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Contents

- Elizabeth Kempen, Rejoice Tobias-Mamina, Mariette Strydom, Lorna Christie, Mirriam Makopo*
 Female Consumers' Involvement in Intentional Non-Sustainable and Unintentional Sustainable Apparel Decisions: An Emerging Market Perspective 4
- Katarzyna Sanak-Kosmowska*
 #isoverparty. The Consequences of Brand Boycotts for Brands in the Social Media Environment After Russia's Invasion in Ukraine 25
- Daniel Dan*
 Exploring the Impact of Negative Words Used in Online Feedback in Hotel Industry: A Sentiment Analysis, N-gram, and Text Network Analysis Approach 39
- Dawid Gajda*
 New technologies in the field of sensory marketing and customer experience: a systematic literature review 51

Female Consumers' Involvement in Intentional Non-Sustainable and Unintentional Sustainable Apparel Decisions: An Emerging Market Perspective

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ABSTRACT

This study is aimed at determining consumers' sustainable apparel involvement in the purchasing or disposing of apparel in an emerging market context (EMC). Consumers in developed countries show increased interest in sustainable apparel behaviour, contrary to emerging markets such as South Africa, which is indicative of the lowest level of sustainable apparel consumption. An exploratory descriptive qualitative research design was used to determine consumers' involvement and was facilitated through eleven digitally recorded small focus groups with female apparel shoppers who make use of a custom-made apparel designers. The findings reveal intentional non-sustainable apparel decisions manifest through eco-uninvolved in-store purchases and once-off commissioned designer apparel orders. Unintentional sustainable

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apparel behaviour is characterised by (1) in-store apparel purchases: signifying quality clothing, observed in the material and stitching, resulting in clothing items worn for longer and handed down from generation to generation, sensitivity to the origin of the garment and (2) apparel disposal behaviour such as (a) keeping apparel as cleaning material and repurposing into wearable apparel; (b) permanent disposal through handing down items and (c) temporary disposal through exchanged items. Applying the Elaboration Likelihood Model, it was possible to explain the lack of elaborated involvement in sustainable apparel practices resembling the peripheral route of the model. Unintentional sustainable practices have not been identified in the South African context, indicating the valuable contribution consumers in an emerging market context (EMC) can make if better awareness is created by the government and the retail sector specifically to address intentional non-sustainable purchasing behaviours in future.

JEL classification: M00, M30, M31, M21

Keywords: Elaboration Likelihood Model, emerging market, apparel, sustainability, disposal, purchasing behaviour

1. INTRODUCTION

To many consumers, sustainability has become an important factor during the purchase decision (Gazzola et al., 2020) as it represents the balance between human activities and the resultant impact of these activities on the natural environment (Sesini et al., 2020). These activities or actions are indicative of what may be referred to as consumers' behaviour towards sustainability. In essence, consumer behaviour is the way consumers react and respond to products and services offered to them (Roberts-Lombard et al., 2022) as a reflection of their thinking and subsequent decisions concerning the product. Sustainable apparel behaviour on the other hand is not a new concept, it not only refers to in-store sustainable apparel purchases but recognises several sustainable fashion alternatives which include green and ethical fashion (Shen et al., 2013), second-hand clothing (Yang et al., 2017), caring for clothing in less impact-intensive ways (Roos et al., 2017) and the responsible disposal of apparel items (Jacoby et al., 1977). During these sustainable actions, consumers may either intentionally rationalise their decisions for behaving sustainably by becoming involved with already existing knowledge on sustainability on which their sustainable decision is based or unintentionally act sustainably without thinking about it and thus not knowing that they are acting sustainably. The problem is that very little is known about the involvement apparel consumers show when engaging with apparel purchases or disposal of apparel. Therefore, sustainable apparel is intended to serve the environment and its people (Dickenbrok & Martinez, 2020) by minimizing the impact of apparel, environmentally, socially and ethically (Rahman & Koszewska, 2020), yet many consumers in an emerging market context (EMC) may not become consciously involved in environmental sustainability when purchasing or disposing of apparel.

Consumers in developed countries have shown an increased interest in recycling (Park & Lin, 2020), ethical fashion (Wiederhold & Martinez, 2018) and sustainable fashion solutions (Kim & Oh, 2020; Vehmas et al., 2018; Todeschini et al., 2017; Kozlowski et al., 2018), which is contrary to some evidence that suggests that this is still not the case in EMCs (Park & Lin, 2020). Emerging markets such as South Africa have lagged behind in implementing sustainable consumption behaviour (Schroeder & Anantharman, 2017). As a result, South African consumers have been classified at the lowest level of sustainable apparel consumption behaviour. Hasbullah et al. (2019) suggest that this behaviour is attributed to the irrelevancy of sustainable apparel concepts in [South African] society, a lack of knowledge and a lack of available sustainable

apparel products in the market. Existential factors such as these may signify the low perceived benefit consumers find in purchasing sustainable fashion (Sheoran & Kumar, 2020) and more so for consumers in an EMC. In light of these facts, non-involvement in sustainable apparel purchases or disposal of apparel may be justified. However, currently little is known of EMC consumers' involvement in sustainable apparel purchasing and disposal behaviour and if this behaviour is intentional or unintentional where sustainability is concerned. Therefore, the question this study aims to answer is how involved consumers are in the sustainable purchasing or disposing of apparel products in South Africa as an EMC. It is further questioned what sustainable thinking or elaboration South African consumers show when purchasing or disposing of apparel and what meaning sustainable apparel has to them. Through this exploration, it will be possible to identify the current position of South African consumers towards sustainable apparel and if a lack of knowledge and awareness and resource constraints are contributing factors to their involvement in sustainable apparel behaviour.

Through the Elaboration Likelihood Model (ELM) proposed by Petty and Cacioppo (1986), this study aims to explain the sustainable apparel consumption involvement of consumers from an EMC, specifically South Africa. This model proposes two different pathways (central or peripheral) of elaboration or thought that consumers use when considering a particular concept. The central route resembles a person's critical thinking and high elaboration about a matter (e.g. sustainable clothing) with the true opposite to the peripheral route where little thought is given to the matter or a low elaboration level occurs (Kitchen et al., 2014) as the matter is also of little personal relevance to the person (Manca & Fornara, 2019). The ELM suggests that people vary in their ability and motivation to receive and consider a matter which influences their likelihood of elaboration (Lien, 2001). Therefore, people who have a higher ability and motivation as regards a matter will become involved in the matter through continuous thoughts and elaboration, more so than a person with a lower ability and motivation (Esfahani et al., 2015). Lien (2001) points out that various factors influence the likelihood of elaboration, these include message repetition, prior knowledge, self-referencing, arousal and the media type through which information is communicated. These factors may play an important role in consumers' elaboration and involvement in sustainable apparel within an EMC. By applying the ELM to this study, it will fill the gap in explaining the involvement consumers in an EMC have with sustainable apparel when purchasing or donating apparel. Moreover, Tseng et al. (2016) indicate that there is little research that exists on sustainable consumption models for emerging markets, and even less on sustainable fashion within the South African EMC. A further concern is that the ELM has not been applied to explain consumer involvement in sustainable apparel purchases and disposal behaviour, specifically in an EMC. The purpose of this study is therefore to describe the sustainable apparel involvement of consumers in the purchasing or disposing of apparel in an EMC by using the ELM to explain this behaviour.

2. LITERATURE REVIEW

2.1. Sustainable Apparel Contextualised

Lundblad and Davies's (2016) broad view of sustainable apparel suggests that the concept includes an array of ethical, environmental, social, production and consumption issues, to which Roozen et al. (2021) add organic textiles and fibres. Orminski et al. (2021) opt to contextualise sustainable apparel within the three domains of sustainability (environmental, social and economic), including the production and consumption of apparel. Nonetheless, the fundamentals of sustainable apparel consumption remain true to the ethos of clothing behaviour that is less damaging to people and the environment (Mukendi et al., 2020). For clarification in this

instance, consumption represents the acquisition, usage and disposal (Goworek et al., 2020) of apparel. In light of the fact that current clothing consumption patterns of developed countries are unsustainable (Hur & Cassidy, 2019), sustainable apparel consumption behaviour is suggested as an alternative to improve apparel consumption practices and alter the way in which consumers purchase and use apparel (Jung et al., 2021). In an endeavour to support this proposal, consumers from developed countries are increasingly demanding products with a low environmental impact (Jacometti, 2019) as their interest in sustainable fashion systems peaks (Ertekin & Atik, 2020). Subsequently, some fashion manufacturers have adhered to the demands of these consumers by producing sustainable fashion items (Kong & Ko, 2017) as an alternative to the over-consumed fast fashion apparel option. Although sustainable apparel is an established concept in developed countries, it may not be apparent and obvious to consumers in an EMC, resulting in the lack of involvement in sustainable apparel behaviour within these contexts.

2.2. Sustainable Apparel Consumption Within an EMC

It is well known that consumers from developed contexts show voluntary sustainable consumption behaviour related to an altruistic concern for the environment (De Groot & Steg, 2008) whereby the consumer recognises the effect of their consumption habits on the environment and on broader society (Sigala, 2014), which may be of little concern to the consumer in an EMC. Furthermore, the implementation of sustainable consumption behaviour is dependent on the lifestyle, consumer culture and, to some degree, the social pressure exerted on the consumer (Sharma & Jha, 2017) to become involved in sustainable apparel behaviour. The reasons an emerging market such as South Africa shows little sustainable consumption uptake in general and more specifically in terms of apparel are attributed to inadequate infrastructure, preference for affordable products (Sheth, 2011), unemployment, poverty, low to irregular income and extreme socioeconomic population variation (Pels & Kidd, 2012) resulting in the rationalisation of goods and services to satisfy basic needs (Quoquab & Sukari, 2017) rather than consideration for the environment. Subsequently, the resource-constrained environment of an EMC (Nkamnebe, 2011) becomes a favourable destination for unsustainable apparel production (Cimatti et al., 2017) with very few policies and government regulations in place to govern sustainable apparel supply chains (Quoquab & Sukari, 2017). However, due to the differences in resource availability and infrastructure between developed and developing countries (Cantú et al., 2021), low consumer acceptance (Camacho-Otero et al., 2018), low demand and little financial benefit to businesses (Tumpa et al., 2019), the adoption of a circular apparel economy in EMCs is challenging (Patwa et al., 2021). Contrary to developed contexts which regulate and create conditions that encourage circular economies (Cantú et al., 2021), EMCs are characterised by exploitative political barriers and numerous government-owned and government-operated enterprises with monopolistic powers (Pels & Kidd, 2012) that create barriers to the development and implementation of circular apparel economies. As a result, EMCs rely on a domestic consumer market to ensure economic development and stability (Schroeder & Anantharaman, 2017) and less preference is given to building a sustainable product consumption culture that supports sustainable apparel behaviour. In an EMC, these markets need to grow the economy (Patwa et al., 2021) by allowing fashion manufacturing industries, although not necessarily green industries, to set up production establishments that bring about job creation (Nguyen et al., 2020) although this could be to the detriment of the environment and to the sustainable apparel consumption progress in the EMC. In South Africa, many of the local fashion industries closed down due to the import of fast fashion produced at a lower cost by Chinese manufacturers, resulting in job losses and unemployment in the South African apparel industry. Consequently, the South African consumer has been left with very little choice other than to continue with non-sustainable apparel consumption practices as this type of fast fashion dominates the apparel supply chain. Consumers in EMCs are challenged

when it comes to sustainable consumption (Tseng et al., 2016) as consumers' continuous support of unsustainable fast fashion retailers is indirectly supporting the environmental degradation associated with the fashion industry (Zhang et al., 2021). However, it is not certain how involved South African apparel consumers are in thinking or elaborating on sustainable apparel consumption when purchasing apparel, and how this involvement influences their purchase and disposal apparel decisions.

