



## WHAT WE REMEMBER FROM SOCIAL MEDIA. MEMORY OF ADVERTISEMENTS ON SOCIAL MEDIA WEBSITES – A RESEARCH IN THE PARADIGM OF BACKWARD FRAMING

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### Abstract:

For many years human memory and its character has been the area of research interests of neurologists, psychologists and psychiatrists. Importantly, proper understanding of how our memory works is an issue that is significant from cognitive point of view and also for promotion and advertising specialists. In order to achieve the objectives of marketing communications – informational, persuasive and competitive objectives – an advertising addressee has to rightly read, remember and recall an advertisement in the phase of making the purchase decision. This process is exposed to endogenous and exogenous noises and distortions. One of the most intriguing types of memory errors is a situation, where previous experience is distorted by the information coming later on (retroactive interference). This phenomenon is being researched in the paradigm of backward framing. Works on this type of memory distortions were pioneered by Braun with co-researchers (e.g. Braun, Zaltman, 1997; Braun-LaTour, LaTour, 2005). In Poland, research on the impact of emotions on the evaluation and memory of advertisements were conducted i.a. by A. Grochowska and A. Falkowski (2008). The source literature cites many examples of research on traditional advertising carried out in the paradigm of backward framing (i.a. Kamins, Marks 1987; C. Hu, S. Cole, 2016, Falkowski 2017). However, there is a cognitive gap in case of this type of research being carried out in the internet environment. In case of online marketing communications, one should particularly note the promotional activities carried out on social media websites. Such communication, whose share in the market grows year by year, is characterized by certain specificity. It may be of great importance for memory and evaluation of advertisements published by that channel. In particular, they include: displaying advertisements in the form of “suggested posts”, which are additionally recommended by friends, interlarding promotional contents in memories and updates of friends displayed in news feed. The main purpose of the research being presented herein is checking how recommendations of friends and famous persons affect memory and evaluation of advertisements and how memory and evaluation of advertisements is

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distorted under the impact of the information coming afterwards. 102 respondents from Poland took part in the pilot research. The results indicate that there is a relationship between the contents presented on Fan Page and the subsequent product evaluation: the respondents who read comments and opinions of other internet users evaluated a non-existing product better than those who saw only an informational page.

**Keywords:** social media, advertisements, paradigm of backward framing

## 1. Introduction

*“Memory’s vices are also its virtues, elements of a bridge across time that allows us to link the mind with the world.” Daniel Schachter, The Seven Sins of Memory, 2003.*

Cognitive processes and their importance for marketing and advertising are the subject of scientific research falling within economy disciplines, management and quality sciences, but also psychology and sociology. One of the special processes, which is extremely important for consumer decision-making process, is memory. Due to complexity of memory functions, they are often subject to distortion - it is possible, among others, in situations called “information overload”. This phenomenon especially affects the social media users who - when visiting a given social media site - receive thousands of photos, videos, information, but also advertisements. The author of this paper identifies these functions - both the existence of certain types of memory errors and also checking the meaning of the “social factor” - recommendations by other internet users for the formation of mental images of products in social media.

## 2. Advertisements on social media websites

Functioning of social media websites is mostly based on the formation of virtual communities, which communities use communications mechanisms to establish relationships between their users in cyberspace. According to Manuel Castells, virtual communities are “*networks of bonds among people, which are the source of social life, support, information, sense of affiliation and social identity*”. From business point of view it is important that functioning of such community can be inspired and creatively shaped by companies (Castells, 2003).

The subject literature offers many social media definitions. One of them is that proposed by Philip Kotler, who defined it as websites whose co-authors are the users themselves and which enable them to express themselves and cooperate with others (Kotler, 2010).

The world’s social media users are dominated by young people under 34. Social media can be used to build a brand image and to change buying behaviours in that group in respect of the lifestyle of Millennials, which is characterised, among others, by

willingness to be in touch with the reference group, share digital contents and by the custom of fast action and immediate response.

The purpose of participating in a social networking service is to establish and maintain relations with other users, who are known from real life or have similar interests, hobbies or problems. The basic functions of each social networking service include (Sanak-Kosmowska, 2018):

- creating possibilities to enter into and maintain contact with the other community members;
- self-presentation of a given user through a set of data presented in its profile;
- presenting the contents prepared by user within a given group or the whole community;
- monitoring of activity of the other group members and evaluating it.

The above functions can be performed both by individual users and by companies and institutions which decide to incorporate social media to their online marketing communications strategy.

