Human TECHNOLOGY

ISSN: 1795-6889

https://ht.csr-pub.eu Volume 20(2), September 2024, 399–415

CONSUMER EMOTIONS, PURCHASING DECISIONS, SHOPPING TIME, AND PATHS IN VIRTUAL REALITY

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Abstract: *This article presents virtual reality research findings on customer emotions, product choice, store time, and distance traveled. Advanced tools, such as virtual reality and EEG technology, were used, as well as both qualitative and quantitative approaches. Data is primarily derived from participants contributing to a broader research project that analyzes both conscious and unconscious aspects. The study revealed that emotions significantly impact purchases in vegetables, fast food, and baked goods sections, with correlations to customer distance in the virtual store. The study is limited by the high data collection cost restricting the sample size. Nevertheless, these findings can guide future researchers interested in this technology. Store managers can leverage these insights to enhance sales strategies and store layouts, aiding customer decision-making. This study attempts to provide a fresh perspective on the research problem by integrating virtual reality (VR) and electroencephalogram (EEG) equipment in the Fast-Moving Consumer Goods (FMCG) sector, offering new results that have not been previously published.*

Keywords: *emotions, consumer behavior, virtual reality, purchasing decision, shopping time and paths.*

DOI: https://doi.org/10.14254/1795-6889.2024.20-2.8

INTRODUCTION

The current breadth of knowledge about consumer behavior in the market is the result of empirical research conducted over the past few decades and the evolving views on consumption, consumers, and their market behavior (Karabiyik & Elgün, 2022; Oszust & Stecko, 2020; Perez-Vega, Hopkinson, Singhal, & Mariani, 2022). Consumer "circulation" in two worlds - real and virtual – is becoming an important research subject. From a scientific point of view, therefore, it is now crucial to get to the source of information, i.e., the human brain. It is thus interesting to study how behavior and emotions in the real world are transferred to the virtual world. Modern technological solutions make it possible to study and observe internal factors and indicators of behavior. Examples include such methods as eye tracking, virtual reality, and electroencephalogram (EEG) devices. It is also possible to combine different tools to get results from different internal impulses (Biercewicz, Chrąchol-Barczyk, Duda, & Wiścicka-Fernando, 2022). Eventually, an alternative methodology was employed, whereby applied research methods were integrated into the analytical process and EEG and VR devices were combined. This approach yielded a new application of these tools. By integrating VR technology with EEG data collection, researchers have gained deeper insights into the neural processes behind emotions and decision-making in a more immersive and realistic setting (Hofmann et al., 2021; Jung, Choi, Kim, Cho, & Han, 2022). This innovative approach has paved the way for exploring how people engage with virtual environments and how their emotional states impact their behavior (Basbasse et al., 2023; Xie, Chiang, Xu, & Gong, 2023). Moreover, combining EEG with VR has allowed researchers to detect neural emotional states triggered by interactions in virtual environments, providing a deeper understanding of the dynamics of human emotions in immersive contexts (Jin, Kim, Moore, & Rothenberg, 2021; Sun, 2023). Additionally, integrating EEG data with inertial sensing has demonstrated potential to enhance subject-independent emotion classification in VR, underscoring the possibilities for improving emotion recognition through advanced technological integrations (Wan et al., 2021).

As a result of the evolution of consumer behavior research, there are numerous definitions of the concept, and contemporary definitions are usually not assigned to a single scientific discipline and are interdisciplinary (Babin & Harris, 2023; Baumgartner, 2002; de Mooij & Hofstede, 2011). As one of the comprehensive definitions of consumer behavior, we can point to M. de Mooij's definition (de Mooij, 2019), in which research elements are exposed, such as attributes of the person and the decision-making process indicating the use of psychology and sociology; analyzing and managing choices, which indicates the viewpoint of sciences such as management and economics; and values and culture, which are the result of using cultural studies for analysis.

