Felicjan Franciszek Bylok
Politechnika Częstochowska
https://orcid.org/0000-0001-5305-8634

Examining the impact of digital technologies on changes in consumption

Abstract: The emergence of Industry 4.0, which is accompanied by revolutionary digital technologies, is changing the hitherto patterns of consumption, while also creating new ones. It is worth noting that digitization based on data and on internet platforms significantly determines the development of consumption online. Mobile equipment (cellular phones, smartphones, tablets) that has access to the Internet facilitates the acquisition and consumption of consumer goods outside of the traditional means of consumption. In this context, it is described in this paper how the adoption of breakthrough digital technologies may shape the future patterns of consumption. The principal aim of this paper is the identification of the most important directions of the development of consumption online. On the basis of qualitative research, the most important ones have been identified, namely, the growth of significance in the following: virtual shopping centres, virtual consumer reality, virtual consumer communities and changes in producer-consumer ties. The practical implication of the research conducted is the indication of the growth in the potential of consumption online. Nevertheless, the social implication of the paper is the emphasis of the significance of consumption online as the new trend in terms of consumption.

Key words: consumption, online consumption, consumer, digital technologies

Introduction

In contemporary society, consumption is a significant cultural and social practice, and not just a simple element of social life. Consumption has a double social character, where on the one hand, it is about the social construction and social

determinants of consumption, and on the other hand, it is about orientation and turning towards other people in the consumption process. Embedding consumption in social conditions allows for approaching it as an important variable describing contemporary society and its transformations. It is about the multilateral connections between consumption and the economic, social, cultural and political spheres. Consumption, therefore, is analysed as an area of social relations established in the process of obtaining means for satisfying needs and in the act of satisfying needs. Consumption brings changes that affect other areas of life, while at the same time it is also subject to changes. Today it is influenced by new digital technologies. The Internet and mobile telephony are becoming an important medium used in consumption, both by producers and consumers. For consumers it has become a determinant of the lifestyle and consumer behaviour. On the other hand, for producers it is a new area of business activity. The offer of products and services available in the virtual space is continuously growing. Numerous virtual stores offering unlimited choice of products, fast purchase as well as multi-faceted information about products are emerging on the Internet. The Internet has become a key platform in every sector through which companies can create a globally connected information and business network. Thanks to it, a new sector of the e-commerce economy has developed, which in 2023 generated a profit of over $ 743 billion (Digital Commerce 360, 2023). The global spread of e-commerce companies is mainly due to several key factors, such as easy accessibility, innovative marketing strategies and satisfaction with the provision of services (Bhattacharjee, Chetty, 2019). It is estimated that the total B2C e-commerce sales in 2022 exceeded $ 5.7 trillion worldwide. As of 2022, online markets have the largest share in online shopping worldwide (Statista, 2022). In Poland, the forecasted value of online retail trade in 2022 will amount to PLN 92 billion. Of this, e-shops will account for 61%, while the remaining part will be allocated to trading platforms. It is estimated that in 2027 the value of online retail trade will increase to PLN 141.1 billion (PMR, 2022). Poles are increasingly using new means of communication, i.e., the Internet, mobile telephony, interactive television to purchase products and services in Polish e-shops (75% of Internet users). 32% of e-consumers buy in foreign online stores. Middle-aged people (35—49 years old), who constituted 33% of the e-consumer population, and people aged 50 and over (30% of people shopping online) are among the most active groups of consumers shopping online. E-consumers most often purchased clothing, accessories, footwear, cosmetics and perfumes, books, records, films, pharmaceutical products, RTV and household equipment and sportswear. Purchase decisions in online stores are primarily affected by financial issues: attractive product price (47% of indications), low shipping/delivery costs and previous positive experiences of buyers. Attractive promotions and special offers are also important (28%) (Gemius, 2022).