Joshua Porter notes a different way of understanding social media<sup>ii</sup>. He emphasises the fact that social network transforms towards more mature social software. In order to illustrate this thesis, Porter notes a dynamic development of communication from one-way to multiway:

- one-way communication, read only - in 1995 there were about 18,000 websites; they all constituted a one-way communication: a user could only read their contents, but he could not tamper with it at all or change their contents - information came only from website creator to its reader, there was no room for feedback;
- two-way communication, enabling to read and write contents - the software development resulted in the possibility to save and store contents on WWW pages; this innovation made it possible for statistical pages to transform into dynamic applications and to create forms and surveys to be filled out by users;
- multi-way communication, which is possible by means of internet social applications - they are characterised by public content which changes under the impact of data entered by many persons; hence communication is not only between given application and person, but also among the persons who use the same application.

Philip Kotler (2010) defines the recent years as an era of „*joint participation and cooperative marketing*”, leading to the creation of „*Marketing 3.0*”. The main drive of that change, according to Kotler, are the “*new wave*” technologies. Starting from the year 2000, they have made their way through trade markets and more and more dominate these markets. It is the said technologies that make it possible to combine individual and group interactivity. In his opinion it is made up of three basic elements: widely available personal computers and mobile phones, low and still dropping costs of internet

connection and open software. The above list should be completed by more and more common - often free of charge - access to wireless internet (Wi-Fi network). It's these elements that users can express themselves with, share their opinions with others and interact with companies. Scott McNealy, the president of Sun Microsystems, cited by Kotler, called such phenomena joint participation - customers no longer are only consumers and communications receivers, but they can also produce information. Consumers - in this measurement and stream of deliberations - become consumers of new type. In the opinion of Kotler, it is just the social media that play a special role in the development of "new wave" technology and joint participation. He proposed to divide social media in two broad categories:

- expressive social media: blogs, portals: Twitter, YouTube, Facebook;
- cooperative social media: for instance Wikipedia.

As social media become more and more communicative, consumers' impact on other users is greater day by day thanks to sharing own opinions and thoughts with them. This may mean that the impact of corporate advertising on consumer behaviour will decrease, while the importance of recommendations or opinions of friends will increase. Due to the fact that social media are relatively cheap and impartial, the distribution of market forces is also subject to changes: communication with customers and their opinions become important factors determining the financial success.

The world's most popular social media sites include: Facebook (over 2 billion users), YouTube (1.9 billion), Instagram (1 billion), TikTok (500 million) and messaging applications, such as: WhatsApp, Messenger and WeChat (Buffer, 2019). The subjects of social networking sites can be different, hence they can perform different functions. Their review is presented in Table 1.

**Table 1:** Comparative analysis of social media websites

Website type	Synthetic characteristics	Website example	Examples of possible marketing activities
Social media websites	Facilitate internet users to contact each other, exchange news, photos, videos, share information and form groups by common traits	Facebook, NK, Instagram, Snapchat, Pinterest, Google+	<ul style="list-style-type: none"> <li>• building a community around the brand</li> <li>• acquiring its committed members</li> <li>• raising the brand awareness</li> <li>• building an image, communication with customers</li> </ul>
Video websites	Make it possible to post videos on portals and to invite others to watch them, comment on them and give their opinions	YouTube, Wrzuta, Vimeo	<ul style="list-style-type: none"> <li>• product information</li> <li>• supplementing the text communication with the environment</li> <li>• image-oriented activities</li> </ul>

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Corporate blogs	An internet diary kept on a regular basis, dedicated to the life of an organisation and the activity of a given company or brand	Blogs created by means of the blog platforms: WordPress, Blogspot, Drupal Gardens, Blogger	<ul style="list-style-type: none"> <li>• ability to communicate with customers</li> <li>• creating and shaping the company image</li> <li>• informational function</li> </ul>
Social media websites dedicated to professional career	Websites concentrating professionally active persons or those who look for a job, facilitating the exchange of professional experiences	LinkedIn, GoldenLine, Profeo	<ul style="list-style-type: none"> <li>• recruitment of employees,</li> <li>• image-oriented activities</li> </ul>
Blogosphere, private blogs	Virtual diaries kept by private persons, some of them are related to specific subject area, e.g. the new media, cooking, children	Blogs created by means of the blog platforms: WordPress, Blogspot, Blogger, Drupal Gardens	In case of establishing cooperation with a blogger and promoting a brand/product on his blog: <ul style="list-style-type: none"> <li>• brand awareness increase</li> <li>• image improvement</li> <li>• sales increase</li> </ul>
Microblogs	Provide for publication of real-time brief information visible for followers of a given profile	Blip, Twitter	<ul style="list-style-type: none"> <li>• fast and two-way communication with customers</li> <li>• informational and promotional function</li> </ul>
Geolocation websites	Make it possible to inform friends about the actual place of staying and to find news about attractive places and promotions offered nearby	Google Maps, Facebook Places, Foursquare, Tinder	<ul style="list-style-type: none"> <li>• promotion of products and services offered in the location of current stay</li> </ul>
Crowdsourcing websites	Websites providing for exchange of ideas among customers and company and for evaluation and giving opinions of products	Bank Pomysłów BZ WBK, My Starbucks Idea, SlideShare	<ul style="list-style-type: none"> <li>• acquiring knowledge about customers</li> <li>• acquiring new ideas</li> <li>• marketing research</li> </ul>
Discussion forums	Websites providing for commenting on their contents, posting opinions and referring to opinions of other users	Ask, discussion forums of the portals: Onet, Gazeta, Interia, PEB, Precyl	<ul style="list-style-type: none"> <li>• informing about new products</li> <li>• image-oriented activities and PR</li> </ul>

Source: Own elaboration.

