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**BETWEEN ACTUAL AND VIRTUAL REALITY.  
TECHNOLOGIES AND FUNCTIONALITIES  
OF DEVICES IN THE BUYING PROCESS  
FROM THE PERSPECTIVE OF (POLISH) CONSUMERS**

In modern times, the buying process involves utilisation of technologies from the virtual world as well as appropriate devices and their functionalities. Strategies of this type are also appreciated by young Polish people for whom balancing between actual and virtual reality is becoming an intrinsic element of consumer awareness. Based on selected papers and research reports, including their own and ones not yet published, the authors of the paper present various ways of moving between two realities throughout the whole buying process, from the stage of creating needs to completion of the purchase. In this respect, they draw attention to such issues as the kind of devices and their functionalities used or preferred in this process, the differentiation of actions in the individual buying categories, the involvement of third parties in the buying process, responses to messages, and willingness to disclose personal information. In addition to the empirical character (presentation of the relevant data obtained during the research) of the study, the authors consider the extent of autonomy and rationality of consumer decisions.

The paper presents empirical research as it was based on the authors' consumer studies, the full descriptions of which, along with the conclusions, are included in two reports constituting elements of a project implemented by the Social Research Institute at the Institute of Philosophy and Sociology of the Pedagogical University of Krakow (IFiS UP) and the Interia Group, under the name 'Studies on the construction of an innovative platform, compliant with the latest global trends and enabling creation of services in the "Shopping Assistant" model', funded by the Regional Operating Programme for Mazowieckie Province for 2014–2020 (Priority axis 1: Knowledge Economy; Action 1.2 Research and innovation in enterprises, Sub-measure 1.2.1 R&D projects for enterprises).

Keywords: consumers, virtual reality, purchase decision process

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## INTRODUCTION

Virtual reality<sup>1</sup> and technological extensions of our body have been accompanying us for quite a long time. We are fascinated by them; we discuss their capabilities that open up to us as humans but also as consumers who have to make a number of buying decisions on a daily basis. Until recently, it was a one-dimensional process taking place in the real world (offline). However, increasing access to interactive media (both on the part of sellers and buyers) has become the driving force for their commercial application. This is because a virtual environment offers much greater interactivity than traditional media, and the level of interactivity can be controlled by the information supplier (which was soon discovered by manufacturers and traders). Interactivity also allows them to better satisfy consumers' expectations (which is a significant advantage of a virtual environment) as consumers more quickly and effectively memorise information provided in such a manner. On the other hand, quick and easy access to information in today's information and knowledge society is a significant benefit thanks to which, it might seem, the decision-making process becomes easier. According to many researchers dealing with consumer behaviours,<sup>2</sup> the modern consumer is more mature and wiser but also more cynical. Two-thirds of consumers point out that they make decisions faster than they did just two or three years ago (Shandwick, 2007). The main reasons for accelerated decisions are greater accumulated knowledge and easier access to information, which often implies that the modern consumer makes purchases on a multi-channel basis. This is a phenomenon consisting in buying products or services of the same brand, or a product from different buying channels, including physical ones (offline), as well as various online places, which include not only online shops but also social media or shopping platforms, using both full-scale devices, such as laptops, PCs or smart TVs (online) and mobile ones like smartphones, tablets and smartwatches (mobile). Multi-channel shopping is understood to be a situation in which a consumer changes channels during the buying process while searching for inspiration, information and opinions, and comparing offers, testing, making the buying decisions, paying, checking the status of the order, receiving the goods or giving their opinion on the purchase. If their buying experience is consistent, and the consumer moves freely among the channels, which are integrated on the side of the provider, this can be termed not

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<sup>1</sup> Virtual reality (VR) is 'the use of a computer-generated 3D environment – called a virtual environment (VE) – that one can navigate and possibly interact with, resulting in real-time simulation of one or more of the user's five senses' (Guttentag, 2010). According to R. Kayne (2014), virtual world is an interactive, computer-generated, three-dimensional environment. And S. Bryson (1996, p. 62) formulates the widest definition of virtual reality as, 'the use of computers and human-computer interfaces to create the effect of a three-dimensional world containing interactive objects with a strong sense of three-dimensional presence'. What is essential is that VR technologies generate totally new surroundings, which distinguishes them from the AR (Augmented Reality) technologies which combine a real image with elements created using such a technology (see: P. Pardel, *Przegląd ważniejszych zagadnień rozszerzonej rzeczywistości (Review of the major issues of augmented reality)*, *Studia Informatica*, Vol. 30, No. 1, 2009, p. 35 [http://www.znsi.aei.polsl.pl/materialy/si82/si82\\_2.pdf](http://www.znsi.aei.polsl.pl/materialy/si82/si82_2.pdf)).