2.3. Sustainable Apparel Awareness Within an EMC

In developed contexts, a gradual shift away from fast fashion to sustainable and socially responsible fashion has spurred on fashion manufacturers to create awareness and demand for sustainable fashion (Kim & Oh, 2020; Khandual & Pradhan, 2018). In-store signage, advertising, promotional campaigns (Di Benedetto, 2017), documentaries, public campaigns, the use of celebrities, political figures (Khandual & Pradhan, 2019) and social media (McKeown & Shearer, 2019) have been used as agents for sustainable fashion awareness. Of late, apparel labelling (Dhir et al., 2021) and brand associations (Kim and Oh, 2020) have also been used to inform and create consumer awareness of sustainable fashion apparel. However, Cavender and Lee (2018) suggest that although these agents have contributed to increased consumer awareness, messages that could limit fast fashion consumption have not been forthcoming. Through better awareness, consumers have changed their apparel habits and increased their preference for sustainable fashion as an alternative to fast fashion (Todeschini et al., 2017). However, since sustainable fashion awareness is at its nascent stage (Todeschini et al., 2017), it has complicated the progress of sustainable fashion awareness (Peirson-Smit & Craik, 2020) and reduced consumers' ability to make a clear distinction between sustainable products and greenwashing (Di Benedetto, 2017). As a result, sustainable fashion is still not as popular as fast fashion (Khandual & Pradhan, 2019) nor is it earning mass acceptance (Dhir et al., 2021). However, Cavender and Lee (2018) found that sustainable awareness positively influenced consumers' orientation towards slow consumption. According to Shen et al. (2013), awareness must precede the adoption of sustainable fashion if any improvement to consumers' habit of sustainable fashion adoption is to be expected. The ineffective use of awareness creating agents in EMCs may result in consumers' lack of sustainable apparel awareness and ignorance, as Quoquab and Sukari (2017) found to be the case with Malaysian consumers. Consumers' lack of awareness in an EMC can be attributed to poor communication infrastructure to disseminate the information (Sheth, 2011) and create better awareness of sustainable fashion. To ensure successful sustainable fashion awareness, consumers must be able to perceive the long-term benefit of sustainable fashion (Kong & Ko, 2017). To this end, a consumer's decision to purchase a sustainable product often relies on the heuristic process of using a recycled product or purchasing a used clothing item, as the lack of information about sustainability and the relevance of this information to the individual may hamper the purchase decision (Ritch, 2019).

2.4. Disposal as a Sustainable Apparel Practice Relevant to an EMC

In pursuing sustainable consumption, it is not only necessary to consider how much consumers purchase but how they use and dispose of fashion products (Niinimäki & Hassi, 2011). Apparel disposal, from a consumer's perspective is the act of getting rid of clothing that the wearer considers at the end-of-life stage (Laitala, 2014). According to Paço et al. (2021), the act of disposal should also include recycling (disposing of products to be used in the production of new products) or reuse of apparel or textiles (to be used by another owner for another purpose). Jacoby et al. (1977) propose three disposal options which consumers engage with: (1) to keep (includes converting the item to another use), (2) to dispose of the item permanently (to give it

away to family or friends, or donate, abandon, sell or trade the item) or (3) to dispose of the item temporarily (options such as loaning or renting to others). From a production perspective, apparel disposal pertains to inferior quality apparel being disposed of during the production process or the disposal of unsold merchandise by the retailer (Lewis, 2015). Laitala's (2014) synthesis of disposal options identified binning, donating, selling, giving away, swapping or exchanging, and keeping for reuse purposes as the most common apparel disposal practices. Bick et al. (2018) suggest that consumers in high-income countries have a role to play in shopping at second-hand stores and repairing clothing they already own. The disposal practices listed by Laitala (2014) further underpin the notion that second-hand clothing can either be recycled or reused, thus contributing to the circular economy. As second-hand clothing refers to previously owned clothing items showing minimal wear, it is a beneficial option to consumers in an EMC, as this type of clothing is a cheaper affordable alternative to lower-income consumers (Pierce & Paulos, 2011; Sorensen & Jorgensen, 2019) and in many instances, its availability is indicative of an EMC. It could be argued that although the latter (the purchasing of second-hand clothing) is a sustainable fashion option, in an EMC it may not be for the purposes of sustainable fashion consumption, but because of the lower price point. It is not certain if the disposal practices of consumers in an EMC are consciously driving apparel purchases or if their involvement with apparel disposal is motivated without them being aware of their contribution to sustainable apparel consumption.

3. DATA AND METHODS

3.1. Study Design and Sampling

An exploratory descriptive qualitative (EDQ) study was designed through which to obtain forthright descriptions of experiences and perceptions of those directly involved with the phenomena (Sandelowski, 2010), particularly where little is known about the topic under investigation (Doyle et al., 2020). The EDQ design allowed the researcher to recognise the subjective nature of the problem and discover the phenomenon through the different experiences participants have (Bradshaw et al., 2017), thus bringing about a better understanding of their involvement with sustainable purchasing and disposing of apparel. The inductive approach to this study, underpinned within the qualitative descriptive nature of EDQ, facilitated through the exploratory approach of the study, enabled a description of consumers' behavioural involvement with apparel. Purposeful sampling, typical of an EDQ design (Sandelowski, 2004), was used to recruit participants for this study. The inclusion criteria for participating in this study required female apparel shoppers who also make use of a custom-made apparel designer (a local term used to define a popular custom among many female South African consumers who engage a small-scale fashion designer to produce once-off outfits for cultural occasions or special events) to participate in the study. Of importance to this study was the use of a custom-made apparel designer by participants, as custom-made apparel is considered a slow fashion application that participants may either use for this purpose or for other purposes which were explored. Convenience sampling was further used to recruit female participants employed at a university in South Africa who complied with the inclusion criteria.

3.2. Data Gathering

Focus groups which are a recognised data collection method in EDQ (Hunter et al., 2019) provide a coactive process in which participant engagements contribute to the clarification of individual opinions and through which insights about the topic emerge that would not be achieved without this group interaction (Doyle et al., 2020). Furthermore, focus groups allow

the researchers to obtain a broad range of information about the phenomena and are one of the recognised interview techniques associated with EDQ during which structured open-ended questions are posed to the participants (Sandelowski, 2000). Therefore, through the use of focus group interviews, the researchers could explore consumers' involvement in sustainable apparel purchasing or disposing behaviour. Eleven digitally recorded small group focus discussions, resulting in 31 female participants, were held, each being facilitated by an experienced moderator. Each focus group session was directed from an interview guide that contained three key topics for discussion which was to explore: (a) the meaning of the term sustainable clothing, (b) the approach to apparel purchasing and (c) the approach to apparel disposal. To explore the meaning of the term sustainable clothing, the participants were asked the question "when you hear the word sustainable clothing, what comes to mind?". The participants' approach to apparel purchasing was based on a scenario sketched by the moderator which typified an encounter with a denim jacket which attracted the participants' attention. After close inspection, the participant identified the jacket as a product made from recycled jeans. The participants were asked if they would purchase the jacket and what was the reasons for purchasing or not purchasing the jacket. After discussing their approach to this item, they were asked to explain their approach to selecting apparel in a retail environment, if sustainability of the apparel item was considered and what their purchase decision was based on as well as their approach to organic and locally produced branded clothing. To generate discussions about their approach to apparel disposal, as little information as possible was volunteered by the moderator about the meaning of sustainable clothing. The participants were asked to explain their approach to the reuse or repurposing of apparel and their approach to mending and donating apparel. Through these discussions, the participants' shared their experiences which were further probed to gather explanations on the behavioural ideas raised by the participants. The duration of each focus group was approximately 60 minutes. Thematic saturation was used to guide the sample size, allowing the researcher to explore the development of conceptual categories until a detailed understanding of the ideas and thoughts consumers had on the purchasing or disposal of apparel was reached. Five follow-up interviews were held with the participants to clarify their involvement with environmental sustainability when donating apparel. The participants were aged between 18 and 65 years, although age was not a criterion for study inclusion. Before data collection commenced, the participants were provided with a participation sheet and consent form which they could read in their own time, after which they were reminded of the purpose of the study, the opportunity to withdraw from the study at any time, that their participation was voluntary, and how confidentiality and anonymity of information were addressed, as well as a reminder that the sessions would be digitally recorded. Thereafter, informed consent was signed. The study received ethics clearance from the College of Agriculture and Environmental Sciences Health Research Ethics Committee (2018/CAES/114) prior to the commencement of the research.

3.3. Data Analysis

Data were transcribed verbatim, followed by an inductive approach to thematic analysis, whereby an emic stance to the words of the participants was used, particular of an EDQ design (Bradshaw et al., 2017), in search of the salient themes emerging from the data. Thematic analysis is the identification, analysis and reporting of data patterns, allowing for a rich description of participant perspectives (Brawn & Clarke, 2006). Following Kiger and Varpio (2020), the process of data analysis that was applied entailed familiarisation with the data, generating initial codes, developing and reconsidering categories and themes, and reporting the findings. Manual open coding was first applied to the data to identify distinct concepts, after which codes were grouped to form categories that best represented the codes. Manual axial coding was then applied to form the categories that best represented the similarities, differences and the relationships

across the categories. Both coding systems also applied in the thematic analysis and referred to as the generation of initial codes and reconsideration of categories and themes (Vaismoradi et al., 2013) were used to inductively organise and refine the data in order to develop the overall story that was emerging from the data. As a result, broad themes could then be assigned to the categories that were developed from the opinions of the participants. Johnson et al. (2020) stress the importance of rigour and the quality of data in qualitative research. To address these issues, the trustworthiness criteria summarised by Nowell et al. (2017) were applied. *Credibility* was achieved through prolonged engagement with the data and the participants in the study, and *peer debriefing* during code generation and *member checking* during the focus group interviews. The thick descriptive data obtained ensured *transferability* and through a logical, traceable and documented research methodology, *dependability* was addressed, which contributed to the *confirmability* of the data. *Authenticity* was achieved through audio recording and the verbatim transcription of the interviews with quotations specific to the responses of the participants used in the presentation of the data.

4. FINDINGS AND DISCUSSION

4.1. Defining Sustainable Clothing Within an EMC

To understand consumers' involvement in the apparel purchasing or disposing behaviour, it was necessary to firstly determine the meaning of the concept sustainable clothing. Findings from these data resulted in four themes, as indicated in Table 1, signifying the participants' general thinking and conceptualisation of the notion of sustainable clothing. Although most participants recognised the term sustainable clothing, it was not a concept that intrigued them or captivated their attention as some indicated that they "*just never read that much into it*" or "*haven't given much interest to...it*" and to which this participant attributes the way in which her clothing purchases are made by explaining:

you buy something, you don't follow that history of it, you just love it, whether it's sustainability or what. It's because you like it....

Different connotations of the concept of sustainable clothing emerged. The one that resembled the concept of sustainable usage and was reflective of refurbishing apparel (Soyer & Dittrich, 2021) was the first theme. In this instance, sustainable clothing meant **rejuvenating clothing**, where useless clothing is converted into new product items (Cassidy & Han, 2013). This is explained in terms of clothing that has lost its fashion appeal when this participant says:

if you can be able to adapt the clothing, whenever you feel like to make it more usable or to make it more modern.....

To this participant, the rejuvenating process is also a creative opportunity to:
change [clothing] into a different design, like if it was a skirt ...it could be a trouser...you can make it whatever that you want.

Table 1
Meaning of sustainable clothing

Theme 1 Sustainable usage	Theme 2 Clothing quality	Theme 3 Disposal	Theme 4 Naturalness
Rejuvenating clothing	Colour fastness	Handing down	Natural fibres
Off-cut material use	Material use and production quality	Functional repurposing	
	Timeless fashion		

Participants further expanded on the sustainable usage of clothing by accentuating their observations of **off-cut material use**, resulting from the construction of garments, when “*they (referring to custom-made apparel designers) take those small pieces and make bags or something so there’s no wasting*” or “*make pillowcases ...a small blanket...*”, thereby noting that “*now you are using it for something else.*” Proactive improvement of apparel design can contribute towards minimising off-cut waste through which surplus apparel products are created (Rukhaya et al., 2021), this principle should be applied by custom-made apparel designers in emerging markets. However, it should be noted that off-cut usage may not necessarily result in the construction of new clothing items.

The second theme represented is clothing quality. Although Harris et al. (2016) suggest that clothing quality and durability is difficult for consumers to assess at the point of purchase, the participants in this study assessed sustainable clothing quality over time. This meant that **materials, including the dye, the caring of the item, the process used to produce the material and the production techniques** used to construct the clothing item were measures of clothing quality, as explained by these participants:

...sustainable clothing for me is that quality you know. I want to buy something that I can wear for the longest time, wear and tear, you know, when I wash it I still want it to look blue, it was blue when I bought it...

Another participant explains:

I remember I had a white dress that my aunt bought for me, I was 14 or 15 and when I was 26 I was still wearing that and it was white....so for me that’s quality. To stay with you for longer....”

Therefore, the participants recognise **colour fastness** as an important measure of clothing quality as further explained.

So if the garment....can’t keep whatever colour it’s been coloured with, then it will also impact on the environment and again, I cannot keep a garment for longer; if each time I wash it, it’s losing its colour.... You know, I’m going to dispose it early...

According to Harris et al. (2016), there are consumers who are prepared to invest in more expensive clothes of which they then take better care, resulting in a longer relationship with their clothing. In particular, one participant explained this principle when she said:

I believe in buying something that I can wear for the longest time...That is why you find that someone wears something that says, dry clean only, but they buy it and then they wash it ... after a certain period it’s worn out, because they didn’t take care of it the way they should... I don’t think they.... even read those labels...

Timeless fashion was further emphasised as a measure of quality clothing because the participants recognised the effect of the fast fashion industry as explained: “*fashion today it’s here, tomorrow its gone*” and “*...changing all the time.*” This participant explains the value of timeless fashion:

If you see me in the same outfit five years.. you will not say she is seen in this old fashion. It still looks good...there are designs that don't change, they are eternal classic and the materials are such that they don't wear with time...