The companies which decide to incorporate websites to their marketing communications can perform through them the main function, consisting in “ensuring constant existence of the company on the market” in virtual environment (Wiktor, 2016, p.53), the primary

functions, as well as particular functions resulting from social media specificity. Social media websites and portals, due to their specific nature, create ideal conditions for the performance of informational, educational, persuasive and competitive functions. One should note in particular the persuasive function, which enables companies to use different tools of promotion, including many advertisement formats.

The circumstance for choosing the social media site Facebook as the area of research in this paper is its popularity expressed in the penetration rate on a global scale, as well as on the Polish market and the possibility to carry out the marketing communication of a company. In order to get to know the functioning of that site, the author of this paper adopted as a starting point its genesis and the process of quality changes - from a messaging application for students to a global platform forming a complex and still broadening network of connections between users.

The project named Facebook was developed and launched on July 4<sup>th</sup>, 2004 by Harvard student Mark Zuckerberg. At first the site was addressed only to students of secondary and higher education schools in the USA and was a simple website facilitating finding friends in virtual world, adding and exchanging photos and posting brief information. Over time the portal has been enriched by additional functions and applications - the functions recently launched are for instance the geolocation function Facebook Places, a platform for servicing of advertisements posted on the website or an advanced tool used for the management of company profiles. Facebook soon stopped being only a website dedicated to friends. The creation of business cards on the website and fan communities, the ability to launch online sale within the website, as well as rich offer of advertising tools caused that the website was considered in marketing communications of many companies.

A company profile on a social media portal is in fact a tool for a company to build relations with the environment, create its image and influence fans i.e. the persons who liked a given brand. Company webpages on Facebook, called fan pages, are one of the first marketing tools offered by the website. Despite the time passing by, they are still the most popular way of promotion - in 2014 they were used by more than 30 million companies all over the world. Fan page can perform many business functions, but the most important is the one connected with customer communication and marketing services. It also comprises an important function connected with building the brand loyalty. Customers, after establishing relations with the brand (for instance by buying a product or service) may continue the "acquaintance" on Facebook. A perfect example is the company GoPro, which on a regular basis posts on its page (7.4 million fans) materials made by customers. An interesting example of performing marketing functions by fan page is also direct sales - it is practised for instance by Tchibo Polska. In their posts administrators direct fans to online shops, to a direct purchase offer. Customers who like a given business on Facebook often share their opinion on the products or services offered. It is another very valuable function of fan page. Opinions can be either positive (it is worth enhancing them and using in marketing communications) or negative. The

latter should be used to define the areas which can and should be corrected in order to improve the marketing communications efficiency.

Fan page, being an affiliated page of selected brand or company set up by its representatives on Facebook, often serves as WWW website. On the timeline, i.e. on home page, apart from a photo, which is usually big, there are also working hours, address with localisation map, contact data and information about which friends like and visited the selected company (i.e. checked in at the address specified in the description using the *check in* function). Fan page also makes it possible to post an unlimited number of photos and videos (visible in the tab photos). The affiliated pages, discussed herein, are very well positioned in the Google search engine by so-called brand phrases, i.e. phrases containing name of company, product, etc. Fans may “like” and comment on a given brand or product page, as well as share the information provided on it, by publishing it on the profile page or by posting it on the page of their friends. The creation of a brand page itself is free of charge, administrators may also publish any contents on the profile - such as text, photos, videos or links to external sources. The purpose of such publications is acquiring the largest possible reach and engagement: both in an organic way (thanks to attractiveness and original character) and against payment by way of a properly configured advertising campaign. Advertisers may choose from among a number of advertisement formats, decide about its frequency and the context displayed, and most of all address it to a properly selected target group (by demographic, geographic and behavioural targeting). As far as advertisement structure is concerned, it is worth underlying the role of recommendations or more broadly speaking of the “social proof” - the research confirm that positive reviews, recommendations of internet users and a high number of followers have a positive impact on brand perception by persons not having any experience with it before (e.g. Turcotte, York, Irving, School, Pingree, 2015).