Of particular importance in modern consumer behavior research, as already mentioned, is psychology, which uses scientific research on human, social, cognitive, and emotional factors to better understand the behavior of individuals. A psychological approach to consumption research has pointed to the need to recognize the consumer's psychological profile in analyzing his market behavior. This profile is the influence on market behavior of the consumer's personality, attitudes, habits, opinions, motives, emotions, norms, and values, which are a set of intangible factors (Haugtvedt, Herr, & Kardes, 2008; Mullen & Johnson, 2013; Schiffman, O'Cass, Paladino, & Carlson, 2013).

The contemporary stage of research on consumer behavior, especially consumer purchase decision-making, which took shape in the 21st century, is not uniform and consistent. Attempts are being made to categorize concepts, analyze information processing, study consumer loyalty and experience, and capture consumer ways of thinking in patterns (Halkias, 2015; Ishak & Abd Ghani, 2013; Jain, Aagja, & Bagdare, 2017; Novak & Hoffman, 2009; Zaltman & Zaltman, 2008).

Analyzing the emotions that accompany market decisions has also become an important aspect of consumer behavior research, which has continued since the 1980s (Achar, So, Agrawal, & Duhachek, 2016; Foxall, 2011; Hirschman & Stern, 1999; Laros & Steenkamp, 2005; Niedzielska, 2016; Richard, Zynep, & Joseph, 2002; Williams et al., 2014). Emotions are also believed to be an important factor influencing consumer behavior including time spent in the store and moving through store aisles. This factor belongs to the group of internal factors related to the consumer's person, which are individual and subjectively affect decision-making (Pawle & Cooper, 2006). Individuality means that consumer behavior cannot be 100 percent predicted.

Emotions, from a psychological point of view, denote a set of changes including physiological arousal, feelings, cognitive processes, and behavioral reactions that occur in response to a situation that an individual perceives as important (Foxall, 2011; Izard, 1991; Reisenzein, 2007; Williams et al., 2014). In addition to emotions, affect and mood are also distinguished. Emotions are short-lived, involve a specific object or subject, and can be very intense (O'Shaughnessy & O'Shaughnessy, 2002). Moods are long-term in nature, are not tied to a specific situation or subject, and their intensity is lower than that of emotions (Ekkekakis, 2012). Affect, on the other hand, is a positive or negative very short-lived reaction, often automatic and not subject to control (Achar et al., 2016; Ekkekakis, 2012; Laros & Steenkamp, 2005; Williams et al., 2014).

The emotions that accompany consumers in their shopping and purchasing decisions can also result from, be shaped by, or be stimulated or mitigated by the impact of other direct and indirect determinants (Mullen & Johnson, 2013; Szymańska, 2017; Verduyn, Mechelen, & Frederix, 2012). The role of emotions is evidenced by the fact that more than 80% of decisions are made under the influence of emotions (Rahmanian, 2013)

Explaining consumer behavior before making a purchase decision, or the motives behind the choice is a complicated process (Khan, Rezaei, & Valaei, 2022). According to a study conducted at the University of Amsterdam, simple decisions are made with thought, and complex decisions are made intuitively (Haslam, 2007). Emotionally driven purchases are most common in the FMCG product group (Matysik-Pejas & Szafrańska, 2011).

In addition, emotions can not only determine the choice of a product or brand, making the final purchase decision, but also how long the customer will stay in the sales location, or what distance he will travel to find the right product, in his opinion. The existing literature offers a multitude of definitions of emotions, as well as a detailed account of the aforementioned issues. (Achar et al., 2016; Alsharif, Md Salleh, & Baharun, 2021; Ceccacci, Generosi, Giraldi, & Mengoni, 2018; Dawson, Bloch, & Ridgway, 1990; East, Lomax, Willson, & Harris, 1994; Gaur, Herjanto, & Makkar, 2014; Guo, Wang, & Wu, 2020; F. Hansen & Christensen, 2007; Hui, Inman, Huang, & Suher, 2013; McDonald, 1994; Petrosky-Nadeau, Wasmer, & Zeng, 2016; Spanjaard, Young, & Freeman, 2014; Wang, Guo, Wu, & Liu, 2019). Therefore, conscious companies, more and more actively, meet the

emotional attitudes of consumers by creating a positive consumer experience with a product or brand (Dimitrakopoulos, Uden, & Varlamis, 2020).