Timeless fashion also gave impetus for having items worn for longer periods, which represented the third theme in the conceptualisation of sustainable clothing as confirmed by Pereira et al. (2021), who suggest that this does not mean that consumers are eliminating fast-fashion items but are rather showing willingness to do so. This participant explains how clothing that can be worn for longer is considered as “*decent clothing*” that “*can last for a long time [because] it's about wearing that garment for longer years, for many years, instead of just that one occasion.*” Therefore, timeless fashion supported by the colour fastness of the garment as well as material used in producing the item contribute to the creation of a timeless apparel item of good quality that can be worn for longer and is therefore more sustainable.

A further expansion of the concept of sustainable clothing resulted in the disposal of clothing as the third theme specifically attributed to the quality of clothing which could then be **handed down**, as this participant explains: “*clothes that you can give to your kids.*” Paço et al. (2021) suggest that the reuse of clothing amongst family and friends should be encouraged as this behaviour would have a significant influence on the effect of clothing production on the environment. Clothing disposal further resulted in the **functional repurposing** of clothing items for household purposes, as this participant explains:

you know when you have those tights that have holes ...you use it as cloth to clean... just use them in the house...when I need a cloth to dust or to skrop[scrub] the floor, I have those...all over the house, you also use ...the shirts you can cut it up to make a press lap [rag]....

Sustainable clothing was further identified as clothing with naturalness, and as the fourth theme of this study, whereby less chemical processing is the expected result of natural fibre use. Kim and Oh (2020) found that female consumers in South Korea, one of the emerging markets, identified eco-friendly textiles as an important factor in building a sustainable fashion brand image. This was an important aspect also mentioned by the participants in this study as seen when this participant says:

like natural fibres....it is coming from renewable sources and you are using less of chemicals or dyes in the processing of that....so I'm thinking natural that you can process without having to go through chemical intensive processes

Evident from the participants' conceptualisation of sustainable clothing within an EMC is the inclusion of sustainable use and disposal features which are synonymous with sustainable apparel in general. Added to these aspects is clothing quality that results in apparel being worn for longer and supported by the material used to produce the apparel item, as well as the production quality of the item. Through participant descriptions synonymous with sustainable apparel, the concept was found to exist although not necessarily through a showing of conscious involvement by participants. This suggests that sustainable clothing behaviour is conceptualised without any reference to the actual context of sustainable clothing, signifying non-involvement specific to the peripheral route of the ELM.

4.2. EMC Consumers' Intentional Non-Sustainable Apparel Behaviour

The next section of the data analysis will present the findings on the purchasing behaviour of the participants in order to determine how involved participants were with sustainable apparel when deciding on purchasing an apparel item, be it from a retailer or a custom-made apparel designer. From the analysis, intentional non-sustainable apparel purchasing behaviour emerged as a theme that represented eco-uninvolved in-store purchasing and once-off designer

outfit purchasing as two different behaviours towards apparel purchases that are not consciously directed towards environmental sustainability (see Figure 1).

Figure 1

Intentional non-sustainable and unintentional sustainable behaviour



Eco-uninvolved in-store behaviour

From the findings, it emerged that the participants did not consciously elaborate on sustainable apparel when faced with an in-store fashion item, resulting in an eco-uninvolved behavioural approach (see Figure 1). According to Moon et al. (2015), this behaviour expresses how little consumers care about whether a product is environmentally sustainable. This is explained by the participants who mentioned that they “*never thought about that [referring to sustainable apparel]*”, and that to them sustainable apparel was “*immaterial*” and that “*I don’t really mind. I don’t really care*”, which was a theme, as this participant emphasised: “*I don’t think about those things [referring to sustainable apparel]*” when in store, further adding: “*With me...when I see this particular item, when I like it, I become biased and I don’t think about those things [referring to environmental sustainability] I just want this thing.*” The scope of eco-non-involvement is explained by this participant who says:

it’s me and this garment. I don’t think about it [referring to environmental sustainability] unless I would read the label and it would say it’s...sustainability pillow, or the processes it went to and as much as I’m trying to teach myself on this sustainability and contributing to it, believe me,...it’s me and the garment and how am I’m going to look in it.

Eco-non-involvement may not necessarily mean that the participants are not aware of sustainable apparel, it is rather reflective of their disengagement with the sustainable apparel concept as a result of the overpowering effect of the apparel item being considered, as this participant explains: “*I just look at it and if it looks beautiful and I like it I’m taking it and that’s it.*” Therefore, when in store, the participants little engage with the concept of sustainable apparel as indicative of the route of elaboration.

Eco-unsustainable once-off designer purchases

Intentional non-sustainable apparel behaviour was also found with participants who made use of personal designers to create unique outfits for special occasions, as seen through participant statements: “*going to a wedding, to a party...I needed a specific dress*” (see Figure 1). In these instances, the participants mentioned that these outfits may be designed to follow a particular theme as explained here: “*I realised I’ll go to the wedding and the dress fits the wedding and the theme and after that I wouldn’t wear it*” and that this may be driven by its uniqueness created through a personal designer who assists the participants in being “*uniquely identifiable.*” Subsequently, many outfits which have only been worn once fill cupboards because “*they cannot see me again at the wedding in the same dress, you know*” and also because of their uniqueness which is explained by this participant who says:

...so most of our outfits we only worn them once, I’ve got so many of those in my wardrobe that I just worn them once...because they were designed...

These occasional items are rarely worn again, which is not a sustainable practice, as they were designed for a specific purpose and are not suitable for wearing on other occasions. These types of items are also items participants indicated as being difficult to part with, in terms of donating, upcycling or any other way in which the clothing item can be put back into circulation because:

it’s just so easy to give away the things (clothing) we buy but made by designer, maybe it’s because they are unique.... they have that uniqueness that you don’t want to part with, because you willnever see another person wearing such, specially which they have designed, custom made....

In this instance, the creation of once-off designer outfits within an EMC does not support sustainable apparel behaviour as these items are not worn for longer time periods, which was one of the criteria participants attributed to sustainable clothing. Although once-off designer outfits do not support sustainable apparel behaviour, the quality of these items does render them the potential to be worn for longer time, thus their increased likelihood of contributing to sustainable apparel. The participants in this study did not directly associate custom-made designed items with sustainable apparel. Saricam et al. (2017) found that amongst consumers in Turkey, which is an emerging market, this was also one of the aspects related to sustainable apparel that was less understood or not thought of as having a direct influence on sustainable apparel. Further to this, the participants in this study are not consciously involved in considering the sustainability of these outfits, which may be attributed to a lack of awareness. Therefore, it was concluded that designer outfits also result in participants’ low involvement with the concept of sustainable apparel, which is indicative of the peripheral route of elaboration.

4.3. Findings on EMC Consumers’ Unintentional Sustainable Apparel Behaviour

The findings in this section highlight the theme of unintentional sustainable apparel behaviour that emerged in relation to apparel purchasing and disposal practices. The theme represents the participants’ behaviour derived from discussions on how they purchase and dispose of apparel items from which the unintentional sustainable apparel behaviour emerged (see Figure 1). When considering apparel purchasing, unintentional sustainable apparel behaviour was highlighted through the categories of clothing quality and the origin of the material.

4.3.1. Apparel purchasing

Unintentional sustainable apparel behaviour was evident when purchasing apparel, as the participants were not involved in examining the clothing items in relation to their contribution to sustainability, as seen when participants vehemently responded to whether they were thinking

about sustainability during apparel purchase: “*no, it doesn't I just look at it and if it looks beautiful and I like it I'm taking it an that's it. I never think of it, it never crosses my mind.*” Thus it was evident that sustainability was not consciously considered during apparel purchases. However, when judging the external attributes of the clothing item, unintentional sustainable apparel behaviour emerged in relation to **clothing quality** (see Figure 1). This was previously identified as an important indicator of sustainable clothing, and also features in eco-conscious Slovenian consumer apparel purchases (Žurga et al., 2015), as it unintentionally emerges as a determinant in the decision to purchase. Therefore, the material from which apparel items are made is an important quality measure as this participant explains:

we sometimes you never know what triggers it, but sometimes it happens, you look at it and you're thinking, feels like there is something wrong with it, and you start having those thoughts in your head but it is not something that happens often but it does happen...you have that feeling....you stop you look at it, is it the fabric?

These participants were also customers of custom-made apparel designers and the quality of the material that was used for these garments was of particular concern to them, as this participant explains: “*first the material, it must not look cheap.*” When looking at quality outfits from custom-made apparel designers, the participants also took into consideration the quality of the stitching used to produce the garment, as explained: “*it's the stitch of a garment, because remember a stitch holds the garment together, so the total outcome of the garment relies on the stitch*” and “*trim the inner part, the edges of the material...to prevent those threads.*”

By considering the quality of the apparel, whether it is a retail item or it comes from a custom-made apparel designer, the participants were suggesting that inferior material and manufacturing would not last as long as good quality material, which is attributed to sustainable clothing. Clothing quality was an important feature that participants looked for when purchasing clothing items, as it was necessary for them to be able to wear the apparel item for as long as possible, thereby ensuring that fewer items with shorter life spans are bought because “*that is why I buy quality stuff, I want to wear it for a long, long, long, time*” and this is possible through the purchase of “*proper clothes that can sustain me for longer*” as indicated by this participant. The participants were unintentionally seeking sustainable apparel through quality features in the apparel they were purchasing.

The participants also associated quality clothing with items that remain fashionable for longer because “*most of them are classic,you can wear them anytime and you can change it with something else*”, which is similar to what eco-conscious Slovenian consumers purchase (Žurga et al., 2015). Subsequently, these items can be worn again at a later stage when a resurgence of a previous fashion trend occurs, as this participant explains: “*yes, and its coming back now, most of the things that our parents use to wear; its coming back.*” Importantly, the quality of the fashion item results in generational wearing, as seen in this instance when a participant explains that “*they are good quality....I still have my great grandmother and my grandmother's dresses....the material is so good.*” This participant explains the process of generational wearing as items being handed down when she says:

I got a jacket that my mum bought me, now my daughter is wearing it, and it's beautiful, all the time, ...so if it's quality it stays ...my children give it to my children's children....

The quality is further ensured through the care of the garment, as this participant explains:

I watched my grandmother washing clothes. It's how they take care of their clothes in washing them, not too much exposure to the sun and packing them and ensuring that they are out of moths and all that....taking care of your clothes....

During apparel purchases, the origin of the garment was another quality indicator that unintentionally contributed to sustainable apparel when this participant says: “*but what comes*

to mind, I always look at whether the fabric was imported, whether it is from SA or whether the garment was made in South Africa.” This participant emphasises the extreme to which they question the origin of the clothing when she says:

But I always have the curiosity of knowing where does the material come from that they used....across the borders, ...I'm thinking have they bought this material from China...we hear that most material are produced in China, so ...did they also purchase this one from China?

Although participants did not question the origin of the garment and fabric in relation to them lowering the environmental footprint of the garment by purchasing locally produced garments, their unintentional behaviour indirectly addressed an important part of sustainable apparel. This unintentional behaviour is brought about by the participants' low involvement with the concept of sustainable apparel when purchasing apparel and is indicative of the peripheral route of elaboration.

4.3.2 Apparel disposal

Unintentional sustainable behaviour emerged during the disposal of apparel as participants were not consciously disposing of apparel in terms of its effect on the environment, as these participants explain: “*the environmental sustainability aspect is, it's not the primary focus at the time and I don't think about that. I just think about the people who are in need and trying to meet their needs*” (see Figure 1). Disposal of apparel items is an important part of sustainable apparel behaviour of which Jacoby et al. (1977) propose three options that consumers engage with: (1) to keep (2) to dispose of permanently or (3) to dispose of temporarily (behaviour such as loaning or renting) that will be used to discuss the most salient disposal behaviour in this study.

Keeping apparel items: It is evident from the findings, and aligned to the keeping of apparel items, that the participants unintentionally followed a sustainable practice by repurposing old clothes as these items were considered not worthy for donation and could therefore be used as cleaning materials, as this participant explains when she says: “*you clean with them, a worn out T-shirt. You can't give it away. We use it to clean the house*” and as this participant says:

my old T-shirts I can cut and use as swobs for cleaning, so I know people say these age have that cotton cloth, why do you use your own clothes? But somehow it is my pillowcases...I usually always use them for cleaning the cars and the windows. I throw away when I feel it is no longer suitable for any other use around me.

Repurposing was also applied to creatively generate new wearable apparel items, as this participant explains:

I recently cut my jeans and made them shorts I've also taken a dress that has a ..inner... so it's a shear dress andso I removed the lining and used it as a beach cover...so I do find ways to repurpose my outfits.

However, the repurposing of apparel is subject to the availability of a seamstress or custom-made apparel designer who can convert the apparel item into a new wearable clothing item, as this participant explains that not everyone can do it themselves:

...It's just that ...most of the time it becomes difficult to get people who are willing [to repurpose an item for the participant]. Most of them they just prefer to, the good ones, they prefer to start a garment from scratch. Then others who are willing, you find out that they end up messing up your....it's not always practical.