<sup>2</sup> Antonides G., van Raaij W.F. (2003), Baker S.M., Holland J., Kaufman-Scarborough C. (2007), Bojar E., Rzemieniak M. (2013), Duliniec E. (1986), Evans M., Jamal A., Foxall G. (2006), Falkowski A., Tyszkta T. (2006) et al.

only as multi-channel but even omni-channel shopping<sup>3</sup>. As stated in the most recent report from the study *Omni-commerce. I buy comfortably* from May 2018,

- 98% of mobile internet users take advantage of their smartphone or tablet for shopping-related activities;
- 88% of internet users pursue shopping-related activities using the internet;
- 73% of internet users buy products of the same category from more than one shopping channel;
- 70% of mobile consumers will have a negative reaction to a non-mobile shop;
- 65% of e-shoppers declare that they make the same number of purchases or more than in the offline channel;
- 53% e-buying consumers make mobile purchases;
- 52% of internet users declare online shopping; and 34% made an e-purchase in the last 6 months;
- 41% of internet users made their last purchase on a multi-channel basis;
- 37% of consumers regularly pay with a card at physical shops;
- 34% of mobile internet users pay with a phone at physical shops;
- 33% of e-shoppers usually make payments by instant transfer;
- 29% of e-shoppers usually pay with a card on order;
- 28% of consumers make buying decisions at the time of comparing offers (cf. [http://eizba.pl/files/8415/2641/0887/Omni-commerce\\_Kupuje\\_wygodnie\\_2018.pdf](http://eizba.pl/files/8415/2641/0887/Omni-commerce_Kupuje_wygodnie_2018.pdf)).

These data indicate an increasingly greater impact of the internet on consumer behaviours outside the virtual environment as well. Consideration is usually given to the differences between the online and offline worlds. However, present observations of consumer (also e-consumer) behaviours clearly demonstrate that the different sales channels do not exclude but rather complement one another. The consumer begins to choose, deliberately, the one that is more convenient to them at the given moment (we begin to shop smartly – which will be dealt with in the discussion of the results). In a virtual environment it is still impossible to provide smell, taste or tactile sensations, although in a growing number of cases it is possible to efficiently represent reality by using visualisations of flash animations. However, VR provides increasing capabilities in this field. VR enables experiences not only in any place and at any time but also some that would not be possible in the real world. As indicated in an eMarketer study from October 2015,<sup>4</sup> the largest group of consumers are interested in the possibility of seeing objects in actual size at the time they want to buy them online. Therefore, placing virtual furniture in a living room or checking in the mirror if a given bag is the right size are more and more common practices among e-consumers. It may be soon that such experiences will be desired by the majority of customers. And in marketing, increasingly more attention is being paid to consumers' experiences and satisfaction. If a customer feels surprised or delighted by a product or service, it is very probable that a strong emotional bond will develop between them and the brand, and this is after all what the sales wizards want.

<sup>3</sup> See: [http://eizba.pl/files/8415/2641/0887/Omni-commerce\\_Kupuje\\_wygodnie\\_2018.pdf](http://eizba.pl/files/8415/2641/0887/Omni-commerce_Kupuje_wygodnie_2018.pdf).

<sup>4</sup> Data acc. to [//www.bluerank.pl/downloads/wirtualna\\_rzeczywistosc.pdf?](http://www.bluerank.pl/downloads/wirtualna_rzeczywistosc.pdf?).

According to Michael R. Solomon, motives for using the internet to go shopping can be divided into functional and non-functional (Solomon 2008: 141). The former are related in the first place with being focused on solving a problem, on buying the right product quickly and efficiently, and on achieving the intended objective (purchase of a specific product) while incurring the minimum costs, especially in terms of time and effort. On the other hand, the non-functional ones are related with seeking entertainment, fun, interaction and pleasure involved in shopping (cf. Solomon 2010: 141–142). For a long time it was considered that consumers using the internet for shopping are primarily guided by functional motives, such as the virtually unlimited selection, savings in time and money, being able to compare products, and exhaustive information about the product. However, Andrew G. Parsons believes that online consumers more and more frequently attach importance to non-functional motives, such as:

- graphic effects,
- entertainment,
- opportunities to communicate with like-minded people,
- bargains,
- playing a different role,
- an escape from the daily routine,
- participation in new trends,
- and freedom (Parsons 2002).