#### **4. Memory of advertisements and memory distortions**

Human memory, due to its character and structure, may be, in a relatively simple way, distorted (e.g. Maruszewski, 2005). This phenomenon to a large degree concerns autobiographical memory - the one related to memories of personal life, as well as prospective memory (relating to what we have to do in the future) and semantic memory. The distortions, discussed herein, may appear at different stages of the memory process, that is during encoding, storage and retrieval of information (Krogulska, Barzykowski, 2013).

In the lexicon *Psychologia pamięci* [*Psychology of memory*] memory distortions are called “*changes in the content of remembered information*”, which are manifested in “*errors in recollections*”, Roediger and McDermott (2000) treat this term as a synonym of “*memory illusions*”. Roediger (1996). *Słownik psychologiczny* [*Dictionary of psychology*] dated 1964 contains the following definition of illusions: “*In case of sensory perception ‘a subjective change in an objective content’ or actual sensory data; in case of memory a subjective falsification by adding, omitting or replacing in recalling of a future experience*” (Drewer, 1964). The present

approaches exclude the content changes resulting from omissions from the scope of memory distortions or illusions (Roediger and McDermott, 2000).

The subject literature most frequently divides memory distortions in two types (Niedzwieńska, 2004):

- 1) Cognitive distortions, being an effect of human cognitive system and its characteristic data treatment processes.
- 2) Motivational memory distortions, being an effect of specific motives that drive the person remembering. It can be e.g. willingness to keep a coherent picture of oneself.

The first category means that a person doesn't recall a future event or its fragment. In the latter case a person recalls elements of an event which in fact did not occur, or recalls an event which did not take place at all. The term of memory illusions was shaped by an analogy to a much better known category, which is perceptual illusions (Roediger, 1996). The term "illusions" was also generalised to other processes, such as inference and decision-making, noting that in many cases they deviate from a certain norm of correctness of reasoning or a state of fact (Kofta and Szustrowa, 1991; Pohl, 2004). Cognitive illusions "*jeer at our beliefs that what we perceive, recollect and know is in entirety in accordance with the state of external world*" (Roediger, 1996, s. 76). Pohl (2004) distinguishes five characteristics defining this category. Firstly, an illusion leads to a perception, judgement or memory which highly deviates from reality (is biased), whereas reality as a criterion of correctness can be construed in two ways. In case of optical and memory illusions, it is created by external stimuli, while in case of inference and decision-making processes, the frame of reference is made by certain norms of correctness. Secondly, in illusions a deviation from normative standard has to be systematic, not random. This means that the knowledge of specified conditions makes it possible to predict the occurrence of an error. Thirdly, illusions have to appear in an unintentional way, meaning without specific instructions or intentions of a person. The persons who are under illusions are therefore convinced that they inferred, made a decision and recollected information in the right way. The fourth characteristic defining an illusion is a consequence of the third one. Avoiding illusions has to be very difficult and sometimes even impossible. According to Pohl, cognitive illusions distinguish themselves as something special in functioning of the human cognitive system and attract attention of researchers as something unexpected.

D. Schacter (1999), proposes in turn to divide memory distortions in those related to omitting or transforming. The author includes in the first group - transience, absentmindedness and blocking, while in the other one - misattribution, suggestibility, bias, and persistence. Table 2 presents detailed characteristics of errors considered in the conception of the seven sins of memory by Schacter.

**Table 2:** The seven sins of memory by D. L. Schacter

Memory error	Characteristics
The sin of transience	Forgetting over time of what happened. The first information is forgotten as soon as after 20 seconds from exposure. Forgetting is caused by blurring the past data with new information.
The sin of absentmindedness	Forgetting daily minor things. It is caused by erroneous encoding or insufficient attention or by the problem with extraction of memories.
The sin of blocking	Blocking of the information of which we know that we know it (the <i>tip-of-the-tongue</i> effect) by other information which at a certain moment attract our attention.
The sin of misattribution	Combining different elements into a uniform untrue wholeness by “supplementing” gaps in memory by incorrect data or events and imagined facts which fit into the memories.
The sin of suggestibility	Including a misleading information from other sources in personal memories and evaluations due to memory tendency to change statements relating to the past under the influence of infoglut, incorrect information or suggestive questions.
The sin of bias	Transforming events from the past in such a way, so that they would comply with the current views
The sin of persistence	Intrusive recollection of certain event because of supranormal persistence of a given memory trace preventing the natural memory fading process.

**Source:** Own elaboration based on: Schacter D.L. (1999, Polish edition: 2003): *Siedem grzechów pamięci [The Seven Sins of Memory]*, Warszawa: Państwowy Instytut Wydawniczy.

The author of this paper will focus in particular on the types of memory distortions whose occurrence is typical for memorisation of advertising messages.