Although done unintentionally, by actively repurposing apparel items, the participants were contributing to sustainable clothing practices with little involvement in considering their effect on the environment. Items that were kept also included items to be mended in order to ensure

the continued wear of the item. The participants specifically pointed out that “*I have it fixed*” and that such repairs were “*just small things, then I can just do it myself, if it is something that I see is complicated I can take it to them (seamstress or custom-made apparel designer) to do it for me.*” Important to the action of mending a clothing item was whether or not the participants would wear the item after it was mended, and it was apparent that there was no hesitation in wearing such items, as this participant explains: “*you make sure that it is as neat ...like nobody sees it and you forget, I forget, I even forget that its patched, I wear it without a problem*” and this participant who also explains: “*I took it [a skirt] to be tailored, to be fixed nicely and I’m still wearing it.*”

Permanent disposal: Throughout the discussions, the participants reflected on the permanent disposal of clothing through donations, which is unintentionally related to sustainability, in order to ensure that “*it goes to somebody who can be able to make use of it.*” The items are mostly handed down to family members, as these participants mention “*I have a sister...so I always give out for them*” and as this participant mentions:

same with my sister I would give her stuff and she would wear them...there are things that she gave me, because she has not been wearing it for too long....

The generational effect of handed down clothing contributes to a sentimental value attributed to such clothing items, as this participant explains:

But the clothes that I have a sentimental value for me, for example, I had two coats, winter coats that were given to me by my mom, you know, and the other one was given to her by her gran, by her mother so that’s my grandmother, you know so, there was a sentimental value to it. So when I gave those away, I gave them to a relative, to someone that I knew would actually take care of them the same way I did, you know and the only reason I gave them away is because they were small, I couldn’t wear them anymore, but I still loved them and it was something that I couldn’t give to someone I don’t know.

Clothing donations were also made to specific groups of people in need of clothing, as this participant mentions: “*my mom knows lot of people....people they are sufferingI’ll take it to my group...*”, or the clothing items are given to “*other people who have younger cousins who can also use the clothes so I just give them to those people*” as well as to church or community groups mentioned by this participant who says that she takes them “*to the shelter for abused women [or] our community ...sub-group...who takes care of kids...I just put it on the [WhatsApp] group and somebody will contact me to take it to such and such a place.*” These donations were not conscious decisions of sustainable behaviour, but consciousness of someone’s need that the participant could address through clothing donations, as stated here: “*the reason behind giving it out ...you don’t use them anymore and there’s somebody who needs them more than you*” and by this participant who says: “*so, for me it always have that thing that there’s somebody who could be using this thing instead of it lying for the whole year.*”

The participants were very specific in terms of the quality of items that were donated, which meant that clothing items being “*still in good quality*” were donated because “*when you’re giving it to someone, it’s not something that is worn out.*” The value system in which donation is imbedded is explained by this participant who says:

I tell my kids, my mom taught us to say, you cannot give someone something that you don’t like anymore, it must either be that it does not fit you anymore, or you know that person needs it more, but you cannot give them something wrecked, you know it is not right, I mean it is torn and you’re giving it away, really now, no, no...

The distinction between when to donate and when to repurpose a clothing item was very specific in that participants would not donate anything “*that is too worn out*” and would rather cut up clothing items or “*just burn them.*” Clothing was burnt because the participants felt

uncomfortable donating such items, as the quality of these items was not good enough to donate, which is explained by this participant:

I can't have my things that I wear lying on the waste, so I'd rather cut them and I burnt them because I was like even if I throw away these types of pants, I can't throw them away for somebody to pick and wear something that I can't wear myself, so just out of guilt I burnt it.

Although permanent disposal is practised by the participants, this behaviour – as revealed in the conversations held with the participants – is not guided by sustainability consciousness. It emerged that different ways of clothing disposal were explored through processes in which the participants internalised disposal practices and took control of clothing disposal by specifically cleaning out their wardrobe. Some participants used a seasonal approach whereby unworn items within a specific time period were disposed of, as this participant explains:

I do that every season....I've got a rule to say that if I haven't worn something in three months, then changes are...I'm talking about every day work and every day wear. If I haven't touched it for three months, then I'll get rid of it, it's easy for me to clear my closet.

For other participants, the time frame may be longer such as “*something that you don't wear for 2 year, 3 years.*” However, Yan et al. (2021) did not find a relationship between the amount of apparel purchases made every month and the perception consumers had of themselves owning more clothes than they needed, which in turn did not impact on how long they kept their clothes before disposal. The significance of the time frame that the clothing is kept relates to participants questioning the number of times they had worn a clothing item which is correlated to their need to dispose of the apparel item, as this participant explains:

[A]nd I ask myself how many times have you worn this skirt this year. And I would be like, you haven't so you don't need it. Then I will give them away.

In other instances, unworn items were disposed of due to weight gain, as “*they are no longer fitting so I had to part.... And I can't lose weight, [and] I mean I no longer fit in it, no matter how, whatever diet you may try, you no longer going to get there*”, which results in the justification for the participant's disposal of the clothing item. This participant further mentions: “*But now you have to let it go [the clothing item that does not fit].*” Laitala's (2014) literature synthesis of consumers' clothing disposal behaviour found that clothing fit was one of the common apparel disposal reasons.

The participants shared their ability to override their reluctance to dispose of, or part with, clothes they had bought or designed, especially when there was an emotional attachment to the item that made it difficult for them to dispose of the clothing even when confronted with the reality that the item no longer fits them and is therefore no longer of any use to them, as this participant explains:

There are some items that you don't necessarily want to give away, but you realize that they are too small. I'll never ever fit into this, but for the money that I paid for those and ...that it's still gorgeous...so I have that issue ...I have to give it away...it's painful....

Contributing to this resistance, in particular, was the monetary value attached to the clothing item, the significance of this relationship is explained by this participant who says:

[I]t was difficult to give the ones that were expensive, that I bought them with lot of money, so I held them close and very dear to me, so but I had to teach myself by giving my best....

Temporary disposal: Temporary disposal is an underexplored disposal method used by participants, specifically explained by this participant who captured the essence of how it works as seen in this specific exchange situation when she mentions:

There's this one thing that I went to, they call it exchange what?...ladies come on a Saturday, they bring whatever that they like, 3 garments, that you like, then there's a big rail, and we

exchange, you shop, you put yours and another puts, and you shop, oh I like this one and I like that one, that's how we exchange....you put three you get three back....

This disposal behaviour as categorised by Jacoby et al. (1977) emerged through conversations with the participants, and although possibly significant to the South African EMC, it is behaviour that is unintentionally pursued as a sustainability practice. However, Bianchi and Gonzalez (2021) found that this behaviour is synonymous with eco-conscious female consumers in Chile, one of the smallest emerging markets in the Americas. Specifically, this behaviour resembled the participants' non-involvement with sustainable apparel, which follows the peripheral route of elaboration.

5. CONCLUSION

Within an emerging context, consumers' involvement in the apparel purchasing or disposing behaviour seems unintentionally directed at supporting sustainable apparel practices. By applying the ELM, it was possible to inductively explain the lack of elaboration related to sustainable apparel practices that resemble the peripheral route of the ELM. However, these findings are limited to the South African context and may not be transferable to other contexts. Better awareness of sustainable apparel is likely to improve consumer involvement in sustainable apparel behaviour in an emerging market context, as this will lead to purposive elaboration and consciousness in apparel purchases and disposal. Unintentional sustainable apparel practices overlap with what consumers in an EMC think sustainable apparel means, such as addressing sustainable usage, insistence on quality clothing items, items being worn for longer, disposal practices and the usage of natural materials. Although consumers in an EMC are not able to contextualise these concepts within the sustainable apparel field, they are to be commended for their decisive behaviour which has indirectly contributed to sustainable apparel. Education and awareness about sustainable apparel practices need to be supported by governments, retailers and custom-made apparel designers in EMCs to ensure that consumers are able to make meaningful contributions that signify their involvement in improving their sustainable apparel behaviour. Apparel purchases and disposal practices will allow consumers to find purpose in their purchasing behaviour, as they can then relate these behaviours to them making more informed decisions about environmental sustainability. More research is needed to understand the impact that consumer education and awareness will have on sustainable apparel behaviour in the South African EMC. In light of the exploratory nature of this study, demographics such as age was not used to classify the behaviour of consumers in relation to their intentional and unintentional sustainable apparel purchase and disposal behaviour. Future studies of a qualitative nature may want to consider establishing the age groups particular to intentional and unintentional sustainable apparel purchasing and disposal behaviour, which may identify the target markets for consumer education programmes. Through this study, consumers' involvement in sustainable apparel behaviour could be described, thereby giving further insight into already existing sustainable behaviour which consumers did not consciously relate to sustainable practices. However, the findings of this study are limited by the qualitative exploratory approach to apparel which may not yield the same behavioural involvement where other product categories are concerned and are in need of further investigation. The findings from this study can be used to support and encourage sustainable apparel behaviour in South Africa, as it is underemphasised and not receiving the same amount of attention as the recycling of plastics, paper and glass receives. This attention to sustainable apparel behaviour will improve consumer awareness and involvement in the sustainable purchasing and disposal of apparel items, in South Africa in particular and in EMCs in general, by enabling consumers to make more meaningful contributions to environmental sustainability. The fact that this study is limited to the intentional and unintentional sustainable apparel purchasing and disposal behaviour

of South African consumers in an EMC does not make it representative of all EMCs. Future research may find value in duplicating the study to determine if other EMCs have similar or the same sustainable behavioural involvement.

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.#isoverparty. The Consequences of Brand Boycotts for Brands in the Social Media Environment After Russia's Invasion in Ukraine

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ABSTRACT

This study investigated social-media-based anti-brand communication. Guided by consumer boycotts and brand cancellation theory, the author conducted a qualitative study based on content analysis of tweets about 59 international brands that remained in Russia after the invasion in February 2022. The research was conducted on Twitter between August 10 and 17, 2022. The study aimed to determine whether brands that have decided to stay in Russia are still exposed to negative WoM, calls for a boycott or brand cancellation after 6 months since the war began. The obtained results made it possible to identify the number of tweets and their content and sentiment. They also showed the dynamics of negative WoM publications on social media and their character. The practical implications are the following: brands exposed to consumer boycotts, depending on their business goals, may decide to adopt a “wait-out” strategy.

JEL classification: M3, M14

Keywords: consumer boycotts, brand cancellation, social media, brand reputation

1. INTRODUCTION

The negative characteristics of customer-brand relationships seem to be less studied than positive ones (Ninh Nguyen & Binh Nguyen, 2021). The “dark side” includes brand hate, brand avoidance, brand distrust, brand boycott, and brand retaliation. Only a few studies have discussed the multidimensionality of the brand hate construct; however, the validation of its multidimensional structure is yet limited (Fetscherin, 2019; Kucuk, 2019; Zarantonello et al., 2016).

The article aims to determine whether brands that have decided to stay in Russia are still exposed to negative WoM, calls for a boycott, or brand cancellation. On February 24, 2022, Russia attacked Ukraine, resulting in social, economic, and societal consequences. In reacting to the conflict, most countries decided to impose sanctions on Russia and restrict trade and economic exchanges. International brands previously present in the Russian market faced quite a challenge: in a short period, they had to decide on the continued presence of brands in the Russian market. Consumers observed and commented on these decisions online, especially at the beginning of the invasion (February and March 2022). It was assumed that the activity of internet users and

the number of messages containing the expression of negative emotions towards the brand would decrease over time. To verify this assumption, the author conducted a content analysis of tweets posted by internet users in August 2022. The study included tweets directly referring to brands that remained in Russia and were shown on the Yale List of Shame (2022).

The article consists of two main parts. The theoretical part presents a synthetic review of the literature on various dimensions and forms of expression of negative feelings towards a brand: brand hate, consumer sense of betrayal, consumer boycott, and brand cancellation. The most significant consumer boycotts in recent years are also presented. The empirical part presents the results of the analysis of tweets about brands that decided to stay in Russia after the invasion of Ukraine in February 2022. The study, conducted in August 2022, helps to answer the questions about the nature of contemporary consumer boycotts and brand cancellation, their durability, and their impact on the brand's business decisions.

2. LITERATURE REVIEW

This part of the article overviews concepts that are the most relevant to the stated goal. The analysis of negative feelings and emotions towards brands, companies, and organizations, as well as ways of expressing them, has been the subject of numerous studies conducted in psychology, marketing, and sociology. Considerations of brand hate should begin with an approximation of the hate theory proposed by Sternberg (Sternberg, 2003). The duplex theory of hate is presented as a theory that applies to individuals and groups. Indeed, evidence suggests that the primary processing system used for forming and processing impressions about groups and individuals is the same (Hamilton & Sherman, 1996). According to Sternberg, there are five fundamental claims:

1. Hate is very closely related psychologically to love.
2. Hate is neither the opposite of love nor the absence of love.
3. It has its origins in stories that characterize the target of emotions.
4. Hate can be characterized by a triangular structure generated by emotional stories.
5. Hate is a significant precursor of many terrorist acts, massacres, and genocides.