The development of e-commerce brings changes in the functioning of the consumer on the market. For a long time, the consumer was implementing the consumption process in a traditional way, purchasing products and services in traditional stores. With the development of e-commerce, they are increasingly executing

the consumption process on the Internet. The creation of an "e-consumer", which represents a person implementing the consumption process using information technologies, i.e., identifying needs, searching for solutions, purchasing products and services, and sometimes also virtually consuming them is one of the significant effects of these changes. The consumption process implemented by new means of communication affects the change in consumption patterns and lifestyles. As a result of using online shopping, the expectations and habits of new consumers are changing. On the one hand, thanks to the access to a large number of sources of information and the possibility of choosing products of different quality levels the "e-consumer" becomes critical and sceptical towards the world of goods, but at the same time they are aware of the requirements in relation to the prices and quality of goods. On the other hand, they are subject to the influence of permanent advertising occurring in all means of communication, i.e., mobile telephony, the Internet, television, radio, etc., which influence the unification of tastes and the possibility of manipulating them.

As a result of the popularization of new digital technologies, changes in consumption are taking place at the microsocial and macrosocial levels. Therefore, it is cognitively important to identify the determinants of these changes. The article attempts to determine the factors influencing changes in consumption resulting from the development of digital technologies.

1. Characteristics of online consumption

The spread of the Internet has changed the way consumers think and live into an unprecedented consumption trend, i.e., online consumption (Liang et al., 2021). Today, more and more consumers are conducting the consumption process entirely on the Internet, i.e., while identifying needs, searching for information necessary to define the goods that serve to satisfy them, evaluating the potential product they want to buy, choosing the product and purchasing it online (Darley et al., 2010). As a result, rapid development of online consumption is observed. It is affected by many economic, social and technological determinants.

The most important economic determinants include the differentiation of the product and service offer based on target groups, the increase in the mass spread of cheap substitutes for branded products with comparable utility value, the expansion of the low-price segment of consumer goods and services, the widespread availability of consumer credit, etc. In addition, the use of payment cards as a payment method in online transactions is a crucial factor. The increased availability of payment cards has enabled the introduction of an electronic method of payment for products and services, which has facilitated the process of purchasing a product. An infrastructure for electronic money transfer has been created and payment card acceptance processes have been developed and introduced, which made the use of

payment cards in e-commerce a common phenomenon. Another economic factor supporting the development of e-consumption is the desire to purchase products, e.g., branded goods, at a reduced price. This process can be called the "logic of cheapness" (Jäckel, 2006, p. 274), and is reflected in the fact that consumers compare product prices and look for those that are at the lowest price. Group buying is another form of the "logic of cheapness". These purchases are the result of the need for simplicity, saving, and the tendency to "jump" from one offer to another (Flatters, Wilmott, 2009).

Social factors have a significant impact on the development of e-consumption. Mass communication, which is facilitated by the Internet is one of them. Unlike television, which is based on one-way communication, the Internet has offered the possibility of two-way communication, creating conditions for the development of new forms of communication. The network provides communication tools, thanks to which it is possible to satisfy consumer needs without leaving home. The Internet allows for purchasing the goods you need quickly from almost any place where you can connect to the network.

Unlimited access to consumer goods and services on the Internet influences changes in construction of identity towards limiting class identity in favour of individual identity. Individuals have increasing difficulty in becoming aware of their place in the class structure, which results in a decrease in the significance of class identity. At the most general level, having an identity and belonging to a given social class concerns on the one hand, the social imperative not to stand out from the group because it is treated as a deviation from social norms and gives rise to a sense of shame, while on the other hand, there is a desire to be socially distinguished (Armstrong et al., 2016). In this dualism, the individual desire to build one's own identity in opposition to class identity gains an advantage. This process is supported by the growing importance of post-material values. R. Inglehart (1977) was the first to indicate the growing need of post-material values in the consumer society, i.e., the devaluation of duty as a value, which includes, for example, obedience, discipline, conscientiousness, and at the same time the development of self-creation values, i.e., emancipation, autonomy, participation, but also pleasure and adventure, spontaneity, and boldness. Post-material values are associated with individual identity based on consumption. Consumer culture researchers argue that there is a cultural obligation to create oneself and one's identity through consumption (Bauman 2007). Variability is a feature of this identity. It could be said that it is an "evolving" identity, i.e., it is subject to constant change due to the short life of consumer goods used as identity determinants. The need to adapt to new conditions in consumption forces individuals to assume new identities (depending on consumption practices, individuals assume a specific mask), which are not inherited or socially assigned, but must build themselves. As Z. Bauman indicates, identities are a kind of "projects: tasks that have yet to be undertaken, conscientiously done and brought to an infinitely distant completion" (Bauman 2009, p. 119). This process is supported by "new" means of communication, i.e., the Internet, mobile telephony, which facilitate the growth of the possibility of