Recollection of experience details is based - according to many authors – on the inference and attribution processes connected with information source monitoring. The foregoing is noted both by representatives of the two-component cognition theories (Kelley and Jacoby, 2000) and the researchers analysing experience such as „remember” (Dewhurst and Conway, 1994). The model was built around the assumption that there must be special mechanisms facilitating the differentiation of memory sources (for instance whether they are figments of thinking, imagination, or the results of external experience, own observations and human relations). The model authors assume that people don’t retrieve the abstractive labels that specify such sources, but memories are evaluated and attributed to specified source owing to the decision-making process which takes place during the retrieval (Niedźwieńska, 2004). The model assumes that:

- 1) memory representations reflect the treatment processes taking place during data acquisition,
- 2) the acquisition representation results in mental experience which may comprise memories of specific features such as perception details (for instance sound and colour), spatial and time information, semantic information, affective details (for

instance emotional reactions to events) and cognitive operations while experiencing,

- 3) different types of data acquisition processes (for instance perception, thinking, reading) and different types of events (for instance film, dream, observed accident) lead to memory representations that differ in afore-mentioned features in a characteristic way (for instance memories of imagined events usually contain less perceptual, time and spatial information than memories of perceived events and often contain information about potential cognitive operations, such as active generation and manipulation with optical imaginations while solving a problem),
- 4) characteristic differences between representations coming from different sources can be used to identify the source of mental experience.

In accordance with the model, recalling comprises the evaluations of quality and quantity of above features as compared to expectations as to the characteristics of memories from different sources. For instance, a memory containing many optical and spatial details and little information about cognitive operations will be attributed to an event perceived because usually memories of perceived events contain a lot of such details. Many decisions regarding the source of information are made fast and indiscriminately, based on the characteristics of activated memories. It means that people often identify memory sources during retrieval, not realising the decision-making process having taken place. In the model such evaluation processes are called heuristic processes (Niedźwieńska, 2004).

## **5. The paradigm of retrospective memory shaping**

The works on this type of memory distortions were initiated by Braun with co-researchers (e.g. Braun, Zaltman, 1997; Braun-LaTour, LaTour, 2005; cf.: Falkowski., Grochowska 2004). This phenomenon concerns the memory errors in case of which previous experience is distorted by information coming later. It may concern both physical properties of an object and its evaluation carried out by the person remembering. It is worth referring two experiments carried out by Braun and Loftus team (1998). In case of the first experiment, respondents evaluated the taste of chocolates: at first, by eating them from green packaging, and then by watching their advertisement in blue packaging. 45% respondents recognised the packaging colour of the chocolate being eaten as blue. In the second experiment it was checked how an own evaluation of a film trailer watched changed under the influence of a review read - positive or negative. It turned out that memory of previous film evaluations after reading a positive review changed towards the more positive opinion, while after reading a negative opinion - towards the more negative evaluation (Braun, Loftus 1998, cf. Falkowski., Grochowska 2004). It was also stated that the experience itself can be also subject to change - as in the case of changing the evaluation of orange juice taste under the influence of an advertisement (Braun, 1999). The above memory distortion under the influence of an advertisement may also concern a memory from the childhood, which was proved in the experiment of Braun La-Tour

and the team (2004). Researchers note the importance of time between particular encoding stages, and then the retrieval of information from the memory for occurrence of distortions (Braun-LaTour, LaTour, 2005). The research carried out by a Polish team (Falkowski, Grochowska, 2004) also indicated a significant impact of emotions accompanying the perception of advertisements. The research conducted so far concerned mainly the marketing communication implemented in the traditional model (press advertisement and TV commercial). Researchers indicate the specific character of memories remembered or recalled through social media (e.g. Bartoletti, 2011). The research subject also comprises the mechanism of forming mental images of a brand and its perception in the social media environment (e.g. Schivinski, Dabrowski, 2016). In the research presented in this paper the author identifies the types of memory errors - both those consisting in distorting and forgetting and those to which advertisements in the social media environment are exposed. The main purpose was to identify the impact of the type of contents presented on an affiliated page of the brand to its perception and correctness of the related remembered information.

## **6. The methodology of own research**

The research presented in this paper is a pilot research. The purpose of the pilot research (Bryman, 2008) was - besides the verification of the research hypotheses - checking if the questions are understandable for respondents and if the number of questions is appropriate and if any of the questions are skipped. At this stage of the research, respondents were presented an affiliated page of FMCG product - the energy drink Yabu, which is currently no longer available for sale. In addition, one of the control questions concerned experience with the product - only the persons with no previous experience with the brand were admitted to further stages. The questionnaire used in the research consisted of the following parts:

- 1) The survey of frequency and ways of using social media, as well as behaviours and opinions about advertisements in social media.
- 2) Exposure of an affiliated product page using A/B Test: respondents were displayed at random a brand page on Facebook containing only product information or containing reviews, opinions and recommendations of Facebook users.
- 3) Product evaluation - evaluation of estimated price, popularity, taste and willingness to recommend it to friends, carried out based on the exposure of an affiliated page.
- 4) The survey of memory trace persistence - of the details remembered by respondents concerning the brand exposed.