At this point, it is worth noting that the phrase “brand hate” or “brand love” is a kind of hyperbole. The title relationship between the consumer and the brand is usually not accompanied by such extreme emotions. Research on the intensity of love or hate has been the subject of many studies (e.g., Patwardhan & Balasubramanian, 2011; Romani et al., 2012).

According to Sternberg, hate potentially comprises three components; the first one is the negation of intimacy that involves seeking distance and repulsion, and disgust. This repulsion and disgust may arise from the person's characteristics, actions, or propaganda depicting specific characteristics and acts. *Passion in hate: Anger–fear*. A second potential component of hate is passion, which expresses itself as intense anger or fear in response to a threat. Anger often leads one to approach, or fear to avoid, the object of hate. The third potential component of hate is a decision–commitment, characterized by cognitions of devaluation and diminution through contempt for the targeted group. The hater is likely to feel hatred toward the target individual or group, viewing the target as barely human or subhuman. This component seems to be particularly important for the consideration of hate communication in social media. The accompanying social distance, the sense of anonymity, and the speed of forming social groups favor the diffusion of messages.

Sternberg's theory has been the basis for consideration by many theorists studying negative emotions toward brands. The literature devoted to negative feelings toward the brand oscillates around several key concepts adopted by researchers in marketing, psychology, sociology, and management. Many terms and definitions in the literature express how consumers express

negative feelings toward brands. They are brand hate, customer sense of betrayal, consumer boycott, and, recently, brand cancellation. The following section presents a literature review and research on each concept.

Brand hate. According to Kucuk (2018), brand hate “covers various layers of different negative emotions.” Based on psychology literature, he puts forward three levels of brand hate: cold, cool, and hot. Some of the authors focus on the development of scales to measure brand hate (Zarantonello et al., 2016; Garg et al., 2018; Fetscherin, 2019). A summary of brand hate research is presented in Table 1.

Table 1

Brand hate research summary

Author	Type of the brand hate	Key results
(Kucuk, 2016)	Attitudinal and behavioral brand hate	3 levels of brand hate (cold, cool, hot) Possible consequences of brand hate: consumer complaint, boycott
(Zarantonello et al., 2016)	Active and passive brand hate	A measurement scale (18 items) Possible consequences of brand hate: brand avoidance, negative WoM, brand rejection
(Garg et al., 2018)	No differentiation	A measurement scale (27 items)
(Kucuk, 2018)	Macro-level of brand hate	CSR is negatively related to brand hate Brand hate comprises cold, cool, hot, simmering, seething, boiling and burning brand hate Brand hate consequences include consumer complaining, negative WoM and consumer boycotts
(Fetscherin, 2019)	Cool hate, hot hate, simmering hate, burning hate, boiling hate	A measurement scale (29 items) Three components: anger, contempt, disgust Possible consequences: brand switching, private complaining, public complaining, brand retaliation, brand revenge.
(Zhang & Laroche, 2020)	Mild, moderate, strong brand hate	Brand hate is a multidimensional construct comprised of anger-, sadness- and fear-related emotions. A three-factor scale consisting of nine items.

Source: own elaboration based on literature research.

Customer sense of betrayal. From a psychological point of view, it is worth mentioning that a customer’s sense of betrayal can often accompany brand hate. The sense of betrayal is defined in psychology as “a breach in honoring an expected behavior or norm associated with trust” (Elangovan & Shapiro, 1998). In the case of a customer-brand relationship, it occurs when people perceive that their expectations in purchasing and consumption are not met or when they assume brands are telling a lie to them, taking advantage of them (Caldwell et al., 2009). The emotional consequences of customer sense of betrayal that have been studied in the literature include a negative attitude and brand hatred (Hashim & Kasana, 2019), anger (Ma, 2020), a sense of loss and brand disappointment (Reimann et al., 2018), and undesirable behaviors (Tan et al., 2021), such as spreading negative word of mouth, terminating the relationship and contacts with the brand.

Consumer boycotts. The concept of a boycott was coined only 137 years ago, after Charles Boycott – Irish Mayo County Administrator. In 1880, Charles Boycott introduced a rent increase that led to the protest of sellers who decided to ignore the manager when he wanted to purchase at their store (*A New English Dictionary on Historical Principles*, 1888). Nowadays, the term “boycott” is often used in marketing, which has been linked to the behavior of consumers on the market. Table 2 presents different proposals for the consumer boycott definition.

Table 2

Definitions of consumer boycott

Author	Definition
(Friedman, 1991)	An attempt made by one or more consumers in order to encourage customers to refrain from making purchases of selected products on the market.
(Yuksel, 2013)	Consumer boycotts are a form of anti-consumer behavior in which boycotters become market activists who stop buying and consuming specific products due to issues related to the environment, politics, and ethics or society.
(Garrett, 1987)	Refusal to conduct a market transaction with the entity against which the boycott is directed.
(Tilikidou & Delistavrou, 2004)	Consumer boycott is considered a consumer's decision to refuse to buy products produced by businesses or countries.
(Klein et al., 2004)	An effort made by a person or a group of people to achieve purposes. Such customers advise others not to buy specific goods or services.

Source: own elaboration based on literature research.

Friedman (1999) divided consumer boycotts according to their type, distinguishing:

- Boycott sponsors: among the most common are consumer groups, labor unions, organizations representing racial minorities, and environmental groups;
- Boycott actions: action-considered boycotts vs. action-requested boycotts;
- Boycott orientation: media-oriented, marketplace-oriented;
- Boycott function: instrumental vs. expressive boycotts.

Friedman has also distinguished:

- Commodity boycotts that encourage consumers to stop purchases of specific goods not due to their brand but to the type of goods produced (e.g., limitation of purchase of sugar regardless of the country of origin, producer, or chain of stores distributing the product);
- Brand-specific boycotts that encourage to boycott selected companies are associated with the cessation of purchases related to a given company regardless of the brand of products, and because of the brand owner, single-firm boycotts, which in some cases may induce a complete abandonment of purchases, and in others only a reduction or abandonment at a specific time, e.g., on a particular day or at the weekend (Friedman, 1991).

The first consumer boycott was Rosa Parks' protest against racial discrimination in public transportation in the USA (1955). She called for a boycott of public transport in the city. Information about the protest quickly reached a large part of black people, and even in the first days, city transport began to feel the financial consequences of the decisions made (Szwed, 2020). Social media have become the space for organizing consumer boycotts, in which consumers call for certain attitudes or behaviors towards brands, institutions, or public figures. In 2020, the most often used hashtag was #BoycottChina, which was sometimes used with hashtags such as #BoycottMadeInChina and #BoycottChineseProduct (Commetric, 2020). Customers choose boycotts as a proactive response to revenge on the betraying firms and demand compensation for their feeling of loss and value deficits (Hahn & Albert, 2017). An online boycott may spread faster than an offline one because the information and updates can be delivered to others instantly regardless of time zone, region, race, nationality, social class, age, and gender differences (Delistavrou et al., 2020). This process speeds up social media, mostly on social networking platforms like Twitter, Facebook, Instagram, and TikTok. The 2022 LendingTree survey of more than 2,100 consumers discovered that 1 in 4 Americans are currently boycotting a product or company they had previously spent money on (Martinez-White, n.d.). According to the survey results, friends and family most commonly influence boycott decisions (47%), followed by politicians (20%) and celebrities or influencers (19%). Notably, 34% of Gen Z boycotters say

celebrities or influencers impacted their decision. Products or companies are not the only things being boycotted. 24% of Americans have chosen not to travel to a specific state or country because of legislation or policies they disagree with. This jumps to 35% among those with an annual household income of at least \$100,000.

Cancel culture and brand cancel. Cancel culture is a term that originated from Twitter in response to the #MeToo Movement in 2017. The concept refers to the “cancellation” process, which means the withdrawal of support for celebrities, brands, or products involved in problematic or controversial situations (Mueller, 2021). Thus, Saldanha et al. (2022) define this phenomenon as a ‘collective desire by consumers to withdraw support of those individuals and brands in power, perceived to be involved in objectionable behavior or activities using social media’. This process mainly takes place on social media but can also occur in mass media such as TV or radio (Norris, 2021). Tandoc et al. (2022) found that cancel culture can take two forms: active and passive. The passive form consists of not publicly expressing opinions on the guilty without interacting, for instance, unfollowing (Tandoc et al., 2022). The active form refers to the public shaming of the guilty party while interacting, for example, commenting on the guilty party’s post on social media to denounce or shame them (Tandoc et al., 2022).

Brand cancellation can therefore be one of the forms of active brand boycotts, considering consumer proactivity and encouraging other users to behave similarly. This form of brand boycott takes place in the online environment, and the majority of activities happen on social networking platforms. Users tag their posts with specific hashtags, often tagging a boycotted person, institution, or brand in posts. According to (Flick, n.d.), the most popular hashtags in the USA related to boycotting or brand cancellation in 2022 were: #justice #newworldorder #fraud #voteblue #leftist #lockhimup #nevertrump #wakeupamerica #commonsense #2024 #trump #abcnews #lockthemup #trumpsamerica #eattherich #nationalanthem #scammers #dems #trumplies #liarinchief #cowards #hypocrite #mikepompeo #boycottisrael #malcomx #receipts #prisonabolition #minimumwage #standforsomething #hypocrisy.

3. RESEARCH GAP AND RESEARCH QUESTIONS

It is impossible to list all the economic consequences of Russia’s invasion of Ukraine, which took place on February 24, 2022. One of them was the wide-ranging activity of internet users from all over the world calling for a boycott or “cancellation” of Russia, Russian products, and companies. The countries of the European Union and the USA quickly imposed economic sanctions, and therefore, economic cooperation with this country began to decline. It is also impossible to forget about the prosumer activity – calling for renaming the famous Russian dumplings to “Ukrainian” ones, boycotts of Russian literature, music, and cultural centers.

The international corporations that operated in Russia until February 2022 also faced a big challenge. Some immediately decided to leave this market, but some chose to stay. It should be emphasized that some decisions were somehow “forced” by the consumers. An example of such activity is the Polish company LPP, which specializes in the fashion industry (*LPP Company’s Website | LPP Has Closed All Stores in Russia*, 2022).

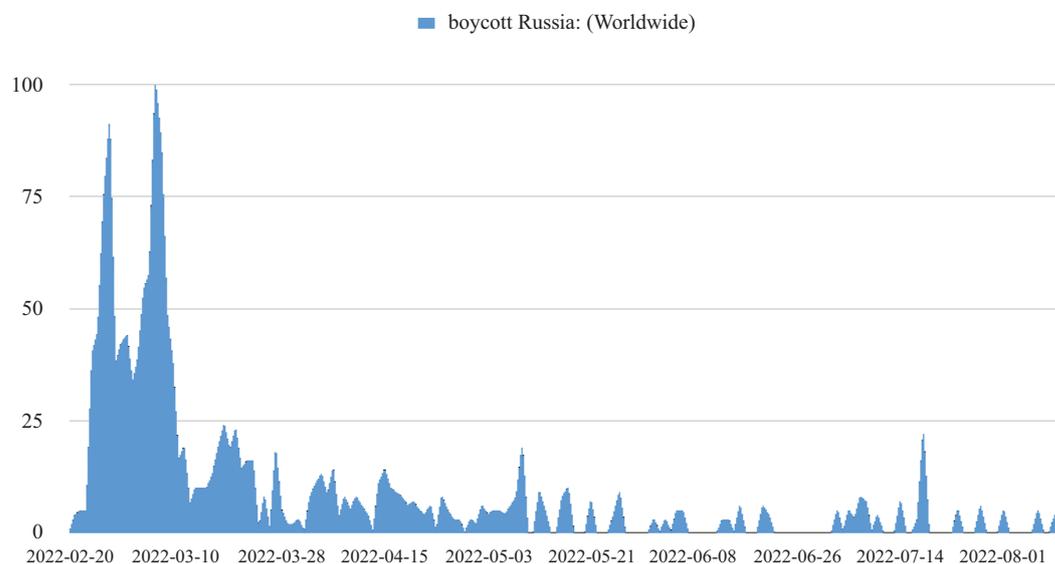
Kyiv School of Economics (Kulich, 2022) launched an analytical project named “SelfSanctions” to collect data on foreign companies operating in the Russian market and limiting or terminating their activities. The examination of data was conducted jointly with specialists from the Ministry of Economy, the Ministry of Foreign Affairs, and the Ministry of Digital Transformation of Ukraine. The database contains much information: it collects daily statistics on changes in the status of foreign companies operating in the Russian market and limiting or terminating their activities. While, since the beginning of the Russian invasion of Ukraine, the percentage of companies that closed operations in Russia has risen sharply by mid-March, in the

last month, the ratio of those who left or stayed was virtually unchanged. But during this time, we see an increase in the share of those companies that remain in the Russian market. However, more than half (50.4%) of foreign companies have already announced their withdrawal from the Russian market, although another 28.6% remain in the country.