## ONLINE CONSUMERS' BEHAVIOUR PATTERN

Many researchers<sup>5</sup> intending to build a model of consumers' online behaviours concluded that such behaviours should be examined from two perspectives: general and detailed. The general perspective concerns the decision on an online purchase (whether or not to buy taking advantage of a virtual environment), and the detailed perspective concerns decisions made within the material scope: what and where to buy, which method of payment and delivery to choose etc.

One of the more popular models attempting to explain consumers' and e-consumers' behaviours is the TAM model (Venkatesh and Davis 2000). In it the authors assume in it that the use of technology (e.g. the internet) is determined by the behavioural intention to use, which in turn depends on the approach to using technology. The attitude is formed directly by two factors termed by Davis as *perceived usefulness* (PU) and *perceived ease-of-use* (PEOU). The first factor is defined as 'the degree to which a person believes that using a particular system would enhance his or her job performance' (Davis 1986). In turn, perceived ease-of-use is defined as 'the degree to which a person believes that using a particular system would be free from effort' (Davis 1986). Hence, online shopping is mainly determined by two factors, the usefulness and the ease of using new technologies employed in the buying process.

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<sup>5</sup> E.g. F.D. Davis 1986, Barozzi, Warsaw 1992, Gefen, Straub 2000, Fishbein, Ajzen 1975, Fishbein 1980, Aronson 1997 et al.

Looking at buying decisions from the detailed perspective, the literature on the subject also distinguishes a number of models. With focus mainly on the decision approach, it is the Engel-Kollat-Blackwell (EKB) model that seems to be most useful in explaining online consumer behaviours. According to the creators of this model, when making a decision concerning an online purchase, as with decisions made outside the virtual environment, the consumer goes through certain stages. These are:

- problem recognition,
- search for alternatives,
- alternate evaluation,
- choice of a particular products/seller,
- purchase.

Whether the consumer decision process is easier in modern times, taking into consideration the two environments, i.e. offline and online, or more complicated, is one of the issues addressed in this paper.

## RESEARCH METHODOLOGY

The study was conducted within the framework of Task 3 ‘Development of guidelines, patterns and design methods for a presentation layer user interface in accordance with the idea of Ambient User Experience’, a part of the project ‘Studies on the construction of an innovative platform, compliant with the latest global trends and enabling creation of services in the “Shopping Assistant” model’.

Based on the research enquiries and guidelines from the Partner, the Interia Group, the research team at the Social Research Institute at IFiS UP designed research tools, recruited respondents, conducted the study and presented the results in a study report.

The following research methods/techniques were applied in the study:

- shopping diaries filled in by 40 respondents for a period of 7 days;
- individual in-depth interviews (40 respondents);
- UX tests (40 respondents) along with an evaluation survey;
- focused group interview (1 interview; 6 participants).

The surveys based on the diaries, individual in-depth interviews and UX tests were conducted on the same study group. Respondents were recruited for the study according to the following criteria:

- differentiation by sex;
- differentiation by age (two age categories, 18–29 and 30–49);
- differentiation by the size of the place of residence;
- frequent shopping activity, online or offline;
- frequent use of mobile devices.

The subjects kept shopping diaries for a period of one week. In the diaries, they entered detailed descriptions of their activities related to each purchase, taking account of, among

others, the place, time, situational context, devices, websites, applications and data sharing. The in-depth interviews were conducted immediately before the UX testing. Their purpose was to obtain more precise knowledge on the activities entered by the respondents into the diaries. The UX tests were performed taking into account such applications and websites as Tiendeo, Listonic, Ikea, Homebook, 3D Shop and Multikino. The subjects tested selected functionalities which they subsequently subjected to their own evaluation. The conclusions contained in this paper are aggregate in nature, as they take into account material gathered using all of the above-mentioned methods.