Technological developments create new opportunities for consumer emotion research. Nowadays, not only observation is used, but also tools that study emotions through brain waves (electroencephalogram) (Amran et al., 2022), voltage and eye movements (Eyetracking) (Chernyak, Chernyak, Bland, & Rahier, 2021), or pulse (pulse meter), but also brain image (CT scanner) or the most modern real-time emotion recognition (Minaee, Luo, Lin, & Bowyer, 2021), or in augmented reality (de Amorim, Guerreiro, Eloy, & Loureiro, 2022). Synergy in getting information from different sources when it comes to emotions is key to understanding what the consumer is feeling, for example, when shopping (Spanjaard & Freeman, 2012).

Important in designing the consumer experience is the place of purchase and the arrangement of the sales area, so that the entire store is conducive to converting potential customers into buyers and staying in the store as long as possible and to encouraging the consumer to navigate using the greatest number of shopping paths or routes. Such activities are referred to as Visual Merchandising (VM) also called the “silent selling technique” (Park, Jeon, & Sullivan, 2015). VM can be used by retailers in various categories, and after the strong development of modern technologies, also in the areas of e-commerce (Eroglu, Machleit, & Davis, 2003; Swanson & Everett, 2015). There is a discussion in the literature on the distinction between Visual Merchandising and 'store atmosphere' or 'atmospherics' where the differences and similarities of these concepts are shown (Basu, Paul, & Singh, 2022). This article assumes, following the authors indicated earlier, that these concepts are different but interact to form an integral store environment. VM creates a product strategy that relates to a particular brand, shelf, or entire store area. It is about display based on a product that is important to both manufacturers and retailers. Atmosphere refers to areas of the store and will refer to the activities carried out in its domain therefore the display throughout the store (Bhatt, Sarkar, & Sarkar, 2020).

The presented article attempts, based on research conducted in virtual reality, to determine the relationships occurring between customer emotions and product choice, time spent in the store, and distance traveled.

METHODS

Determining the relationships that exist between customer emotions and product choice, time spent in the store, and distance traveled was the goal of the study.
Three research questions were posed:

1) In virtual reality, do emotions influence purchase decisions?
2) In virtual reality, do emotions influence the longer time spent at the point of sale?
3) In virtual reality, do emotions influence the longer distance traveled at the point of sale?

In this research, we investigated the relationship between consumer emotions and various factors influencing purchase decisions within virtual shopping environments. The independent

variable of interest was the emotional state of the consumers, while the dependent variables included the time taken for decision-making (H_1), the duration spent in the virtual store (H_2), and the distance covered within the virtual store (H_3).

This study employed a qualitative research approach to explore the complex interplay between consumer emotions (independent variable) and dependent variable: H_1 the time it takes to make a purchase decision; H_2 time spent in the virtual store; H_3 the length of distance traveled in the virtual store.

Data was gathered from a sample of 30 participants, making use of innovative research tools, namely the EEG apparatus (electroencephalography) and VR technology. The study was qualitative in nature, and a simple random sampling method was employed.

The data collection process involved the utilization of EEG technology to capture participants' brainwave patterns and emotional responses, providing valuable insights into their emotional states. Additionally, VR technology was employed to immerse participants in a virtual shopping environment, enabling a realistic shopping experience that closely mimics real-world interactions.

The type of research was a qualitative study method, where the data was collected from 30 respondents.

The authors used the following research method: descriptive statistics: mean, Pearson correlation coefficient, Index of Arousal, and Valence.