optional lifestyle choices, pluralism in consumption patterns, resulting from the interpenetration of cultures and the loosening of cultural influence and the development of new communication possibilities via the Internet, enabling wide access to consumer information. As a result, consumption has become the foundation for building one's own "self", which, after the values related to community, tradition, patriotism, family and religion have been displaced, has become an unused space. People try to fill it by gathering objects or collecting impressions that they can boast about to others. At the same time, the variability of the symbolic content of these objects causes a constant search for new ones on which identity is built. By following novelties on the Internet, the consumer implements their identity project considering the semantic function of consumer goods. The present based on the principle of "here and now" is the feature of such an identity. It is therefore assumed that an individual actively creates their own identity by purchasing and using consumer goods saturated with symbols of the here and now. However, it loses its significance when new goods that are created as socially important appear.

The consumer's individual identity is based on autonomy in consumer choices. The Internet provides access to a wide range of products from various manufacturers, thus creating a self. It allows for making purchase decisions with more easily, without pressure from sellers. Advanced information and production technologies have improved personalized consumer experiences and increased their autonomy (Kim, Lee, 2020). However, this autonomy is sometimes limited because the consumer is a target of digitally driven manipulation. Manufacturers influence consumer behaviour on the Internet through a wide range of technologies that determine what information is displayed, as well as how and when it is displayed. This creates an environment of pervasive manipulation. It starts the moment consumers enter a search term (autocomplete), continues through the display of search results (search engine bias), the speed at which a website appears on the screen (traffic management), and ends with the layout of elements on the website (interface design) (Mik 2015).

Artificial intelligence (AI) used by companies to support consumer decision-making also has an impact on consumer autonomy. Personalized content based on consumer data increases the possibilities of influencing and manipulating consumer choices, reducing their autonomy. Much of AI technology is hidden from the consumer and influences on their consumer decisions without their knowledge or awareness of that. In this way, AI used by manufacturers undermines consumer autonomy and increasingly facilitates consumer manipulation, in the absence of complementarity, transparency and privacy regulation (Bjørlo et al., 2021).

The growing role of hedonic shopping values, which are defined as consumption activities aimed at obtaining personal benefits and fulfilling hedonic needs is an important premise for the development of e-consumption (Tarka et al., 2022). Hedonic consumers believe that the main goal of consumption is to satisfy a sense of pleasure and personal needs (Chen 2024). They focus on fun and entertainment, and shopping has an emotional value, without the intention of achieving a predetermined final goal (Babin et al., 1994). Hedonic values are increasingly influencing

online consumption. The Internet is becoming a pleasant place for online shopping, allowing online shoppers to enjoy and be satisfied with visiting virtual networks/ websites, thanks to which they spend much more time browsing the products they offer (Kesari and Atulkar, 2016).

The increase in impulsive purchases, which are becoming more common because the Internet promotes shopping based on current emotions and impulses is one of the effects of the influence of hedonistic values on online consumer behaviour (Rietveld et al., 2020). Sometimes, impulsive online purchases turn into compulsive behaviours, which are characterized by purchasing products in order to reduce emotional tension. Despite the immediate relief that compulsive buyers experience after making a purchase in an online store, the state is temporary; as a consequence, compulsive buyers make additional purchases to experience relief from their negative affective state (Harnish et al., 2021). Such buying leads to serious psychological and financial problems.