## RESULTS OF THE STUDY IN THE CONTEXT OF MAKING BUYING DECISIONS BETWEEN THE ONLINE AND OFFLINE WORLD

Let us start by noting that the vast majority of our subjects describe themselves as ‘smart shoppers’. This trend is typically understood as searching for the best offer in the market, one that falls within the criteria specified by the consumer with regard to e.g. the best price and value of the product. The buyer attempts to absorb the widest possible range of information in order to gain the greatest possible knowledge on the product in question (Re-format 2013: 169–170). The manner of understanding this notion by the subjects seems to be congruent with its definitions in the literature. H. Mano and M.T. Elliott (1997) define smart shopping as consumers’ willingness to invest a considerable amount of time and effort searching for and utilising information concerning bargains in order to achieve savings. These authors distinguish three basic components of smart shopping: consumers’ market knowledge, consumers’ behaviours related to gaining information on price bargains, and the effects of taking advantage of sales promotions. According to T. Zalega (2013: 48) in turn, smart shopping consists in investing your own time to search for information on promotions, comparing prices of different products (which includes using internet browsers), finding bargains, avoiding ‘overpaying’, not being guided by emotions fuelled by advertisements, and saving money. A person whose way of consuming fits within this consumer trend is referred to as a *smart shopper*. A *smart shopper* does not like to overpay but rather has a savings-oriented approach. Their purchase decisions are thought out; they are not the result of emotions aroused by the media. Our subjects fit within this trend. From their statements it appears that being smart while shopping means for them above all searching for cheaper products on the internet using available search engines (this concerned mainly the product categories of home electronics, household appliances, home/garden and fashion). In this context, the subjects did not very often mention familiarising themselves with others’ opinions on the relevant products.

Although for a considerable number of the subjects searching for cheaper products is the same as searching for promotions (primarily with respect to groceries and cosmetics at physical shops), some of them declare at the same time a lack of confidence in promotions and reduce ‘being smart’ to the ability to distinguish actual promotion from what is known as ambush marketing. They more often associate smart shopping with taking advantage of

seasonal sales (e.g. on clothes). On the other hand, the subjects often state that being smart means for them cutting down on spontaneous shopping, and stopping to consider and plan their shopping. Being smart was to a lesser extent also associated with avoiding excessive shopping and accordingly, with limiting the pursuit of promotions. In this case, a smart shopper is a person who controls their expenditures, not just by reducing excessive shopping but also other activities related to searching for promotions which in their opinion only increase the level of expenditures. Occasionally, people sceptical about promotions consider themselves as smart shoppers because they avoid promotions; such people may sometimes consider themselves as 'conscious' rather than smart shoppers. There are subjects for whom being a conscious consumer rather than a smart one turns out to be more important, even though these attitudes need not always be mutually exclusive. A conscious consumer makes themselves familiar not only with the price but also with the quality of the products, their origin and their impact on the environment.

The subjects also (but rarely) associate smart shopping with having loyalty cards and discount applications. Sporadically, respondents deem themselves smart shoppers on account of using mobile devices, such as smartphones or tablets, while making purchases; or, even more seldom, on account of their ability to make sure they get refunds under various cashback offers.

Thus, as can be seen, our subjects fit within the above-quoted definitions of a *smart shopper* adding an additional aspect to them, i.e. the use of mobile devices for shopping.

In the majority of cases, it is a particular need that triggers the purchase decision. The bulk of our respondents specify their shopping needs in a very schematic manner. As far as groceries are concerned, their purchase is largely determined by the necessity to prepare the daily or weekly menu or to stock up on provisions, although sometimes it is a result of a craving. Purchases of this type are usually made by consumers at physical shops. As for cosmetics and household chemicals, the need for a purchase typically results from running out of a product; and in the case of cosmetics, also from inspirations drawn from friends or the internet (fora, blogs, and videos on YouTube). With regard to articles of clothing, this is the result of old clothing wearing out, or of often spontaneous whims or inspirations from the internet or friends (Instagram). In this category, the subjects admit that the period of seasonal sales has an impact on creating needs, often spontaneous ones. With regard to home electronics and household appliances, the needs are typically generated by the wearing out or breaking down of equipment, a desire to have a newer model, inspirations from the internet (e.g. YouTube), press articles and recommendations from friends and relatives, and frequently advertising or the respondents' hobbies and interests.