Description of the study

The study followed the research procedure, which is illustrated in Figure 1. To select the sample (N=30), the place of residence was taken into account. Then, the research problem was formulated, which is presented at the beginning of the Methods section.

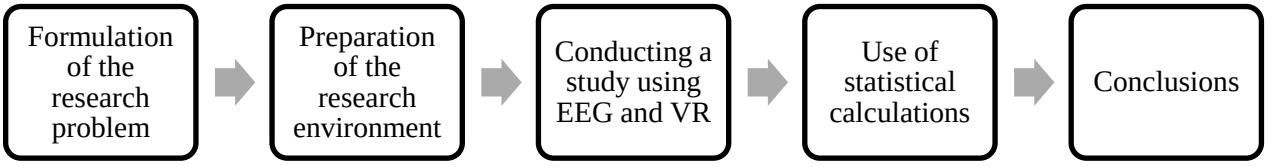

Figure 1. Research procedure

[Source: own collaboration]

The present study used the off-the-shelf store Enzone, which was properly adapted to the research needs and integrated into a VR environment using the Unity engine. The environment was carefully designed to reliably replicate a traditional (FMCG) shopping destination, in such a way as to reflect the real situations that respondents encounter in the real world. Before the study, participants were duly informed of the objectives and nature of the study and voluntarily consented to their participation (the study also received ethics committee approval).

The next step in the study was to present the participants with a short instructional video, which outlined exactly how to move, and pick up objects, and the purpose of the study, which was to do everyday shopping. After watching the instructional video, but before the actual survey, participants had the opportunity to practice the discussed activities in a virtual environment. This allowed them to acclimate and adjust to any disturbances that may have occurred during the study (Li et al., 2020).

Preparing the respondent to participate in the study involved the following steps: Placing the EEG cap (Enobio 20) on the participant's head, performing the connection of electrodes to the scalp, and attaching the HTC Vive Pro Eye virtual reality device.

The study used a cap equipped with EEG electrodes placed at F3, F4, according to the international EEG electrode placement system, known as the 10-20 system (Herwig, Satrapi, & Schönfeldt-Lecuona, 2003). To ensure signal quality and conductivity, the electrodes were placed on the scalp after wetting. To assess the quality of contact between the EEG electrodes and the scalp, impedance values were measured using Neuroelectrics® Instrument Controller (NIC2) software. The sampling frequency was 500 Hz.

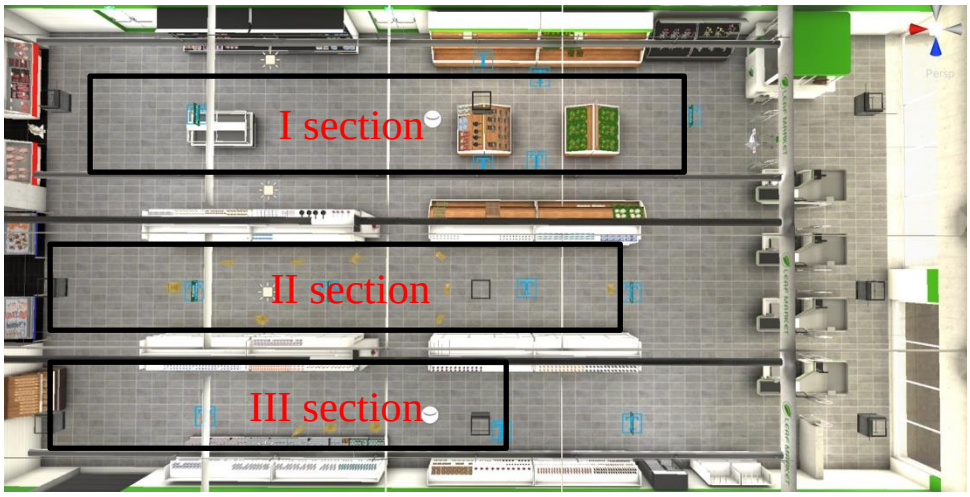

Figure 2. Store appearance

[Source: own collaboration]

The store consisted (see: Figure 2) of three aisles - the first aisle contained products from the fruit, vegetable, dairy, and fast food categories, the second aisle contained fish and beverages, and the third aisle contained baked goods and beverages.