The research was conducted in August and September 2019 in online environment using the survey website Survey Money. The results were analysed in SPSS programme. 102 respondents were surveyed, including 69 women and 33 men, one person did not

disclose its sex. The majority of respondents were young persons: 65% respondents were under 25. The sample selection was purposeful.

## 7. Discussing the results

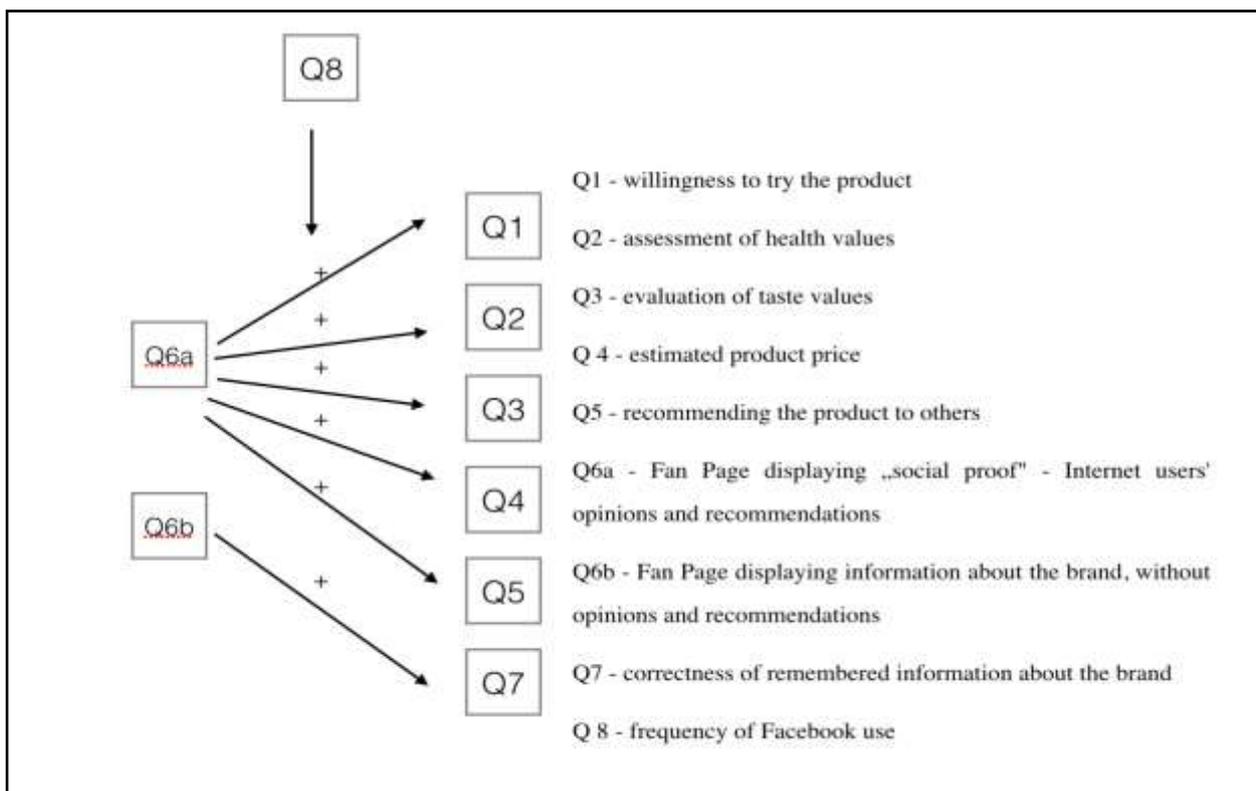
The following research hypotheses were subject to verification in the course of the pilot research:

**H1:** Presentation of positive opinions and reviews on a brand page in social media has a positive effect on the brand evaluation.

**H2:** Presentation of positive opinions and reviews on a brand page in social media has a positive effect on the occurrence of misattribution.

**H3:** Presentation of positive opinions and reviews on a brand page in social media has a positive effect on remembering of the brand information.

In order to verify the above research hypotheses the author of this paper developed a research model, which is presented on Figure 1.



**Figure 1:** Proposed research model  
 (Source: Own elaboration)

In the first research stage it was examined if frequency of use of social media websites affected the behaviour towards advertisements in social media. A statistical analysis was carried out in order to verify the above assumptions, using the method of canonical correlations. The results confirmed a positive relation between examined

variables; the R squared coefficient of determination for examined model was 0.93. In the course of the next stage it was checked which of the variables affected most the strength of correlation. The research results, as presented in Table 2, indicate a strong relationship between frequency of use of social media and treating it as a source of consumer information - checking opinions in social media before making the purchase decision, with particular focus on recommendations of friends, depends on frequency of using websites in general.