In the opinion of the subjects, external information has only little influence on determining their purchase needs. The respondents stress that the need arises above all internally, while all external messages can merely stimulate it to some extent. Things indicated by the respondents as such that may affect their purchase needs include: advertisements and content appearing on social media, as such content is better adapted to their preferences and interests, and it provides them with an opportunity to familiarise themselves with some pictures of the products (this mainly concerns home electronics, household appliances, home/garden, clothing and cosmetics). At the same time, a few respondents perceive social media as helpful



in planning their purchases. Those who utilise them in this way point out several of their functionalities, such as consulting the opinions of others, liking shop websites (which gives the benefit of receiving notifications on promotions, discounts, etc.), belonging to specific groups of e.g. eco-friendly product supporters, the use of pop-up ads, and promotion proposals and ideas/suggestions from friends on how to make shopping easier. Following an analysis of the research material, it seems that this is a promising channel for sending messages to customers because respondents perceive information flowing therefrom as personalised and reliable, i.e. recommended by their friends whose opinions are credible to them. In general, the respondents highly evaluate information shared on social media, which should be associated with more trust in friends who post the relevant information on their sites. Furthermore, it is where they seek/take advantage of other people's opinions on products, which they find more credible than information from consultants, text messages, emails and adverts.

When planning purchases, the subjects also use information from the websites they liked or received by means of emails, newsletters (household chemicals/cosmetics, fashion, home electronics and household appliances) and possibly but to a lesser extent, text messages, especially when these are sent by the shops already liked. One advantage of email messages is that they can be read at a convenient time without having to check the sender upon receiving the message, which turns out to be particularly irritating in the case of text messages received at work. However, the respondents relatively seldom make purchases guided by such information as the offers are by and large poorly personalised, are sometimes out of date, or do not contain any attractive discounts. These messages lead to purchases especially when these are notifications on considerable reductions or discounts concerning a product that is actually being searched for. Browsing such offers contained in emails and making purchases under the influence of such messages is more likely if the message is read on a laptop.

A majority of the respondents find applications provided by the particular shops as the most useful form of external messages because they come from the shops at which they make their purchases and which they liked; also useful are applications such as Blix which provide multiple offers from various offer newsletters. Here, the respondents point to the personalisation of the offer, i.e. messages sent automatically from the websites liked but adapted to their needs (according to what they previously viewed or bought at the particular shops). Additionally, they are notified about the kind of the promotion and its duration. Of utmost importance to the respondents is the fact that such messages are consistent with their past needs and with the product or offer they are currently looking for. Among all the forms of messaging, activities related to receiving notifications from various applications is characterised by the highest score with regard to satisfaction. The subjects admit that even though they sometimes browse various messages it does not always translate into their purchase decisions because in this case it is above all the location of the shop that matters. The subjects typically check prices at different places (e.g. using search engines such as Ceneo, less frequently at physical shops) and make the purchase where the price is lowest; this concerns mainly the categories of home electronics, household appliances and home/garden. According to a majority of the subjects, external messages have a greater impact on their buying decisions with respect to casual purchases (mostly clothes), and less frequently with respect to daily purchases that are simply indispensable.



Separate analyses of the shopping diaries and the interviews both suggest that a majority of the subjects create shopping lists at the beginning of the buying process. These lists primarily concern groceries, and to a lesser extent other shopping categories. Some of the respondents still create lists on pieces of paper. However, more and more respondents turn to the applications for creating shopping lists. In the course of the interviews it turned out that increasingly popular is Listonic, which can compare prices and automatically add ingredients in recipes; another one is Evernote, which can recreate a list made on a computer without the necessity of sending it to a smartphone (synchronisation of the list on multiple devices), and sporadically other applications, such as Termomix, Google Keep, with a recording function for making voice notes of products, Quick Memo, and Google Docx. Users of the above applications unanimously declare that they are convenient and timesaving, and that they facilitate the process of planning and shopping.