The person navigated the store by using a teleportation method, where they directed their movement with a controller and, upon confirmation, their character was instantly moved to the desired location. This movement technique was implemented to address space limitations and minimize additional artifacts.

Before the respondents entered the virtual store, they were presented with a black screen for 60 seconds to calm their emotions and synchronize the brain waves of the study

participants. All activities performed by the participants were recorded and saved in an Excel file using OBStudio software. The collected data was further analyzed.

Measures

In the initial stage, products were assigned to the following categories: fruits, vegetables, dairy, fish, fast food, baked goods, and water. Using the event file, the respondent's purchasing decisions were determined. The event file contained information about each product taken in hand, the time the product was held, and the decision made by placing the product in the shopping cart. The level of emotion was then calculated, based on the arousal and valence index, which are presented in Table 1.

Table 1. Description of the incdes used in the study.

Name of the Index	Formula	Counting method
Arousal (McMahan, Parberry, & Parsons, 2015)	$\frac{F3_{Beta3} + F4_{Beta3}}{F3_{Alpha2} + F4_{Alpha2}}$	Registration value from electrodes F3 and F4
Valence (McMahan, Parberry, & Parsons, 2015)	$\frac{F4_{Alpha2}}{F4_{Beta3}} - \frac{F3_{Alpha2}}{F3_{Beta3}}$	Registration value from electrodes F3 and F4

The choice of these indicators for analysis is due to their potential use in studying consumer decisions in simulation (Moses et al., 2018; Szymkowiak et al., 2020).

RESULTS

All data from the VR environment was analyzed using Matlab R2019a. Analysis of the EEG signal began with the application of bandpass filtering to remove power grid interference, i.e. frequencies above 50 Hz. In addition, the signal was detrended and subjected to additional filtering using the Fieldtrip library. Then, raw EEG data was inspected for artifacts and noise, which included identifying and removing segments with muscle activity, eye blinks. Next, Independent Component Analysis (ICA) was applied to further isolate and eliminate noise components. Bad channels were identified and interpolated based on neighboring electrodes. Finally, the clean data was re-referenced to a common average to reduce reference-related bias. These preprocessing steps ensured that the EEG signal was of high quality before undergoing detailed analysis. The EEG signal was subjected to a spectral analysis using the Morse transform, which calculated the average peak frequency in periods of the frame (J. M. Lilly & S. C. Olhede, 2010; Lilly & Olhede, 2012; Wachowiak et al., 2018). To determine the alpha and beta frequencies, the signal was divided into the corresponding bands (Tsipouras, 2019) - Alpha (7-13 Hz) and Beta (13-25 Hz).

In the study, the indices presented were used to determine the emotions accompanying participants at specific product sections. In this context, four groups of emotions were

distinguished: emotions of delight (with positive arousal and valence indices), emotions of tension (with positive arousal and negative valence indices), emotions of disappointment (with negative arousal and valence indices), and emotions of lethargy (with negative arousal and positive valence indices).

In addition, calculations were made on the timing of decisions to buy or reject the product, and brain waves responsible for emotions were recorded from the moment of entering the area of the relevant department until leaving it. The results obtained are shown in Table 2.

Table 2. The time to decide on a purchase in a given category and emotions.

	Fruits	Vegetables	Dairy	Fish	FastFood	Baked goods	Drinks
Mean time [s] product purchase	2.30	2.08	1.95	1.46	1.73	1.41	2.10
Mean time [s] product rejection	1.25	1.95	2.21	3.44	2.20	3.62	2.63
Arousal	0.18	0.01	0.30	-0.03	0.40	0.84	0.22
Valence	-0.02	0.17	-0.08	-0.03	0.21	0.01	-0.01

The fastest purchase decisions were made in the bread and fish departments, with an average time of 1.41 sec and 1.46 sec, respectively. In contrast, the time to reject a product purchase in these departments was 3.62 sec and 3.44 sec. In contrast, the longest time to make a purchase decision was 2.30 sec in the fruit department. In contrast, the time to reject a purchase from this product category was the fastest at 1.25 sec.