The motivation of consumers to shop online is a factor supporting the development of e-consumption. In stimulating online consumption, utilitarian and hedonic motivations are important (Martínez-López et al., 2014). The most important utilitarian motivations firstly include the consumers' desire to control the process of consumption on the Internet. This motivation is related to the consumer's perception of the possibility of controlling the online consumption environment and predicting its results. This is the degree to which people can manipulate the length of time, content and order of presented information, thus providing them with a higher level of power in market relations (Hoffman et al., 1993). Secondly, it is the desire for greater convenience. This category of motivation concerns saving time and energy, eliminating the need to physically visit a traditional store. Currently, people prefer online shopping because it saves time, energy and money. Thirdly, it is the desire to purchase products and services without restrictions. This dimension reflects the consumer interest in having access to a wide and diversified range of goods and services in online stores. Such stores can offer a much wider selection than brick-and-mortar stores because they are free from the constraints of stock levels or storage. Fourth, it is the desire to purchase goods that offer a good value for money ratio. E-consumers feel more satisfied when they pay less for products purchased online (Crespo, del Bosque, 2010). Thanks to the wealth of information, consumers are able to identify alternative options for purchasing products that offer significant savings. Fifth, it is the desire to have information that allows the consumer to conduct consumption processes on the Internet. The importance of information availability results from the multitude of information that can be obtained on the Internet, compared to the limited amount of information that the seller provides in a traditional store (Sarkar, Das 2017). Sixth, it is the desire to personalize the product that meets the consumer needs and preferences. Personalization allows consumers to express their preferences and identity more effectively than mass products offered on the market (Bertini, Wathieu, 2012). Seventh, it is the search for the possibility of making payments using alternative methods that meet consumer preferences. The ease of making payments for the purchased product has

become one of the most crucial factors of success in online business (Alzoubi et al., 2022). Eighth, it is the desire to execute the consumption process in a pleasant and relaxed environment. The Internet allows consumers to shop in a relaxing atmosphere and make purchases with minimal mental strain and without having to leave your home (Kuo et al., 2011). Ninth, it is the pursuit of anonymity during shopping. This is related to the protection of privacy during the implementation of consumption processes on the Internet. Thanks to this, consumers can have control over the amount of transactional information shared by online stores. Thanks to the anonymity supported by e-commerce sites, young consumers enjoy shopping while receiving the best value for their time, money and effort (Samaddar et al., 2024).

Social media that help connect businesses with consumers, develop relationships, and support those relationships in a timely and cost-effective manner are a significant factor in the popularization of e-consumption (Kaplan and Haenlein, 2010). E-commerce is increasingly being conducted via social media, which can help reach a larger number of potential buyers. Social media sites provide retailers with the ability to engage and interact with potential and current consumers, providing them with a greater sense of intimacy in their customer relationships, and establishing new relationships with consumers (Mersey, Malthouse, and Calder, 2010). Consumers, on the other hand, use social media to obtain online reviews, ratings, and recommendations for products and services, which influence their purchasing decisions. Review platforms are used to obtain online reviews, ratings, and recommendations for products and services, thus influencing purchasing decisions. They are virtual environments in which consumers both produce and consume user-generated content from online reviews. On the one hand, consumers motivated by the desire to help other consumers can express their opinions and evaluations of products and services by generating reviews. On the other hand, consumers collect reviews to match their needs with existing economic offers and to minimize the risk related to the purchase decision process (Mariani, Borghi, 2023). Consumers can write reviews via their mobile devices from anywhere and at any time, which further increases the influence they have on consumer behaviour (Ransbotham et al., 2019).

The technicization of everyday life associated with the widespread use of goods equipped with new information technology is another group of premises for the development of e-consumption. Having products manufactured by the high-tech sector has become not only an important need for many consumers, but also a determinant of social status or life success. Contemporary people are increasingly dependent on goods equipped with modern technologies. Possession of modern mobile products (mobile phones, smartphones, tablets) that function as handy "digital assistants", guides and helpers in everyday life is becoming essential. These devices equipped with special programs and applications enable the implementation of the consumption process anywhere and at any time. The use of mobile devices (mainly smartphones) in the process of purchasing goods has popularized online shopping and has also influenced the creation of new business models. Online-to-offline trade (O2O commerce), which involves consumers

searching, booking or paying online using a mobile application is one of them. Then, by using location-based services, they receive products or services at home or at their workplace through fast delivery or door-to-door services (Yao et al., 2022). In summary, a combination of economic, social and technological determinants is driving the rapid growth of online consumption.

2. Virtual consumer communities

New digital technologies enable consumers to optimize the ways of satisfying their needs. Active participation in virtual consumer communities, where mutual cooperation is essential to make better purchasing decisions and more effective satisfaction of consumption needs is one of these ways. Online consumer communities are "affiliate groups whose online interactions are based on shared enthusiasm and knowledge about a specific consumption activity or related group of activities" (Kozinets 1999, p. 254). According to Maffesoli (2016), online consumers who gather and organize themselves into collectives are motivated by "sharing specific tastes […] that act as social glue" (pp. 742—743). On the Internet, consumer communities are groups of consumers of various sizes who meet and interact online in order to reach common goals and achieve personal benefits (Dholakia et al., 2004, pp. 241—242).