**Table 3:** The impact of the use of social media on respondent behaviour

The impact of the use of social media on respondent behaviour		
Variable	F-Ratio	p-Value
Paying attention to advertisements in social media	0.505	0.803
Checking opinions in social media	4.653	0.000
Checking recommendations in social media	3.121	0.008

**Source:** Own research (N=102).

A classic discriminant function analysis was carried out in order to verify the research hypotheses H1 and H2. It was assumed that respondents who saw the Fan Page version with recommendations, reviews and positive comments would evaluate the same brand higher - contrary to respondents who were showed only an informational fan page. In particular, it was assumed that the persons having the “social proof” - recommendations of other internet users - evaluate higher the qualities related to taste and health and they would want to try out the product presented. It was also assumed that such persons would be willing to pay more for that product and that they would be more eager to recommend it to friends. The developed model of discriminant function analysis based on a set of data Q1 - Q5 foresees well the value of the dependant variable Q6 (the type of presented social media). Two dimensions (vectors) were built in the discriminant function analysis by taking the Q1 - Q5 value of each case and then multiplying them by constant coefficients. The purpose of the transformation was to find the best distribution between the values reached by Q6 and it is called classification function. Subsequently, it was checked how many percent cases correctly identified the model developed. Based on conducted analysis it can be stated that the proposed model correctly identifies 75% cases.

The results are presented in Tables 4 and 5.

**Table 4:** The classification matrix of transformed variables (1, 2 and 3).

The classification matrix				
	1.000	2.000	3.000	% explanations
1.000	35	12	0	74
2.000	12	42	0	78
3.000	0	1	0	0
Total	47	55	0	75

**Source:** Own research (N=102).

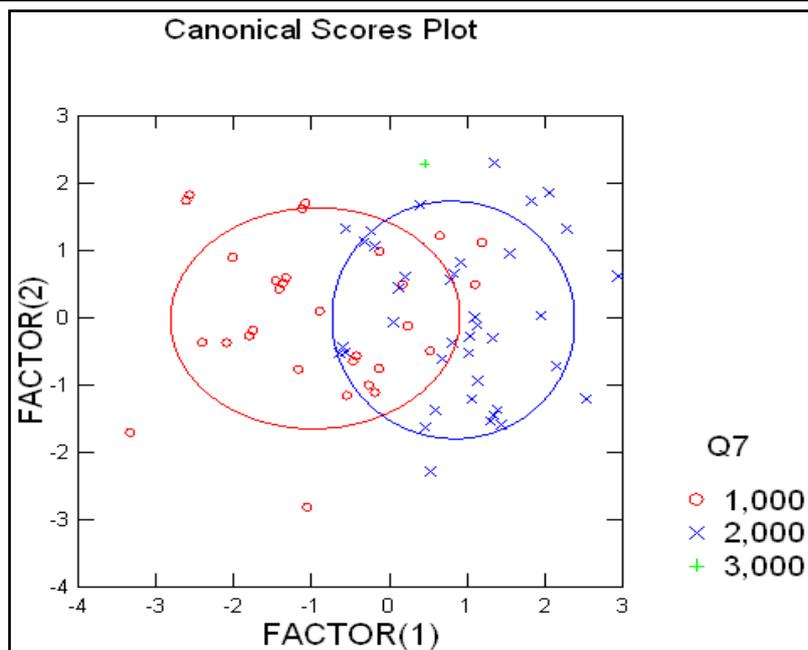
**Table 5:** Model statistic

Test statistic					
Statistic	Value	Estimated value F	df		p
Wilks's Lambda	0.527	3.396	20	180	0.000
Pillai's Trace	0.495	2.995	20	182	0.000
Lawley-Hotelling Trace	0.855	3.803	20	178	0.000

**Source:** Own research (N=102).

Figure 2 shows Q6 value distribution chart based on all variables Q1-Q5 in the model. The results confirm the assumed research thesis – the declared evaluations of the product presented based on fan page exposure are higher than in case of presenting opinions and reviews of internet users on it. In addition, respondents having the “social proof” want to pay for a product and are more eager to recommend it to friends.

Also, it can be stated that the surveyed respondents experienced misattribution - without any experience with the brand they described the product taste and quality only on the basis of its Facebook page which they had seen before (the page was displayed only for 3 seconds and it was impossible to return to it later). It should be emphasised that relatively few people answered “I don’t know” or “I have no opinion” - it was just 12% in case of those who saw the variant with recommendations and 28% in case of the affiliated page of informational character. Nevertheless, due to small size of the sample it is difficult to draw general conclusions - this problem requires further research.