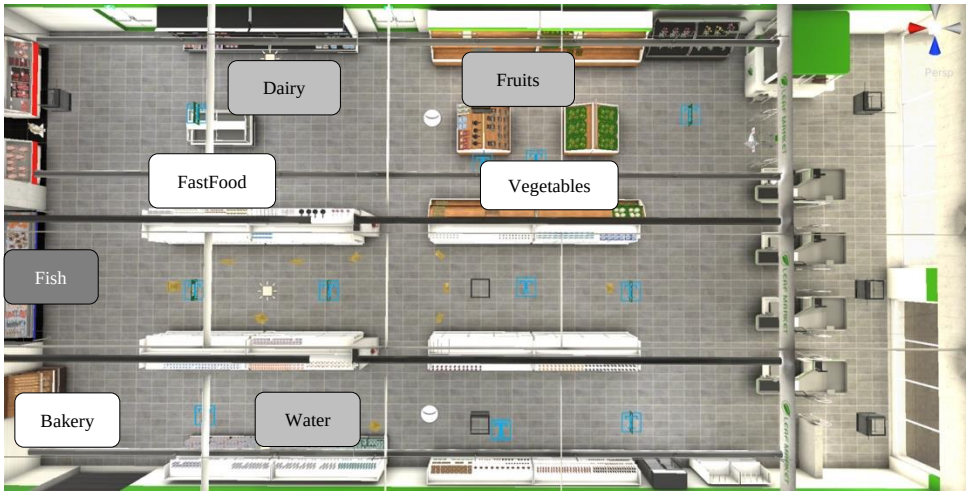

Figure 3. Emotions in individual purchasing departments

[Source: own collaboration]

In addition, it is worth noting (see: Figure 3) that positive emotions were in the vegetables, fast food, and baked goods departments (white color), and negative emotions were observed in the fruits, dairy, and drinks departments (light gray), and discouragement in the fish department. While shopping, each respondent walked an average of 77 meters and spent an average of 557.82 sec in the store.

Next, it was decided to see what average emotions accompanied individual respondents throughout the study. Accordingly, four groups of emotions were distinguished - positive Arousal and Valence scores correspond to feelings of joyful emotions (29% of respondents); positive Arousal and negative Valence scores indicate feelings of anxious emotions (25% of respondents); negative Arousal and Valence scores signify feelings of disheartened emotions (21% of respondents); negative Arousal and positive Valence scores represent feelings of tranquil emotions (25% of respondents).

The final step was to examine the correlation between Arousal, Valence, distance traveled, and time (Table 3). For this purpose, the Pearson correlation coefficient was used.

Table 3. Correlation between Arousal, Valence, path, and time.

Pearson correlation				
	Arousal	Valence	Path	Time
Arousal	1.000000	-0.041836	-0.009367	0.199626
Valence	-0.041836	1.000000	0.380150	0.212219
Path	-0.009367	0.380150	1.000000	0.691528
Time	0.199626	0.212219	0.691528	1.000000

In most cases, a weak or insignificant relationship was obtained. The exception is the relationship between Valence and distance traveled. It was obtained that if the Valence index increases then the distance traveled by the respondent increases moderately ($r = 0.38$). This means that in a situation where one walks a large number of meters in a store positive emotions increase. In the second case, a rather obvious conclusion was obtained, i.e. if the distance traveled in the store increases then we spend more time in the store ($r = 0.69$). A positive strong relationship was obtained in this case.