In February and March 2022, the activity of internet users calling for a boycott of companies that decided to stay in Russia was visible – as evidenced by the number of tweets with the hashtags #boycottrussia and #cancellrussia. This article aims to find out whether brands that have decided to stay in Russia are still – 6 months after the outbreak of war – exposed to negative WoM (word of mouth), calls for a boycott, or brand cancellation. It was assumed that the activity of internet users and the number of messages containing the expression of negative emotions towards the brand would decrease over time. Figure 1 shows the number of queries concerning the phrase “boycott Russia” in the Google search engine. It is easy to notice that starting from March 2022, the number of searches began to decline gradually.

Figure 1

The number of queries concerning the phrase “boycott Russia” in the Google search engine

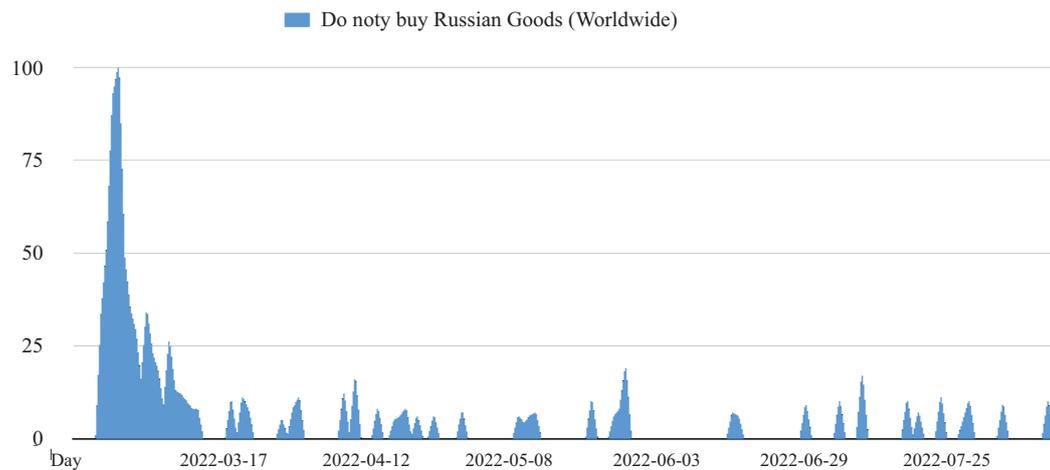


Source: Google Trends.

The analysis of another phrase, “Do not buy Russian Goods” (Figure 2), leads to the same conclusions. In addition, it was also assumed that the number of negative messages and posts about a brand also depends on the industry in which the brand operates and its current activity on social media.

Figure 2

Numbers of queries concerning the phrase “Do not buy Russian Goods” in the Google search engine



Source: Google Trends.

The above considerations led to the formulation of the following research questions:

1. Over six months after the invasion, during the study period (August 10-17, 2022), how many tweets called for a boycott of brands listed on the Yale List of Shame?
2. Despite criticism from internet users, Leroy Merlin and Auchan continue to operate in Russia in August 2022. Is this decision reflected in the number of negative tweets?
3. What is the reaction of Twitter users to information published about Wizz Air, which was considering a return to the Russian market in August 2022?

4. RESEARCH METHODS AND SAMPLING

To find answers to the research question regarding the frequency of tweets containing negative eWoM against brands that remained in Russia six months after the invasion started, the starting point was to identify international companies that still operated in Russia. The online platform created by Yale School of Management in 2022 helped to identify them. Since the invasion of Ukraine began, they have been tracking the responses of well over 1,200 companies. The list below is updated continuously by Jeffrey Sonnenfeld and his team of experts, research fellows, and students at the Yale Chief Executive Leadership Institute to reflect new announcements from companies in as close to real-time as possible (Yale List of Shame, 2022).

The analyzed companies were grouped into the following categories:

- Digging In (Defying Demands for Exit or Reduction of Activities – 242 Companies);
- Buying Time (Holding Off New Investments/Development – 160 Companies);
- Scaling Back (Reducing Current Operations – 171 Companies);
- The Suspension (Keeping Options Open for Return – 501 Companies);
- Withdrawal (Clean Break – Surgical Removal, Resection – 311 Companies).

This article is focused on companies that still operate in Russia and were therefore assigned to the “Digging In” and “Buying Time” categories. In the next step, out of 242 distinguished organizations, 59 companies with an international reach operating in the B2C market were selected. Several factors conditioned this decision. Firstly, these companies use social media much more often for their marketing communication, and secondly, their international presence and recognition prove a strong brand. Table 3 presents all the analyzed companies with the division into industries. In total, 59 companies were elaborated and divided into 11 different sectors.

Table 3

The list of surveyed companies is broken down by industry and the activity level maintained in Russia

Industry	“Digging in” Companies	“Buying Time” Companies
E-commerce (3)	Alibaba, Anta Sports, La Redoute	
Fashion/Apparel (12)	Asics, Benetton, Boggi, Calzedonia, Diesel, Etam, Giorgio Armani, Jean Cacharel, Quicksilver, Tom Ford	Geox, Tom Tailor
Beauty/Wellbeing/Cleaning Products (5)	Clarins, Forever Living Products	Colgate-Palmolive, Procter and Gamble, Yves Rocher
Supermarkets (2)	Auchan-Retail, Leroy Merlin	
Finance/Banking (2)	Raiffeisen, UniCredit	
Home/Hobby appliance (5)	Fischer Sports, Fujifilm, Riot Games, Tupperware	Yamaha
Airlines/Hotels (7)	Emirates Airlines, Etihad Airlines, Pegasus, Qatar Airlines, Turkish Airlines	Hilton, Wizzair,
Food/Grocery (14)	Bonduelle, Chipita, De Cecco, Hard Rock Café, Kotanyi, Sbarro Pizza, Storck	Barilla, Campari, Danone, Merck, Nestle, Ritter Sport, Subway
Technology and household appliances (5)	Gorenje, Makita, Zepter	Delonghi, Huawei
Automotive (2)	Kawasaki, Yamaha	
Aps (2)		BlaBla Car, Bolt

Source: own elaboration based on the Yale List.

The content analysis method was used to analyze the acquired data. Content analysis is a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data (i.e., text). Using content analysis, researchers can quantify and analyze the presence, meanings, and relationships of certain words, themes, or concepts. The analysis of tweets was carried out using the MAXQDA software. MAXQDA is a software program for computer-assisted qualitative and mixed methods data, text, and multimedia analysis in academic, scientific, and business institutions. This software is often used for qualitative analysis (e.g., Almosa, 2021) and offers various functions, including sentiment analysis, engagement analysis, and many more. Figure 3 shows the applied research procedure. To find an answer to the formulated research question, each of the brands mentioned by the authors of the Yale List of Shame tweets was searched according to the formula adopted below:

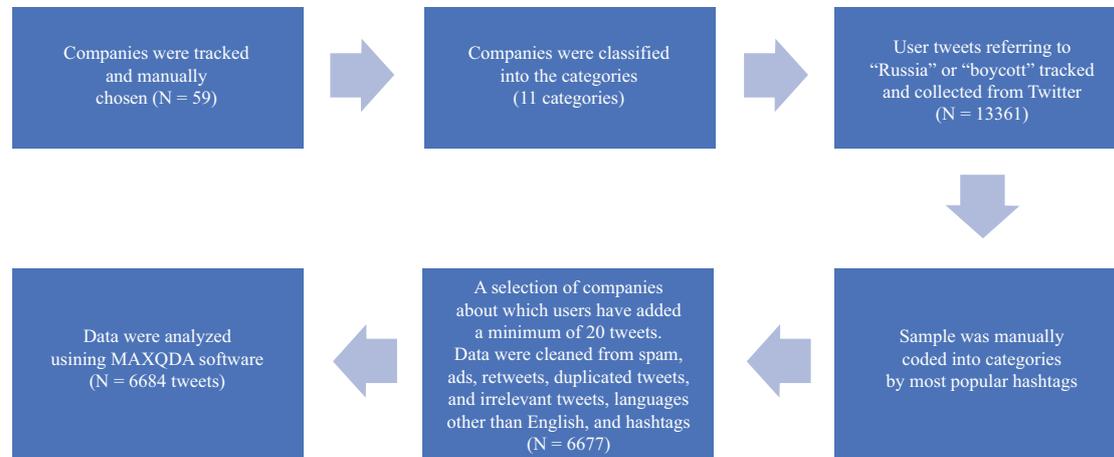
“BRANDNAME AND Russia OR BRANDNAME AND Boycott OR BRANDNAME AND Ban”.

Owing to the limitations of the software used due to Twitter regulations, only tweets from 7 days (August 10–17, 2022) were considered for the analysis. Each studied brand (total 59 brands) was separately verified following the adopted methodology. The searches included user tweets in various languages. Then the obtained data were subjected to data cleaning, which involved the removal of retweets, responses, and inadequate tweets. It should be emphasized that the sentiment analysis was carried out in two stages: first, it was carried out automatically by MAXQDA, and then the results were also analyzed manually. The companies surveyed were those users mentioned in a minimum of 20 tweets referring to Russia, the boycott or the ban. The sentiment analysis – using natural language processing, text analysis, computational linguistics, and biometrics to systematically identify, extract, quantify, and study affective states and subjective information

delivered by MAXQDA – concerned only tweets published in English. The sentiment analysis was also verified manually.

Figure 3

Research procedure



Source: own elaboration.

5. RESULTS

This part of the article presents the most important findings from qualitative analysis based on content analysis. It will first present data on the number of tweets of users dedicated to brands or companies and the most important lessons learned from their research. In the next part, the case of Wizz Air airlines will be presented, which was the subject of the most tweets during the studied period (August 10-17, 2022).

Users' Tweets Analysis

On Twitter, more than 20 user tweets about the brand's presence in Russia concerned only 15 of the 59 brands surveyed. The total number of analyzed user tweets was 6,684. Their list is presented in Table 4.

Table 4

Results of Twitter analysis conducted between August 10 and 17, 2022, based on user tweets mentioning selected brands' names

Brand	Total number of tweets related to "Russia" or "Boycott" or "ban"	% of negative trends (posts identified as those containing negative sentiment)	Most popular hashtags
Alibaba	68	70	#armukrainenow, #alibaba, #russia, #banxso
Benetton	41	87	#boycotrussia
Giorgio Armani	38	84	#boycotrussia, #giorgioarmani, #ukraine
Auchan Retail	42	88	#auchan, #russia, #russianterroriststate, #ukraine, #boycottwizzair, #business, #genocideforukrainians
Leroy Merlin	21	76	#armyhromadske, #russianterroriststate, #wizyouwerehere
Fuji Films	55	62	#boycotrussia, #fujifims, #russia, #omsk
Nestle	43	77	#russia, #ukraine, #nestle, #boycotrussia, #boycottwizzair
Emirates Airlines	111	72	#uae, #ukraine, #russia, #bloodytrade, #russiatankertracker
Turkish Airlines	71	39	#donetsk, #russia, #ukraine, #ukrainerussiaawar, #airlines
Wizz Air	5968	90	#wizzairsupportterrorists, #wizzairmakesmoneyonblood, #ukraine, #wizzair, #armukrainenow, #moscow
Hilton	43	49	#kiev, #agentx, #armyhromadske, #goldeneye
Hard Rock Cafe	43	92	#boycotrussia, #hardrock, #harrybigbutton
Huawei	53	81	#boycotrussia, #huawei, #russia,
Subway	37	66	#russia, #subway, #moscow, #thingstodoinrussia
Bolt	50	72	#auspol, #ukraine, #11august, #russiaukrainewar

Source: own elaboration based on Twitter research.

Relatively few tweets refer to the presence of the studied brands in Russia. Among them, by far the most references were made to Wizz Air (5,968), as well as other airlines: Emirates Airlines (111) and Turkish Airlines (71). Another brand also associated with the travel industry – the owner of the Hilton hotel chain – was mentioned 43 times in the context of its presence in Russia. Still, almost half of the tweets were negative. The following are the most important findings of the analysis, with particular attention paid to Wizz Air, which was affected by the most significant number of user tweets analyzed.

Auchan and Leroy Merlin – Brands That Decided to Stay

The relatively small number of mentions of Auchan and Leroy Merlin stores is puzzling. These brands – especially at the beginning of the invasion – were widely criticized, and there were also numerous user groups on Polish social media calling for a boycott. However, few such mentions exist in the case of the English-language tweets analyzed. So, the negative “hype” around brands may have quieted down. To verify this thesis, it would be necessary to conduct a tweet analysis in Polish. Another brand widely criticized in March 2022 for staying in Russia was Decathlon, but this company decided to suspend operations in Russia under the influence of the public. These observations confirm the sales results in the surveyed stores in Poland. Business Insider published the data made available to the local editorial office via the “PanParagon” shopping application. They clearly show that Polish consumers have returned to Auchan and Decathlon stores three months after the invasion began.