In the course of planning their shopping, respondents take advantage of offer newsletters (promotional and advertising), both in the paper version and online. As is apparent from the analysis, this is only a slight majority of the subjects; there are people who do not browse them or do it only sporadically because they e.g. prefer internet browsers, make purchases spontaneously, have no time for that or simply buy all their groceries in one place. In the paper version, these are flyers from retail chains, mainly with groceries. They are taken advantage of by people with families, as the respondents browse them in the course of preparing shopping lists. Online newsletters are browsed above all on smartphones, usually at home. Some of the respondents who do not use online newsletters most commonly give reasons such as lack of or low responsiveness of the websites, poor aesthetics of the websites, content overload, pop-up ads, and lack of up to date equipment (in the case of smartphones) or appropriate software. On the other hand, respondents' reasons for using online newsletters include time savings, availability, ecology and lack of access to the paper versions. Newsletters are only sporadically browsed by young people who have no families and are studying and/or working, as they do their shopping on a day-to-day basis, at one place. These people might be encouraged to have a look at a newsletter by a personalised offer, e.g. for tools or promotions like 'A week with... cuisine'. It is noticeable that people who take advantage of online newsletters more frequently also take advantage of applications and discount coupons, so they are people who are more 'mobile'.

Participation of third parties in the buying process can be considered as quite common, essential and varied. It amounts to browsing online offers together, passing on requests for buying a particular item, making purchases for other people without prior requests from them, going out together to appropriate places of consumption or entertainment (more seldom to shops), or making joint purchases online. Other people may also act as a source of information on discounts or promotions, or may provide suggestions and opinions on products. Other people's opinions do not matter to the subjects as far as day-to-day purchases are concerned; here, they rely more on their own experience or the fact that they are accustomed to a particular brand. They do matter, however, when more expensive purchases such as electronic appliances are considered. It is significant that the subjects more often undertake purchase activities or consider an offer under the influence of information from friends rather than that of marketing information.

A majority of the subjects take special promotions into account in the process of planning their purchases. It should be emphasised, however, that the subjects are more frequently motivated by them when planning casual purchases such as shoes (seasonal sales), home electronics (Black Friday), clothes of better/favourite brands (seasonal sales), cosmetics (here the impact of the brand is strongly emphasised). With respect to groceries, promotions are less frequently taken into consideration at the stage of planning the purchase; the respondents admit that they first take account of them at the moment of making the purchase.

However, while shopping, the subjects pay attention to marketing tricks used by retail chains (e.g. limited offer, 2+1) and often succumb to them. When they see a promotion like buy one get one free, by one get one for a penny, buy two get two free, or buy one get one 50% off, the subjects tend to stock up. Some respondents add, however, that in the case of groceries, this only concerns such products that they often use and know that they will certainly use, and those that arouse their interest, such as Indian food.

At the level of the activities that were recorded in the diary, the respondents reveal that more often than searching for promotions, bargains, discounts or sales, they engage in searching for attractively priced products or lower product prices without combining this with searching for promotions. However, the respondents admit that with respect to the day-to-day purchases (mostly groceries) they do not pay much attention to the prices, as this is hardly profitable. With respect to causal purchases, they usually check prices online using available search engines (Ceneo or OLX) or on Allegro. Normally, the respondents compare prices online in order to buy the goods they want because this is cheaper (even with postage included) but they also browse prices online in order to make the most cost-efficient purchase offline; this concerns large household appliances, for example.

When planning their purchases of everyday items, like groceries, cleaning products or petrol from a particular seller (e.g. BP or Biedronka), the subjects take into consideration loyalty cards; on the other hand, with respect to casual purchases (home electronics, clothing, perfumes, expensive cosmetics or alcohol), more respondents pay attention to their favourite brand (this is often the reason for getting loyalty cards at particular shops). Incentives for the use of them are the different kinds of benefits involved in having and actively using such a card, e.g. in the form of points and reductions that can then be exchanged for products or a chance to receive some small presents from time to time.

The subjects usually use their smartphones for the following activities related to the buying process: browsing websites such as online newsletters (mostly groceries); making shopping lists in the notebook or in special applications (groceries, chemicals, cosmetics); using an application at the shopping location (e.g. to check barcodes or compare prices – groceries, chemicals, cosmetics and electronics); reading information/opinions on a product (typically at a physical shop or on the way there – mostly for electronics); taking pictures of products at the shop; sending pictures of products using an MMS service or Messenger (clothes, toys, electronics, possibly but to a lesser extent groceries, e.g. the husband goes shopping and send his wife a photo by MMS to ask her which product to buy) to relatives or friends; and consulting purchases with relatives or friends. Hence, it can be concluded that this device is most commonly used while shopping at a physical shop before the act of purchase itself or in order to research the market, both at a physical shop and on the way to/from work using public transport.