DISCUSSION

The authors analyzed the results concerning the influence of positive emotions on purchase decisions in virtual reality. In the research conducted, the results obtained confirmed this assumption about 3 product segments, i.e. vegetables, fast food products, and baked goods. The study of the impact of emotions on consumer decisions and behavior has been of interest to researchers for many years. As early as the 1980s, models appeared in which, when analyzing the consumer choice process, a significant role was attributed to emotional processes. Emotions themselves were seen as complex and socially constructed, and it was noted that in many cases the awareness of emotions in the decision-making process is followed by rationalization of purchases (Elliott, 1998). In the case of the studies conducted,

the rationalization was to shelve the product. Emotional perspective has also been studied in the context of assumptions that consumers do not use their cognitive and affective skills independently, but rather influence each other, and results indicated that the affective construct of emotion did not significantly influence purchase intention (T. Hansen, 2005). This assumption was not borne out in the case of the studies conducted, studies have shown that emotions influenced purchases. Still, other studies have looked at the relationship between emotions and choice and perceived risk in the purchase of products and services. It was shown that emotions can violate rational choices and that emotions change under the influence of perceived risk (Chaudhuri, 2002). Subsequent research on deepening the understanding of the impact of emotions on purchasing decisions considered the ethical aspect. In this case, the influence of both positive and negative emotions was studied. The research focused on analyzing present decisions, and in addition, it also determined how present decisions can shape future consumer choices. The study found that a positive-minded consumer will make a more ethical decision, and this experience will result in positive emotions in future purchases (Escadas, Jalali, & Farhangmehr, 2020). The authors' study showed that emotions also had a positive impact on buying decisions. It is also worth mentioning that in the literature one can find studies that indicate that both traditional and modern methods can be used to study the impact of emotions on purchasing decisions. Among others, the observational method and the method of behavioral descriptions are used, which can be used to capture consumers' emotional experiences and can help study both the structure and content of a consumer's emotional experience, recognizing both the conscious and subconscious elements of that experience (Chamberlain & Broderick, 2007). Nowadays, methods of using artificial intelligence to study emotions and consumer behavior are also spreading (Mehralian, 2022; Warszycki, 2019). The authors' study used modern tools such as EEG and VR.

The result obtained on the evaluation of the impact of emotions on the length of time spent by consumers at the site showed that areas where shopping was associated with positive emotions, revealed a moderate correlation between an increase in the Valence index and an increase in the distance traveled by respondents ($r = 0.38$). The results mean that positive emotions affect the distance traveled by customers in a virtual store.

This observation is consistent with research conducted by Forsythe and Bailey (1996), who studied the impact of pleasure on time spent shopping in traditional stores. Their research indicates that this relationship is also related to consumer characteristics other than economic, such as marital status and age. Similar findings were also obtained by researchers analyzing consumer behavior in shopping centers in Vienna. There, they noted a correlation between age and time spent in the mall. Other studies suggest that time spent shopping is also related to gender, with women spending more time shopping than men (Obulesu & Kumar, 2022). In addition, visual merchandising also has a significant impact on time spent in the store (Mihić, Anić, & Kursan Milaković, 2018).

In terms of perceptions of time spent shopping and its impact on customer loyalty, research by Anić et al. (2011). They provide valuable information. These studies analyze not only time itself but also time gaps (misconceptions about the passage of time) and the relationship between time spent in the store to customer loyalty to the store.

In addition, some studies focus on how time affects customer abandonment of online purchases and shopping cart abandonment (Jiang, Zhang, & Wang, 2021; Rajamma, Paswan,

& Hossain, 2009). These results underscore the importance of time as a factor influencing customers' shopping behavior, both in traditional and virtual stores.

It also turns out that emotions affect the distance traveled by the consumer. The customer's movement through the store can provide us with valuable information about whether all products are arranged intuitively, the preferred direction to move through the store, or which department they start shopping from. In the study, it was obtained that emotions affect the extension of time in the store, however, it was not possible to determine what emotions cause this condition. In contrast, in a study conducted by Jin, Kim, and Moore (Jin et al., 2021) positive emotions in the VR store were obtained, which increased the perceived attractiveness of the store. It is worth noting that in this context virtual reality does not mean full virtual interaction, but rather watching 360-degree videos. In this case, the person is not moving around the store, but watching finished footage.