Interestingly, the most mediatized boycott of Leroy Merlin also turned out to be the least effective (Chabasinski, 2022). The strategy chosen by the representatives of Leroy Merlin and Auchan brought results. They focused on extinguishing tension, trying to wait out the outburst of negative emotions on the part of consumers, tempting them with attractive promotions, and developing their online stores. It is also worth noting that the Polish Auchan and the Polish Leroy Merlin did not publicly support the moves of their headquarters. The employees of these networks actively tried to maintain decency in this challenging situation, for example, by organizing fundraisers for Ukraine. It is worth mentioning that none of the brands interacted with the tweets relating to their presence in Russia.

Wizz Air Case Study

When analyzing the obtained results, the case of Wizz Air airlines deserves special attention. The number of tweets devoted to this brand differs significantly from the other results and mentions. A few days after the armed invasion of Ukraine, Wizz Air jointly abandoned all flights to Russia. At that time, the Hungarian carrier ruled out the possibility of its returning to the country soon.

However, despite the quick response and the decision to cancel flights to and from Russia, Wizz Air was considering a return to serving this destination. Six months after Russia’s invasion in February 2022, the carrier repeatedly surveyed the public mood among its customers, announcing its return to Russia several times. For example, on April 1, 2022, Wizz Air introduced several routes from Hungary to Russia into its booking system. The carrier planned to resume connections from Budapest to Moscow Vnukovo, Saint Petersburg, and Kazan and from Debrecen to Moscow Vnukovo in the first days of June this year. Later that same day, the Hungarian airline withdrew from announcing its return to Russia under pressure from public opinion, which, clearly indignant, began to criticize Wizz Air’s actions.

It did not take long for another attempt to renew connections to Russia and look for profits on undoubtedly attractive and profitable but highly controversial and, in the present situation, completely inappropriate routes to Russia, isolated from the democratic world. On the August 9, 2022, Wizz Air, or its subsidiary Wizz Air Abu Dhabi, started selling air tickets for flights from Abu Dhabi to Moscow’s Vnukovo airport and Krasnodar. The route to Moscow was scheduled to begin on October 3, 2022, and to Krasnodar only on March 28, 2023 (Reuters, 2022).

The reaction of internet users was immediate – there were calls to boycott the brand, and the hashtags #wizzairsupportterrorists began to appear on social media. During the examination period (10-17.08.2022), this topic dominated the brand discussion on Twitter, as reflected in the word cloud illustrating the frequency of each expression in all brand-related Tweets (Figure 4).

The dominant tweets among the analyzed ones are those informing about Wizz Air's business decisions and direct messages addressed to brand representatives (Figure 6).

Figure 6

Examples of tweets including researched hashtags

	Тетяна TanyaGritsiuk	13.08.2022 11:09	Tweet	Shame on you!!! @wizzair #wizzairsupportterrorists #WizzAirMakesMoneyOnBlood https://t.co/aEjeXaQVsL [zobacz tweeta]
	✈️Rister ✈️Bjite SpaceMySoul	13.08.2022 10:47	Tweet	WizzAir terrorist partner? #wizzairsupportterrorists #WizzAirMakesMoneyOnBlood @wizzair https://t.co/7YNwLg3734 [zobacz tweeta]
	Ir Ir irozavrr	13.08.2022 10:27	Tweet	@wizzair stop cooperating with #RussiaTerroristState Shame on you!!! #wizzairsupportterrorists #WizzAirMakesMoneyOnBlood https://t.co/bB9iumCi2f [zobacz tweeta]

Source: own elaboration based on Twitter analysis.

To check whether the negative WoM and calls to boycott the brand on social media impact the brand value, it was decided to check the share prices in August 2022. The proposed method allows for formulating only very general conclusions, and the coexistence analysis requires in-depth analyses; however, observing this phenomenon could indicate a significant impact of internet users' reactions on the company's value. To objectify the observation, the daily stocks of Wizz PLC were compared with those of the U.S. Global Jets ETF. The U.S. Global Jets ETF (JETS) provides investors with access to the global airline industry, including airline operators and manufacturers worldwide. The index tracks the performance of airline companies across the globe with an emphasis on domestic passenger airlines. The universe of airline companies is screened for invertibility (e.g., must be listed on a securities exchange), a minimum market capitalization of \$100 million, and liquidity (minimum average daily value traded). U.S. Global Investors, Inc., the funds' investment adviser (the "Adviser"), generally expects the index to include 50 airline companies. The index is rebalanced and reconstituted quarterly in March, June, September, and December (JETS – U.S. Global Jets ETF, n.d.). The results of the comparison are shown in Figure 7.

Figure 7

Wizz PLC relative stock performance vs. U.S. GLOBAL JETS ETF between July 10 and August 19, 2022



Source: Investing.com.

In the analyzed period, Wizz outperformed (25%) compared to the JETS benchmark (7.5%). Of course, to formulate conclusions in this area, it will be necessary to compare unpublished quarterly reports. Still, it can be stated that recent business decisions and the harsh reaction of internet users have yet to be reflected in the current valuation of the company's shares.

6. CONCLUSIONS

There is no doubt that social media – an example of which is the analyzed Twitter – constitute a natural environment for expressing negative emotions toward brands. High dynamics and impermanence characterize the reactions of internet users – after a period of “indignation,” the number of mentions drops drastically. The article aimed to determine whether brands that have decided to stay in Russia are still exposed to negative WoM, calls for a boycott or brand cancellation. An example of this is relatively little interest in the Auchan and Leroy Merlin brands in the analyzed period, with simultaneous intense discussions around Wizz Air's business decisions. It is worth emphasizing that most of the surveyed companies are not listed on stock exchanges – they represent private capital and thus are less dependent on external pressures. In the case of the examined company Wizz, listed on the stock exchange, the negative WoM was not reflected in the value of shares in the analyzed period.

The strategy of “waiting out the storm” applied by Auchan in this context seems to be bringing the effects expected by the brand: the number of negative WoM has decreased. Boycotting, as a political action, has a long and successful history. It can still cause a permanent shift but, at the same time, boost publicity or seriously damage a company's bottom line. Social media, as a platform for quick and dynamic information exchange between internet users, certainly accelerates the formulation of this type of consumer reaction. However, there is a concern that due to information overload and the impermanence of information published on social media, the effectiveness of “online brand cancellation” is relatively unstable. It is undoubtedly also influenced by the anonymity of internet users and heuristics – one thing is to publish a tweet, and another to give up the consumption of products and services of certain brands. However, further research on the topic is needed to support the findings. It seems necessary to learn about the attitudes and motivations of internet users engaging in consumer boycotts and their economic consequences through a financial analysis of companies in the “boycotted” period.

It is important to note the research limitations of the research method used in this article. Firstly – due to the restrictions imposed by the Twitter application – it was possible to analyze only a week of internet users' activity. Limiting the period of the study is a significant research limitation. Unfortunately, the research tool and the Twitter policy do not allow full access to historical data as of February 24, 2022. Historical data analysis would certainly shed new light on the results obtained and their conclusions. Therefore, it will be necessary to re-run the analysis at different time intervals and compare the obtained results.

Secondly, it is worth emphasizing that the surveyed Twitter platform is just one of many social platforms that constitute a space for discussion among internet users. To objectify the obtained results, conducting a similar analysis on Facebook, Instagram, TikTok, and Telegram would be necessary. It would also be interesting to conduct analyses in languages other than English, particularly Polish, Ukrainian and Russian.

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Exploring the Impact of Negative Words Used in Online Feedback in Hotel Industry: A Sentiment Analysis, N-gram, and Text Network Analysis Approach

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ABSTRACT

This study examines the words and situations that trigger and those that do not trigger a hotel response when customers post negative online feedback. The research explores, through sentiment analysis, bigrams, trigrams, and word networking, the valence of online reviews of five important hotels in Las Vegas. Only the feedback that has been categorized as negative by the algorithm is selected. In correspondence to this feedback, the existence of answers from the hotels is checked together with the response style. While the negative valence of the feedback can represent a mixture of subjective and objective emotions, there are common features present in their expression. On the responses side from the hotel, not all the reviews receive attention. As such, the negative feedback words are extracted and separated into those that belong to reviews that obtain a response and those that do not. The replies are standardised by following an established pattern. This paper aims to contribute to a prominent issue in tourism that is little tackled: responses to feedback. The findings may help the hotels' management explore different paths to improve their services and responses alike. Behavioural marketing researchers might want to use these results to confirm the existence of such patterns in different datasets or situations.

JEL classification: L83, M31, Z30

Keywords: sentiment analysis, tourism, hotels, marketing, customer's opinions.

1. INTRODUCTION

Feedback is important in the hotel industry because it helps hotels understand the expectations and satisfaction levels of their guests, as well as, identify patterns in reviews as well as areas for improvement and make necessary changes to enhance the guest experience (Torres et al., 2015). A consistent part of the GDP of many countries is given in general by the service industry and the tourism industry in particular (Bazargani & Kiliç, 2021). The quality of these services is sometimes hard to assess. Nevertheless, in the last years, with the introduction of the possibility of customer satisfaction expression through direct feedback, the results are measurable. These results can be

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expressed in a numerical form, such as several stars to encode an experience, or as a message text for future visitors and/or hotel management. The number of stars may be variable, but they can be associated with a Likert scale, defining a terrible experience with a star on a particularly pleasant one – with five stars. This assignment, of course, is subjective, depending on several factors (Willits et al., 2016). Still, negative feedback is considered when the stars number of given ranges from 1 to 3 and positive from 4 to 5 (Proserpio & Zervas, 2017). Dissatisfaction arises when there are discrepancies between our own expectations and the perceived reality. A direct consequence of the customers' negative feedback should be a drive for an improvement in service quality, so perceived as an opportunity, but sometimes it is perceived as a threat that needs to be silenced.

There are several approaches to dealing with criticism in feedback. It was seen that any answer is better than no answer (Esmark Jones et al., 2018). One approach, which seems to be preferred, is to adopt a structured answer that follows the 10 moves scheme: express gratitude, apologize for sources of trouble, invitation to a second visit, the opening pleasantries, proof of action, acknowledge complaints, refer to customer reviews, closing pleasantries, avoidance of reoccurring problems, solicit response (Zhang & Vásquez, 2014). Other approaches follow a similarly structured answer pattern (Sparks, 2001). Inappropriate and untimely responses (Davidow, 2003) to the e-WOM (electronic Word-Of-Mouth) of dissatisfied customers can lead to losses in monetary terms and credibility.

This paper's main purpose is to identify, in negative feedback, the words that lead an accommodation unit to respond and those that do not trigger a response. The analysis will be done with the help of sentiment analysis, which is part of the Natural Language Processing (NLP) ecosystem.

The dataset in this work was obtained from the Unwrap blog (Singh, 2021) and was originally sourced from Yelp.com. There are a total of 6 Las Vegas hotels: Bellagio, The Cosmopolitan, M Resort SPA Casino Henderson, MGM Grand, South Point Hotel Casino and SPA and The Venetian, but only the first 5 were considered because, although The Venetian had many reviews, the responses to these reviews were only 2. The hotels are enormous and well-known in the U.S. and abroad as well. The complete dataset consists of more than 20,000 feedback reviews starting from 18th October 2004 until 22nd April 2021.

In the realization of this study, the R programming language (R Core Team, 2022) was used, as was the RStudio interface (R Studio Team, 2022). Additionally, the code was written by the author. The study makes use of NLP, a branch of Artificial Intelligence.

2. LITERATURE REVIEW

In any service industry, there is a link between the quality of service and customer satisfaction. Depending on how the perceived service is delivered, customers react, and their reaction is subjective and objective alike. This is also valid in tourism, especially in the hotel industry, and is deemed useful to improve service quality (Li et al., 2013). The customer is the main player that can be considered a limited empowered influencer. This definition arises because based on the feedback they give, they have the power to influence and thus convince hotel managers to make changes, sometimes structural, that voice from the outside of the accommodation unit and concern the accommodation unit based on a short-term experience. Customer opinions expressed through publicly available feedback might be more subjective than objective though (McAuley & Yang, 2016). In the hotel industry, an ideal customer would return, and physical attributes play a key role, exceeding one of the services received (Worsfold et al., 2016). Overall, when tourists wanted to book a service (be it a hotel room or a guided tour) in a new place, they would read online reviews and make decisions upon that (Xiang et al., 2015). The similarity between the reader and the reviewer can influence the decision process (Chan et al., 2017).

2.1. Negative Online Reviews

Even long before the internet era, WOM was used to recommend products because buying something that had a certain cost could have been considered a risky operation. It is understood that sellers were affected if bad WOM was spread (Cox, 1967; Woodside & DeLozier, 1967). In marketing, customer evaluations and complaints need to be properly addressed because they involve satisfaction and, more importantly, trust (Tax et al., 1998).