With regard to laptops, the respondents point out the following purchase activities: browsing websites, searching for a particular product, comparing prices, searching for promotions, creating shopping lists like in Excel (and saving the relevant file to the desktop, in the case of luxury goods), ordering products online (typically casual, e.g. home electronics and household appliances, home/garden or fashion). Thus, a laptop is most commonly used at the time of researching the offer on the internet and placing orders online.

A majority of the respondents do not use smartphones to scan discount codes printed on receipts, and some of the subjects do not even know about this option. Only a few of the subjects admit that they occasionally take advantage of it. These are codes at McDonald's, KFC, Selgros and CinemaCity.

Communication with the seller is another important element already at the stage of making a purchase. According to the study, the best evaluated and most willingly used at this stage is communication by means of email (as it can take place irrespective of the time of day or night) and by telephone (used typically in online shopping and in contacts with telephone companies). Face-to-face communication is used for purchases of home electronics and large household appliances at physical shops. Chatting is used in specific areas, e.g. insurance, banking and medical matters. Email communication is considered by the subjects as the most convenient because it allows for less obtrusiveness and provides the possibility of making contact at different times of the day and night that are convenient for them; additionally, as one of the respondents pointed out, email messages can serve as a proof in the event of any complaints or ambiguities in the buying process.

The main factors pointed out by the subjects with regard to online shopping are above all price, but also the promptness and type of delivery, and methods of payment. The respondents admit that the current standard is delivery within 2 to 5 days (for purchases made on AliExpress it is up to two months). As far as the form of delivery is concerned, the most convenient option is in the respondents' opinion courier delivery to the workplace because of its convenient timing. According to the subjects, a parcel locker is not a convenient form of receiving items purchased online due to the necessity of travelling to a particular place to collect them, and this a waste of time. The method of payment for online purchases preferred by the respondents is a card, in particular Blik, PayPal or PayU as this reduces the delivery time and is more convenient (there is no need to enter all the details). One of the respondents prefers cash on delivery payments because of a negative previous experience with couriers. Payment by card is also desirable when shopping offline ('I don't like having cash on me'; 'I forget to get money from the ATM', etc.).

The subjects provide numerous ideas concerning the use of applications, devices and functionalities facilitating their purchases. They can be divided into two stages: planning purchases, and making them. In the former case, the subjects point out, among others:

- better filtering on comparison websites; collecting up-to-date information from a greater number of shops;
- receiving a customised offer from a given shop ('my needs') or a personalised offer arranged according to specific categories (e.g. groceries, followed by other categories);
- having an application with the layout of the shop and creating a 'shopping route' based on the shopping list;

- application responsiveness.

In the latter case, the subjects point out facilities that include:

- a virtual advisor in the form of a three-dimensional hologram;
- payments by a card or Blik without entering personal details (autocomplete for personal details);
- an application reminding that the customer forgot to buy an item from a previously compiled list and enabling payments without queuing at a cash desk;
- deliveries by means of drones.

An essential aspect of online shopping is (especially nowadays) personal data protection and sharing such data. As research shows, a prerequisite for sharing personal data is often the intention of making a purchase. Therefore, data are generally shared first when placing the order. Another context of data sharing is sharing them after the purchase, in connection with receiving loyalty cards and offers to join loyalty programmes. Another essential context is sharing data when registering an application. Even though the subjects in general do not indicate explicitly that they do it with the intention of obtaining a discount, this may also be a reason to do so. The subjects have a slightly less restrictive approach to sharing only email addresses or phone numbers. They do it in order to receive newsletters or subscriptions, which need not imply a high probability of making a purchase. Sporadically, the subjects indicate that for this purpose they provide email addresses that they do not use on a daily basis. With respect to offline activities, along with activities consisting in using devices at shops data sharing is most frequently related to having loyalty cards issued and participating in loyalty programmes – which normally takes place prior to undertaking such activities. With regard to online activity, data sharing is most commonly related to making a purchase or placing an order, as well as to having an account on an auction website or the website of a shop. With regard to online activities preceding a visit at a shop, data sharing was most frequently associated with placing an order or with a purchase. The highest percentage of activities involving data sharing concerns actions relating to other shopping categories (41.9%), then to the category of health and beauty (39.9%); the lowest concerns the category of food (16.6%). Concerning the data that are most often shared, the respondents indicate email address, then first name and surname, followed by telephone number, address and, relatively seldom, bank card details. Sporadically, date of birth, account number, personal ID number (in Poland, the PESEL) and other data such as cookies, photos, place of work, and children's data for when buying children's clothes.