To encourage customers to travel a longer distance in-store and possibly change their traditional shopping path, stores often use various strategies such as product tastings or promotions, including mobile promotions (Hui et al., 2013). In addition, the atmosphere in the store and the level of congestion also affect how long customers stay in the store and how far they travel. If these factors are viewed negatively, customers may reduce their time spent in the store or even decide to leave the store (Hwang, Tung, & Cho, 2023). All of this underscores the importance of both emotions and the store environment in shaping customers' shopping behavior.

It is worth noting that the use of modern tools will increasingly be used to study consumer behavior and especially to study emotions, as consumers value a media-rich environment that helps them make decisions (de Amorim et al., 2022).

Thus, it can be concluded that the results obtained by the authors of the article are in line with the research trend and can add to the existing knowledge on the presented topic of the impact of emotions on purchasing decisions.

CONCLUSIONS

In the article, the obtained results of the study confirmed the influence of emotions on purchase decision-making for three types of products, thus indicating the significant role of emotional processes in the consumer's full-scale decision-making process. The very design of the study proposed in the article and the results obtained are in line with the discussed research trend on the impact of emotions on purchase decision-making and add to the knowledge in this area. On the one hand, the results corroborate the findings of previous studies. However, this also permits the expansion of these investigations through the utilisation of additional innovative research instruments and techniques.

Emotions affect the length of time spent in the store, but it has not been possible to determine which positive emotions extend this time.

When arranging a sales area - a virtual store - appropriately, it is important to build a positive atmosphere in the store, which will build customer emotions, and this will influence a longer "walk" of the customer through the store. Which increases the probability of getting better acquainted with the store's offer.

However, it should be taken into account that for certain participants in the study, the environment in which they were situated, i.e. virtual reality, determined gamer-specific behaviors. The authors posit that this effect could be attributed to the way the VR environment is perceived as a space where the passage of time holds significance. Another constraint lies in the study's scope, which is currently limited to a pilot investigation. To achieve a more comprehensive and accurate representation, it becomes imperative to broaden the sample size. Despite these limitations, the outcomes derived from the study substantiate the viewpoint that there is a correlation between emotions and the length of time spent in the virtual store. The constraint posed by the high cost of data collection and its effect on sample size should be considered in future research.

IMPLICATIONS FOR RESEARCH, APPLICATION, OR POLICY

The results of this study underscore the significance of emotions in influencing consumer behavior within virtual shopping environments. Further research could delve into specific emotional triggers that lead to varying levels of engagement, time spent in the store, and distance covered by consumers.

The conclusions drawn from this study carry practical implications for marketers and companies operating in virtual commercial spaces. Designing virtual shopping environments that evoke positive emotions has the potential to increase customer engagement and encourage longer interaction times.

Furthermore, businesses might consider adjusting the layout of their virtual stores and product placements based on emotional cues to enhance overall shopping experiences and boost sales. As virtual shopping becomes more integrated into the retail landscape, understanding the emotional aspects of consumer behavior can shape policy discussions.

Regulatory frameworks and guidelines could be developed to ensure the ethical use of emotional cues in virtual shopping environments, safeguarding consumer rights and preventing potential manipulation. The implications of this study for research, applications, and policy underscore the importance of emotions in shaping consumer behavior in virtual shopping environments.

The findings of this study contribute to a deeper understanding of how emotional responses influence purchasing decisions, providing opportunities for improved marketing strategies, enhanced consumer experiences, and well-informed policy considerations in the virtual retail landscape.

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Acknowledgments

Co-financed by the Minister of Science under the "Regional Excellence Initiative".

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Human Technology
ISSN 1795-6889
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