Online consumer communities remove time and space boundaries, enabling consumers to meet online to share information, collaborate, and support each other anywhere and at any time (Kozinets et al., 2008). Research on online consumer communities suggests that the increasing connectivity of online consumer communities makes defining a community structure as related to a single consumption interest difficult as members become increasingly involved in different community initiatives based on individual needs (Weijo et al., 2014). Based on a comprehensive analysis of over 100 marketing and consumer research articles, Thomas et al., (2013) identified nine dimensions along which consumer communities differ, i.e., clustering, market orientation, duration, dispersion, accessibility, attractiveness, resource dependence, collective belonging, and heterogeneity. In a consumer community, it is important to strive for a common identity, prefer a similar lifestyle and actively negotiate to ensure mutual benefits.

The virtual world is a supportive environment for the development of consumer communities. On the Internet, consumer communities are created by consumers who meet and interact to pursue common goals and personal interests. Virtual consumer communities allow shopping in the „company of friends". People in one group have access to specific messages containing information about products purchased by other consumers in this group and about recommendations provided. They can also exchange information about various products, influencing other people's purchasing decisions.

Spontaneously organized consumer communities and communities inspired by the manufacturer around a specific brand can be found on the Internet. In the first case, consumer communities are initiated and maintained by consumers in order to satisfy a specific need or integrate around a specific brand. The awareness of belonging, a sense of collective similarity to each other and to the group, as well as differentiation from other communities are the most important attributes of a brand community. Brands facilitate the process of creating a community by identifying people with similar views. The position of a member in such a community is influenced by the period of use of the brand, the historical value of the model owned, the number of models owned, as well as the scope of knowledge and experience. Positive expectations and emotions related to participation in a given community are a crucial factor that unites consumers. This can be supported by a high degree of personalization in communication between participants of an online consumer community. According to Kim et al., (2008), personalization affects not only the shaping of attitudes, but also the satisfaction of its members with the social life of the community, recommendations regarding a specific brand, and the purchasing behaviour of products associated with the brand.

Some consumer communities implement the idea of communal consumption. J. Hamari, M. Sjöklint, A. Ukkonen (2016) define communal consumption as an activity related to obtaining, providing and sharing goods and services via online services. It is a way of creating shared value among community members who bear the social and moral responsibility of consumers based on mutual trust and solidarity. The idea of collaborative consumption is implemented by virtual peer-to-peer communities that focus on joint activities aimed at solving problems related to all kinds of consumption experiences. The patterns of network exchange in these communities and communication networks are characterized by patterns of direct reciprocity and indirect reciprocity (Faraj, Johnson 2011). There are also digital content sharing communities, providing digital „e-goods" distributed freely among others. These online collectives provide consumers with a space for cooperation, implementing innovation and problem-solving.

In the second case, the producer of a specific brand around which consumers gather is the initiator of the consumer community. The aim of such a community is to build a network of connections between the brand and consumers, which is likely to have a positive impact on their attitude towards the brand, on the assessment of the brand's personality, their customer satisfaction with the brand, recommendations and customer involvement in the development of the company (Casalo et al., 2010). Such communities have a positive impact on consumer loyalty towards the brand and their purchasing behaviour (De Valck et al., 2009). Emotional attachment, love for the brand and cultural values significantly affect consumer involvement and their loyalty to the brand influences consumer behaviour in online consumer communities (Sohail 2023).

Consumers usually become members of an online consumer community associated with a brand not for a single day, but rather for a longer period of time. If a brand is represented in an online consumer community in a way that meets the

expectations of its members, it is reflected in positive attitudes towards the brand, satisfaction with it, positive brand recommendations and purchasing its products (Van Doorn et al., 2010).

Sometimes, the dilemma of choosing an individual consumption style arises in the context of loyalty to an online consumer community and a brand. On the one hand, the consumer is connected to a given online consumer community organized towards a given brand and wants to be loyal to the members of this community, and on the other hand, they strive to build their own consumption style. Online communities can provide members with an important arena for negotiating these lifestyles and the conflicting meanings associated with them. According to Närvänen et al.,'s (2013) research, individual and collective parts of identity are mutually constitutive and co-created in constant negotiations with others. Discursive practices are a way of renewing meanings and culture, and also produce new culture.