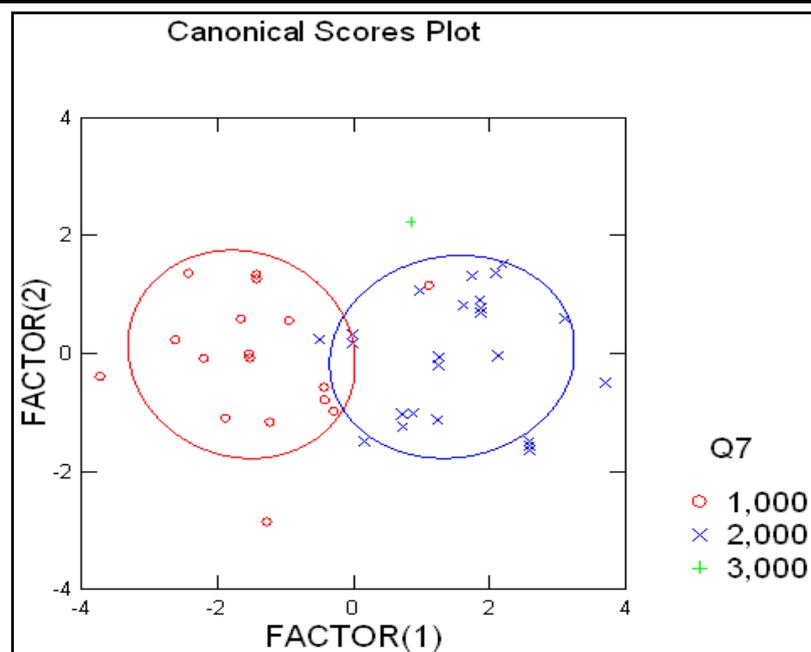
**Figure 2:** Variables distribution chart in the examined model  
 (Source: Own research (N=102))

At the next stage it was checked if that effect was stronger among persons who indicated Facebook as the most frequently social media site. The conducted discriminant function analysis confirmed that thesis: the model narrowed to such cases obtained 95% explanations. The test statistic is presented in Table 6. Despite small size of the sample being the research limitation, it is worth noting this dependence. It may be suspected that the users being “hard users” on that website already have certain habits, the effect of which if just scanning of reviews and creating mental images of brands based on them.

**Table 6:** Model statistic subject to Facebook users only

Test Statistic					
Statistic	Value	Approx. F-Ratio	df		p-Value
Wilks's Lambda	0.263	4.373	20	92	0.000
Pillai's Trace	0.798	3.118	20	94	0.000
Lawley-Hotelling Trace	2.574	5.792	20	90	0.000

Source: Own research (N=27).



**Figure 3:** Variables distribution chart in the examined model subject to Facebook users only  
(Source: Own research (N=27))

The final research stage involved the verification of hypothesis H3. It was assumed that the persons who saw a fan page that was only informational would remember more information concerning the presented brand than those whose attention was focused on reviews and recommendations (Q7). However, the conducted statistical analysis did not confirm that dependence: the type of presented fan page had no impact on correctness of remembered brand data ( $p=0.14$  R squared =0.067). The hypothesis should be rejected. It is worth underlining that only less than 15% respondents responded properly, indicating the right elements, colour and properties of the product and information about it. Majority of errors had the form of distortions - as logotype colour respondents indicated e.g. the colour of the writing on the photo type cover photo (profile background).

## 8. Summary

The research presented in this paper refer to the subject area of cognitive processes taking place in minds of e-consumers in the social media environment. In particular, the research comprised a memory error identification sample, with regard to memory errors which might take place when remembering and recalling information about products advertised in social media. The author of this paper indicated an important role of exposing the social proof - recommendations and reviews of other internet users. It was identified that the trust to them grows along the frequency of using the examined websites. The research results indicate the common occurrence of memory errors (relating to attribution and distortions), and concurrently they show how fast and easily consumers create mental images of the brand they know only from social media. Despite

the lack of previous experience, most of respondents evaluated the product by, among others, commenting on its taste, only on the basis of information coming from Facebook.

At further research stage it is worth thinking of the way to evaluate credibility and reliability of reviews and opinions provided by internet users. One should also think of existing memory distortions and their source.

It is worth emphasizing that due to small sample size and pilot character of the research presented hereinabove, the above conclusions are only initial and constitute a starting point for further studies on the subject area in question. It is also worth thinking of modifying the research procedure - in this case respondents commented on non-existing product with which they had not had any experience before. In controlled conditions it will be possible to carry out similar research with products actually experienced by respondents, not only those seen on computer screen. The theses presented in this paper require further verification - the next element which is worth checking is manipulation with the type of presented product. Sex and age of respondent can be also an important factor - such conclusions can be drawn by examining a bigger group of respondents.

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