In this case, the place where the transaction is made becomes a necessary missing element. As it turns out, the development of Internet technologies and the e-commerce sector has largely made it possible to fill this gap. Table 1 lists activities with potential significance for the functioning of the circular economy in the sphere of consumption. Internet technologies enabling their partial or complete implementation have been assigned to these activities.

Table 1. Associations between consumer activities, internet services and circular economy principles

Category	Activities	Technologies involved
Reduce	<ul style="list-style-type: none"> learning the skills necessary to repair broken items 	<ul style="list-style-type: none"> websites streaming services discussion forums social media portals
Reuse	<ul style="list-style-type: none"> the ability to sell / purchase used items learning ideas that allow making useful items on one’s own 	<ul style="list-style-type: none"> advertising portals auction portals on-line shops discussion forums social media portals
Recycle	<ul style="list-style-type: none"> obtaining information on types of waste and proper segregation acquiring knowledge on how to handle hazardous waste 	<ul style="list-style-type: none"> websites social media portals

Source: own study.

Based on the presented table, it can be already stated that Internet technologies create great opportunities for the environmentally-minded consumer. The likely scenario is the emergence of further innovative forms of pro-environmental consumer behaviour and the search for opportunities to implement them via the Internet.

4. Obstacles and controversies

The consumer behaviour described above aims to maximize product efficiency on the one hand, and minimize resource consumption (raw materials and energy) and the volume of waste for processing and disposal on the other. An economy with these features would be a very promising model, coinciding with the idea of a circular economy. Unfortunately, the implementation of such a model may encounter a number of barriers which may be technical, social and economic. A list of such possible barriers is presented in Table 2.

Table 2. Barriers to implementing a circular economy

Obstacle category	Types of obstacles
Technical	<ul style="list-style-type: none"> • no internet access • threats related to the security of online transactions
Social	<ul style="list-style-type: none"> • reluctance to use the secondary market product offer • lack of trust in sellers • weaker impact of promotional and advertising mechanisms
Economic	<ul style="list-style-type: none"> • conflict with the doctrine of the need for continuous GDP growth • possibility of negative impact on the manufacturing sector

Source: own study.

Technical obstacles are the most obvious category of these barriers. First of all, infrastructural barriers resulting from the poor development of the network infrastructure should be mentioned. This problem may seem insignificant in industrialized countries where this situation may occur in sparsely populated regions. However, this is much more important in the case of developing countries in which a poorly developed communication infrastructure is a significant barrier to economic development. The issue of security is also becoming increasingly important. This problem is particularly relevant in developed countries with a complex network infrastructure. Despite the great progress in the development of secure communication protocols, transaction authentication methods and identity verification, many phenomena still pose a threat to today’s e-consumer. According to Symantec’s analysis, 10% of functioning url addresses are a source of malware threats. The growth of the formjacking phenomenon is particularly disturbing. Formjacking is a way of attacking electronic payment systems to take over transaction data (Symantec, 2019). In turn, the SophosLabs report highlighted the risks associated with applications for mobile devices (Sophos, 2020).

Social obstacles have their source mainly in psychological conditions. The stereotypical belief, widespread in t many countries, associates the acquisition of pre-used items with low social status. In people susceptible to environmental influences and hypersensitive about their own image, it can contribute to fear of depreciation of their social status, which may turn out to be a determining factor in a person’s consumer behaviour. Another psychosocial factor with a potential negative impact on the functioning of the circular economy is the reduced level of buyer’s trust in the selling party. This attitude is partly justified. When purchasing used items, as a rule one cannot rely on the manufacturer’s warranty. Therefore the purchaser is at a greater risk than when buying brand new goods. In such a situation, the reliability of the seller, especially his/her diligence in checking the condition of the offered goods, is of particular importance. The accurate presentation of the description of the offered items, along with a detailed listing of any defects, would probably have a significant impact on reducing the buyers’ concerns. This factor is of particular

importance in countries with a low level of social capital, in which it may become one of the most serious barriers.

Economic barriers are a special category. The obstacles present in this category are of fundamental character. The essential importance of these barriers is related to the features of the economic system. The current economic paradigm is the doctrine of continuous growth. The central concept of this doctrine is economic growth as measured by the GDP indicator. The good condition of the economy is identified with the situation where the GDP indicator shows a constant, positive dynamics. Stimulation of this growth can be achieved through increased consumption. In this aspect, there is a visible conflict between the assumptions of circular economy functioning and the currently implemented economic policy. Furthermore, promoting sustainable consumption is not in the interest of the manufacturing sector. In the case of producers, the reduced demand for newly manufactured products means lower revenue, and thus reduced profitability of production. In such a situation, it is easier to make decisions regarding the cessation of recruitment of new employees, or, in the worst case, reducing employment. The dismissal of employees will result in an increase in the unemployment rate along with all the accompanying negative social consequences. On the other hand, the likely consequence of implementing the rules of a circular economy will be to slow down the globalization process and weaken the position of the corporate sector. Companies from local markets will gain more importance, thus encouraging an environment for creating new jobs.

5. Conclusion

Despite its overall form, the circular economy is not an end in itself, but rather a means of implementing the principles of sustainable development in relation to economic activity. The implementation of the circular economy must take place on many levels, and one of the areas of its implementation is the consumer sphere. The dominant factor determining the functioning of consumption is consumer awareness and the choices made with it.

Modern internet technologies have a great potential to influence both consumer awareness and making specific purchasing decisions. The article attempts to show that the potential of these technologies can be helpful not only as a stimulator of the functioning of the classic, linear economy, but also the circular economy. One of the forms of stimulation is undoubtedly the creation of conscious consumers with the possibility of satisfying their consumption needs in accordance with their values. Another form is to provide access to knowledge forming consumer awareness which knowledge can have different characteristics. For example, it can be related to learning how to repair broken devices, reuse unused items, thus giving them the so-called “Second life” or the proper segregation of the generated waste, but also to making consumers aware of issues regarding the negative effects associated with

the presence of certain types of products on the market. Examples include disclosing the operating conditions of the clothing industry in developing countries or the realities of industrial animal husbandry. The dissemination of this type of knowledge is already reflected in market realities.

Nowadays, one can notice the dynamic development of the e-commerce sector, thus giving e-consumers numerous possibilities of satisfying their needs. These possibilities include various types of selling/buying sites (traditional on-line shops, auction and advertising portals, sophisticated payment methods (on-line bank transfers, PayPal and other services) and the customization of shipping services (the possibility of configuring the delivery options). At the same time, the process of social innovation is developing the shape of economic activities that will reduce the impact on the environment as much as possible. The interaction between these two phenomena will be the subject of further research.

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