3. Artificial Intelligence as a Challenge for Consumers

Artificial intelligence (AI), which will influence both the shape of consumption, consumer behaviour and the actions of producers is a key factor that will have an impact on the future of consumption in the near future. For now, artificial intelligence is primarily used by producers and sellers in marketing activities. Firstly, self-learning algorithms are used for personalization, segmentation and matching advertisements and recommendations of products and services to a specific group of recipients. Secondly, such systems as CRM, MA and DMP, provided by the creators of platforms such as Google, Facebook, Amazon, Alibaba, Tencent, SAP, Salesforce, Adobe and Oracle are used for communication with the consumer and their service. Producers most often use artificial intelligence to build a personalized offer for an individual consumer. Solutions based on the idea of an interactive recommendation agent (IRA) built on artificial intelligence algorithms, which identifies the user, collects search patterns, analyses the known preferences of similar users and estimates their specific preferences in order to adjust recommendations for a given consumer are used for this purpose (Kim et al., 2022). AI-based IRA is also used in advertising. AI personalization agents select and advertise a small set of products as recommendations that match a person's preferences in order to influence their decision-making. It is also used to identify the attributes of products/ services that are most valued by consumers.

AI is used to predict consumer income in order to personalize prices based on consumers' potential willingness to pay for the products offered. AI can then connect products and services to segments of consumers who are likely to purchase those offers. Since psychological factors can either reinforce or inhibit consumer

intentions and behaviours, AI can segment consumers and target advertisements to them according to their psychological predispositions.

Artificial intelligence can also be used by consumers. Many solutions worth mentioning include Siri, a personal assistant for the iOS operating system which offers, among others, interaction with e-mails, calendar, reminders, contacts, and Alexa, a wireless device introduced to the market by Amazon. Alexa helps in playing music, audiobooks, providing various information, and can also control smart home devices. Artificial intelligence introduces a new quality to the life of the consumer, enables 24-hour service, hyper-personalization of solutions, greater convenience in the process of making a purchase, or the possibility of avoiding a wrong choice. AI is a new dimension in the sphere of experiences, both thanks to recommendations, advice, and suggestions on the best way to use the product (Jarek et al., 2018).

Comparing the level of use of artificial intelligence by producers and consumers, a large imbalance to the detriment of consumers can be noticed. The question arises as to what extent artificial intelligence can support consumers on the market. Artificial intelligence has no problems with creating multidimensional, multilevel and hybrid compositions and recompositions in an interdisciplinary and transdisciplinary perspective, which is increasingly used by producers, marketers and sellers. However, there is a problem with its use by consumers. An important question is therefore how to build algorithms, program computer systems and devices so that they provide original answers in form and content, images, graphics, music, poetry or literary texts, culinary recipes or recommendations for practicing sports so that they contain new creative, rational combinations and patterns.

4. The impact of digital technologies on consumer-producer relations

Thanks to the development of digital technologies, digital transformation is observed. It is characterized by the use of new digital technologies in producer-consumer relations (Piccinni et al., 2015). Digital transformation has caused a transition from a physical to a virtual process in market exchange, in which physical interaction between people has been eliminated (e.g. e-commerce, online banking). The growing importance of the virtual process has numerous consequences. Change in the interactions between consumers and technologies (i.e., they change the way consumers use digital technologies); between consumers (i.e., the exchange of information about products and services is developing) and between consumers and producers is one of the most important.

The increase in consumers' access to resources of information about products and services, which, thanks to inexpensive digital technologies, are becoming

increasingly available anywhere and at any time is one of the factors influencing changes in the producers-consumers relations. This affects the growth of consumer awareness. Developed digital competences allow for the development of problem-solving skills related to online shopping and service (Granados, Gupta, 2013). In addition, digital technologies facilitate interactions between consumers in search of information (e.g. sharing information about products in social networks, online reviews and blogs). Through digital media, consumers can create, promote and strengthen content about the producer (e.g. in consumer reviews), which determines the perception of the organization and its offer by other consumers.