## SUMMARY

Along with the changing technology and new, increasingly mobile and intuitive devices, the customer is changing, as well. Their expectations and values are changing, and above all their buying behaviours and the way they make decisions. We buy differently than we used to. In addition to offline shopping we are more and more often shopping online; this is a process of interpenetration and the individual channels complement each other. According to a Deloitte

Report (Deloitte Report, 2013), 33% of consumers make purchases on a multi-channel basis, of whom 31% visit a physical shop before they make an online purchase, while 34% of people use information obtained online before making an offline purchase. As many as 51% use the mobile channel in the course of searching for information. This is confirmed by our study, which additionally defines the modern consumer as:

- more competent – customers are more self-confident and know how to take advantage of their experience and knowledge, and often call themselves a ‘smart shopper’;
- with an analytical approach – decisions concerning larger purchases or complex purchases are subjected to thorough analysis, often using different tools such as comparison websites;
- more demanding – customers have high demands concerning that which they feel they deserve, which is the consequence of the large number of options offered by a growing number of competitors including on the internet;
- an individualist – they need a personalised offer as early as at the stage of shaping their needs;
- thrifty – but not just financially (promotions, sales, coupons) as we tend to value our time. We are no longer willing to spare it for the sake of cheaper purchases, but we will take the time to consider e purchases;
- relying on other consumers’ opinions – when assessing the overall value of consumer choices one must not fail to mention recommendations, which are becoming a new form of consumer participation; as consumers, we tend to believe suggestions on the internet more than advertisements or marketing specialists;
- mobile – more and more commonly we are taking advantage of new technologies to browse offers and also to make purchases;
- careful – cautiously sharing their personal data, usually first at the moment of making a purchase or if the sharing implies a benefit to them.

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MIĘDZY RZECZYWISTOŚCIĄ REALNĄ A WIRTUALNĄ.  
TECHNOLOGIE I FUNKCJONALNOŚCI URZĄDZEŃ W PROCESIE ZAKUPOWYM  
Z PERSPEKTYWY (POLSKICH) KONSUMENTÓW

Współcześnie w procesie dokonywania zakupów wykorzystywane są technologie ze świata wirtualnego oraz odpowiednie urządzenia i ich funkcjonalności. Strategie tego typu zyskują uznanie również wśród młodych Polaków, dla których balansowanie między rzeczywistością realną i wirtualną staje się nieodłącznym elementem świadomości konsumenckiej. Autorzy artykułu – w oparciu o wybrane, w tym także jeszcze niepublikowane, artykuły i raporty badawcze (m.in. własnego autorstwa) – prezentują zróżnicowane sposoby poruszania się pomiędzy dwiema rzeczywistościami w całym procesie zakupowym, od etapu kształtowania się potrzeb, do finalizacji zakupu. Zwracają przy tym uwagę na takie kwestie, jak: rodzaj stosowanych lub preferowanych w tym procesie urządzeń i ich funkcjonalności, zróżnicowanie działań w poszczególnych kategoriach zakupowych, zaangażowanie osób trzecich w proces zakupowy, reakcje na komunikaty, skłonność do udostępniania danych osobowych. Oprócz empirycznego charakteru (prezentacja właściwych danych uzyskanych w toku badań) autorzy podejmują refleksję nad zakresem autonomii i racjonalności konsumenckich decyzji. Artykuł ma charakter empiryczny, został bowiem oparty na zrealizowanych przez autorów tekstu badaniach konsumentów, których pełny opis i wnioski zawarte zostały w dwóch raportach stanowiących elementy projektu realizowanego przez Pracownię Badań Społecznych IFiS UP i Grupę Interia, pt.: „Badania dotyczące budowy innowacyjnej platformy zgodnej z najnowszymi światowymi trendami, umożliwiającej tworzenie usług w modelu «Shopping Assistant»”, finansowanego z Regionalnego Programu Operacyjnego Województwa Mazowieckiego na lata 2014–2020 (1 Oś Priorytetowa Gospodarka Wiedzy, Działanie 1.2 Badania i innowacje w przedsiębiorstwach, Poddziałanie 1.2.1 Projekty badawczo-rozwojowe przedsiębiorstw).

Słowa kluczowe: konsumenci, wirtualna rzeczywistość, proces podejmowania decyzji zakupowych