Manufacturers have also benefited from the use of digital technology in inter-actions with consumers. The intensity of consumer interactions has increased in a cost-effective way, resulting in the development of new products, improvements to existing products, and solutions to product-related problems. By interacting with them virtually, manufacturers are able to respond to changes in consumer needs and respond to them quickly (Huang & Pan, 2012). As consumers become better informed and empowered by digital technologies, manufacturers are changing the way they develop new offerings, which are becoming more individually tailored and highly diversified. Manufacturers are also changing the way they interact with consumers, i.e., there is a greater need to respond quickly to consumer needs and to use consumer interactions to co-create new products and services.

In this regard, manufacturers are becoming increasingly consumer-oriented. This consumer orientation is observed in prosumption, which involves consumers participating in the creation of a personalized product based on information technology. Consumers engage in part of the work performed by specialists in the company, e.g., by actively participating in the process of designing a given product, which at the final stage will acquire personalized features tailored to the consumer's expectations. Tapsott and Williams (2008) define this aspect of prosumption as the desire to have diverse types of consumer goods in line with one's own imagination and active participation in the co-creation of a given good. It was therefore assumed that products are an arena for experimentation for potential customers, and considering their suggestions for changes, and thus consumers are treated as partners and not just customers. The new form of prosumption is related to Internet communication based on Web 2.0 (Wikipedia, Facebook, Second Life, Ebay, YouTube, Amazon.com, etc.). Bremdal (2011) identified various forms of prosumption using Web 2.0 technologies. The most important of them include searching for and sharing health care advice online instead of visiting a doctor, managing a personal account online, searching for and booking airline tickets online, performing work at the airport related to obtaining boarding passes in electronic kiosks, purchasing books and other products in online stores, writing articles, reviews and comments on the Internet, organizing events and entertainment on the Internet. Describing these activities, it can be concluded that platforms using Web 2.0 technologies have become a major place of prosumer activity.

Prosumption is developing the fastest on the Internet. For the prosumer, access to information and knowledge about the method of production of a given consumer

good is the most important thing. The Internet provides information and creates opportunities to make market transactions using the acquired knowledge. The consumer can obtain information from the manufacturer's websites or the websites of online stores, which is important for decision-making. In addition to access to this type of information, the buyer also has other sources of information including portals specializing in a specific, narrow topic, blogs, videos, films, photographs, discussions on forums with other consumers about the properties of a given product. The emergence of Web 2.0 technology has allowed for the expansion of producer-consumer communication possibilities. Consumers are not only recipients of information from producers but are also its creators. Web 2.0 services have changed the scope of interaction between the owners of the service and its users, partially transferring the creation of content to their users. The network in which consumers and the producer or a group of producers participate is a feature of services. Participation in the network allows for gaining optimal knowledge about the utility values of a given good, which reduces the influence of producers on these decisions. Thus, thanks to access to diverse sources of information, buyers become partners for producers. They can cooperate with them in creating a personalized product, or they can be bidders themselves — this is what happens on allegro.pl or ebay.com.

Consumers involved in activities aimed at creating a product are co-creators of new value. This most often occurs in the area of mass media. The idea of prosumption in creating new values was presented in an interesting way by Bruns (2008), who, when analysing the communication process in Web 2.0, indicated the emergence of the so-called produsage, a person who plays a hybrid role between a user and a producer. Their role is to constantly build and expand existing content in order to further improve it. The products of the work of produsage are not separate products, nor do they directly create new products, but create new intangible value. Sharing knowledge and its continuous improvement are an important feature of the behaviour of this type of consumer. Produsage, using open-source technologies, is both a creator and a user of content in various Internet environments, such as Wikipedia, Second Life, blogs, social networking sites, e.g.,YouTube MOVEN, Flickr, etc. By sharing experiences and knowledge with others, the consumer co-creates the identity and symbolic value of the new product (Majboub, 2014). The idea of produsage is used in computer games, where the player is often both a user and a co-creator. Tolino's (2010) research on prosumption in computer games shows that game producers sometimes encourage players to modify their products to make them more attractive to other users as well. Players become co-producers of games, contributing innovative solutions, new elements of fun, which often determines the success of a given game on the market.

In business practice, many companies use consumer knowledge to create new products. They are encouraged to share their knowledge with manufacturers (Ziemba, Eisenbardt, 2014). Sometimes their knowledge is used to solve specific problems faced by manufacturers. Procter & Gamble, which created the "Vocal-point" program for online communities can be an example here. Community members are rewarded with coupons and product samples in exchange for speaking well

of the products to their friends. This program has about 500 thousand users and is also used by other companies, such as WD 40 or Discovery Channel to promote their products (Neff, 2006). In the process of co-creating a product, manufacturers enable closer and more involved interactions with consumers, which can influence consumers to write positive product reviews or create digital word-of-mouth messages about certain manufacturers.

In summary, significant changes are observed in the relations between consumers and producers. The growing importance of digital technologies results in a partial change in power relations. Consumers gain new instruments of pressure on producers, e.g. consumers can write positive reviews of products or create digital word-of-mouth messages about certain producers thanks to the access to a huge amount of market information and thanks to mutual relations. Recognizing that consumers have more power thanks to digital technologies, producers respond to changes in consumer behaviour by becoming more consumer-centric and changing the way they exchange values (e.g. co-creating digital products and services).

Conclusions

In the modern world, consumption, which in the 20th century became a crucial factor in the development of society, has strengthened its position. Its strength results from the multi-level influence on the creation of new cultural patterns and social norms that consolidate its place in social and economic life. Information technologies significantly strengthen the power of consumption. As a result of changes in digital technology, there is an increase in the potential possibilities of meeting consumer needs. Mobile devices (mobile phone, smartphone, tablet) with an Internet connection allow for the purchase and consumption of consumer goods outside traditional stores, which affects the creation of new consumption patterns. A new form of m-consumption thanks to which the consumption process can be conducted without the limitations of time and space is developing rapidly.

Reflections on changes in consumption caused by new digital technologies allow for formulating several conclusions regarding the directions of consumption development. Firstly, online consumption allows for crossing class and stratum barriers. Thanks to the multitude of consumer goods available on the Internet, consumers have the opportunity to choose lifestyles that often do not correspond to their actual position in the social structure. Secondly, virtual consumption has created conditions for building new individual identities, thanks to combining the real and virtual worlds. Innovative technologies and artificial intelligence which, by creating conditions for consumption in the virtual world, influence the improvement of consumers' quality of life are helpful in this activity. Thirdly, individualistic attitudes in consumption are being created. This is facilitated by the diversified offer of

consumer goods in online stores, which allows for individualizing the style of consumption. The style of consumption is less and less dependent on class and stratum or group influences. Fourthly, innovative technologies facilitate the construction of social capital thanks to the organization of consumers into virtual consumer communities. Consumers are becoming members of virtual communities, where there are no class or strata boundaries; they are situated across the social structure. They enable the exchange of knowledge, experiences and opinions. The progressive alienation of people, especially young people, from real social life is a key factor in the growth of interest in and participation in virtual communities. Fifth, the importance of artificial intelligence is growing, which creates new perspectives in producer-consumer relations. The consumer supported by artificial intelligence will be a partner for the producer to a greater extent than before. The position of consumers who, thanks to access to information resources about products and services will be more demanding towards producers, will be strengthened. They will search, make purchasing decisions and consume or use consumer goods more effectively. Sixth, consumers are increasingly becoming prosumers, participating in the product creation process. Thanks to developed digital competences, they cooperate with producers in creating an individualized product that meets their expectations. This direction of consumption development will be increasingly important for both consumers and producers.

Further development of consumption depends not only on changes in digital technologies, but also on psychosocial barriers limiting changes in consumption. This concerns habits, customs, routines, consumption patterns, typical of "traditional" consumption, which do not occur on the Internet, especially the lack of physical contact with the seller. The lack of trust in online stores, related to uncertainty about the quality of the goods and the very purchase transaction is another barrier to the development of e-consumption. The lack or possession of basic digital skills is also a barrier, which is especially observed among the elderly.

It can be assumed that despite the current barriers to online consumption, new technological solutions, increased digital competences, and changes in attitudes towards e-consumption will lead to further changes in consumption. New communication tools create a new space for meeting needs, often stimulating new, previously unconscious consumer needs, such as the need to experience pleasure in online games. Virtual consumption has forced the acquisition of new digital competences, which significantly affects the intellectual development of consumers and their quality of life. It has also created conditions for building new individual identities thanks to combining the real and virtual worlds. New technologies and artificial intelligence are helpful in this respect, as they create conditions for consumption in the virtual world and improve the quality of consumers' lives.

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