E-WOM is by now an established concept, it represents a transfer of classical WOM onto the internet. When booking a (new) hotel room, after the price, tourists look for other peoples' experiences in that hotel, and e-WOM is expressed through online reviews). These comments can have a strong impact on how and what other people choose (Fileri & McLeay, 2014). Online reviews have a strong influence and can determine the income flow of a company, no matter if touristic or not. Accommodation-related comments may be found on booking platforms such as Booking.com or Tripadvisor.com and, depending on these platforms, people might have a different attitudes towards a hotel brand image, so each of them influences peoples' choices in a separate way (Borges-Tiago et al., 2021). Feedback comments are found on other platforms as well, such as an another well-known one is Yelp.com, which hosts opinions on several businesses, including accommodation structures.

Negative comments usually have a greater impact in cases where there is little knowledge of a product, there is an elevated risk due to purchasing or when the price is incredibly competitive and advertised as the lowest (Chaterjee, 2001). For a business, the biggest issue is that comments on products influence sales (De Maeyer, 2012), and this also happens in the hotel industry (Gavilan et al., 2018). Feelings about a touristic experience, for example, are not shared only through a final review and a rating but are also shared via social media channels such as Facebook or Instagram, and can amplify the effect. This can have a strong impact on the perceived experience (Kim et al., 2013). In case of problems, it is not always the business's fault. Negative reviews might be written impulsively due to a dispute with the staff. Oftentimes, these are due to the customers' incivility and the way the employees deal with these issues is crucial (Zhu et al., 2019). On the negative complaints side, before posting them, customers try to solve their problems with the staff. If the complaints are not solved or are dealt with poorly, then the negative feedback will be posted online (Sparks & Browning, 2010).

Negative feedback needs to be dealt with. Lee and Hu (2004) have seen in their study that around one out of five negative results received a response from the hotel management. In some cases, hotels do not respond at all, and most responded to negative feedback more than positive ones (Park & Allen, 2013). Some hotels reply to positive feedback by repeating words of appreciation from the customers. But the most challenging task is to answer negative feedback, which contains service failures, misunderstandings, or even false claims by the customers. Another issue is on what channel to address negative feedback. Some use the same online tool, while others choose to follow up privately (Chen et al., 2016).

2.2. Text Analysis in Reviews

There are countless papers in the specialized literature on automatic text analysis of reviews. Many focus on sentiment analysis (for example, Berezina et al., 2016; Collandon et al., 2019; Dadhich & Thankachan, 2022), other on topic modeling (Büschken & Allenby, 2016; Park & Liu, 2020; de Oliveira et al., 2021) and text summarization (Zhan et al., 2009; Raut & Londhe, 2014; Sathiya et al., 2022). There is also interest in automatically analyzing negative reviews (Lee et al., 2017; Ali et al., 2021).

But there is no specific analysis on what makes the management of a hotel respond or not to negative feedback, or what are the words (and situations) that might trigger a response.

3. MODEL SPECIFICATION AND DATA

Dealing with huge volumes of text is daunting, hence the need for dimensionality reduction. The following steps were applied to the feedback review(s), here called only review(s), and response(s) to feedback, here called response(s). Both underwent the following pre-formatting steps. Initially, with the help of regular expressions, the extra HTML characters present in the text were removed.

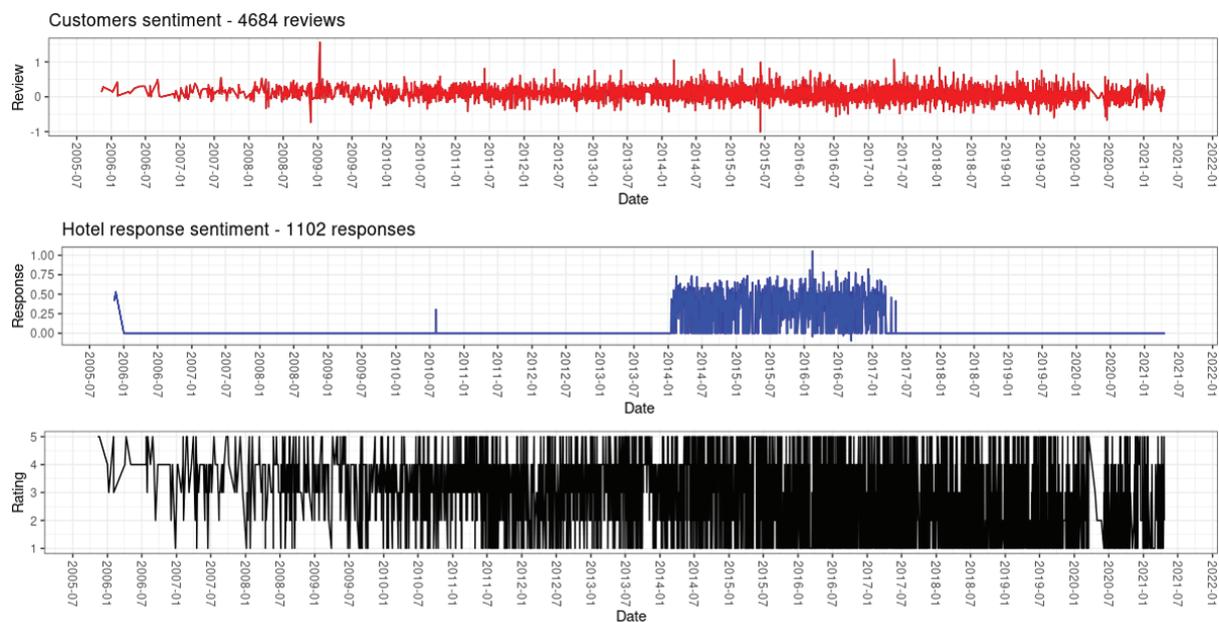
The polarity of the reviews is computed by considering their sentiment analysis score with the help of the *sentimentr* (Rinker, 2021) package. Firstly, all text is tokenized at the sentence level and the overall sentiment value is averaged for each review. Then, a polarity separation into positive and negative is performed.

For the sake of clarity, the MGM Grand Hotel reviews were taken as the main case study, but all of them underwent the same procedure. MGM happens to be the largest single hotel in the world (C.A.R. Team, 2020).

Figure 1 shows, on a timeline, the number of reviews (4,684) and their sentiment. The baseline 0.0 indicates neutrality in sentiment, above that limit – positivity and below – negativity. It can be noticed that the responses are limited to a certain period, between 2014 and 2017. Their number is 1,102. Again, we have positivity, neutrality, and negativity in the sentiment of the text of the responses. The bottom part of the figure represents the rating, expressed in stars from 1 to 5 for each review.

Figure 1

Sentiment distribution of reviews, responses, and rating, MGM Grand Hotel



Source: Author's computation.

As can be noticed, there is a period where the responses are consistent, and those periods are considered for computation. Table 1 shows the total reviews in the dataset, the number of computed negative reviews, the number of responses and the number of responses to negative reviews. The number of negative reviews is calculated by selecting feedback that has (i) negative polarity and (ii) a rating that is less than or equal to 3 (Proserpio & Zervas, 2017). Not all negative reviews get a response, but there are certain common characteristics to which they get one, and which is the topic of this research. Be aware that the accommodation unit also responds to positive feedback, but this is not the object of the current study.

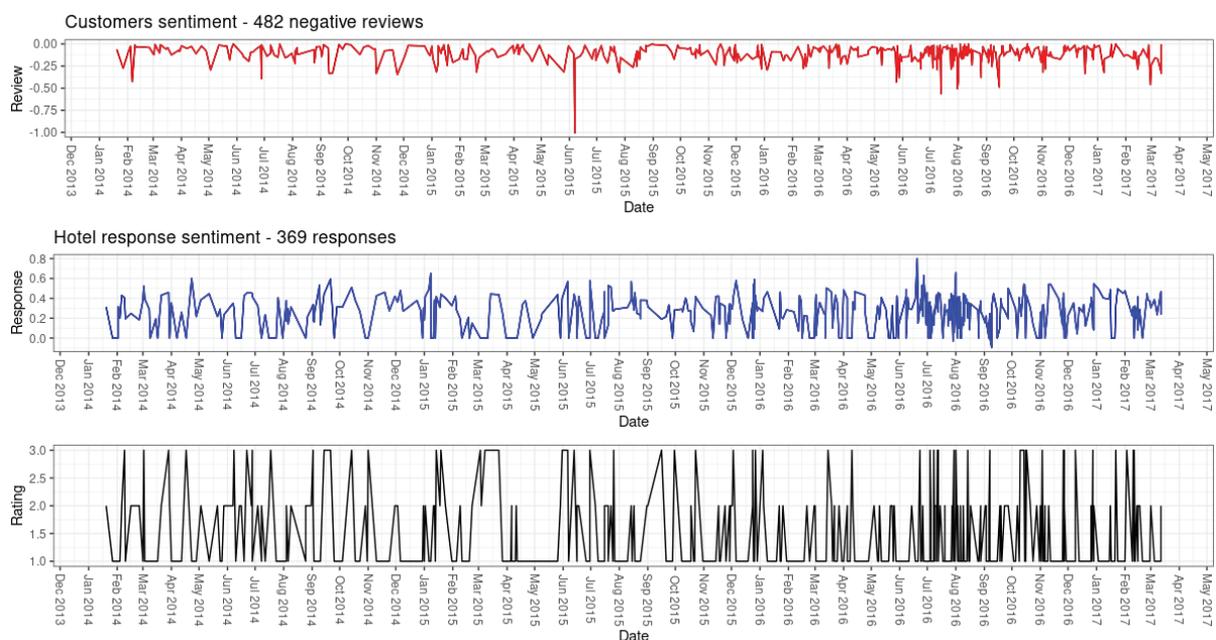
Table 1
Reviews and responses distribution

Hotel Name	Reviews	Negative Reviews	Responses	Responses to Negative Reviews	No Responses to Negative Reviews	Period
Bellagio Hotel Las Vegas	3,884	178	611	128	50	07/01/2015 – 15/03/2017
M Resort SPA Casino Henderson	1,343	72	222	34	38	01/03/2018 – 16/04/2021
MGM Grand Hotel Las Vegas	4,684	482	1102	369	113	19/01/2014 – 14/03/2017
South Point Hotel Casino and SPA	1,920	254	977	164	90	13/02/2014 – 10/03/2020
The Cosmopolitan of Las Vegas	5,040	221	232	104	117	02/05/2017 – 08/10/2020
The Venetian Las Vegas	4,148		2			–

Source: Author's elaboration.

Figure 2 shows, again on a timeline, exclusively the period of the 482 negative reviews, between 19/01/2014 and 14/03/2017, which obtained 369 responses. It results in major clarity that the customers' sentiment tends to the negative side, with respect to where the 0.0 baseline is while the hotel responses also include positivity elements. The ratings follow the sentiment of the reviews, meaning that where there is negative feedback, the ratings are low.

Figure 2
Responses selected period, MGM Grand Hotel



Source: Author's elaboration.

Further on, the bag-of-words model (Zhang et al., 2010) was applied to get the necessary dimensionality reduction. In the pre-processing phase, stopwords, numbers, and punctuation were removed, white space was stripped, and Porter's stemming (Jivani, 2011) was applied. The function *sentiment_words*, from the package *sentimentr*, was used to extract the negative words from the negative reviews that obtained a response and the negative reviews that did

when the experience in the hotel is perceived as “worst”, will not obtain a response. Smoking is a particular topic, which can be seen in the network graph, Figure 4 at the bottom. The smoking ban in the U.S. is duly reinforced to reduce the smoking population (for example, see Bird et al., 2020) but not at Casino Resorts, albeit many non-smokers visit casinos (Sakevich, 2016). Dissatisfaction and potentially negative e-WOM for future readers can be mitigated through responses. In the case of the MGM hotel, there seems to be a trigram advice such as the “avoid the west wing” zone that is addressed by the management, unlike the “hot water” issue that receives no response from the structure. These things were specific to this accommodation unit, but the negative words were common to all of them. The network analysis gives more information about how words are grouped, mostly in smaller or larger topics like comfort, cleanliness, and services (Au et al., 2009), and represents how (in this case negative) words relate to them. Interestingly, the responses are remarkably similar and standardized. They include apologies, thanks for the feedback, regret for the mishaps, and the wish for the customer to return with a promise that in the future the problem will be solved and the customer’s experience will be improved. A similar observation was made by Alrawadieh et al. (2019). They are eager to follow up on the issues but through emails, out of other potential tourists’ eyes.

5.1. Managerial Implications

Automatic text analysis can bring to the forefront patterns of reviews that could elicit a response when these sensitive situations are expressed with specific words. Obviously, these are crucial for the businesses’ reputation. Following such an analysis, management and marketing departments could pay major attention to preventing conflictual situations, learn how to properly deal with them, and leverage the points of strength. Feedback leads to specific actions on the side of the hotel (Assimakopoulos et al., 2015). There is no need for the management to read all the reviews, automation saves time and money. Management can look for the existence of negative words in feedback to improve their reputation.

5.2. Limitations and Future Research

More research needs to be done with bigger and more complete datasets that contain responses and different services or products. For each industry field, there might be different word triggers, but the algorithmic steps can be automatized in the same manner and are identical to the ones used in the case of this study. An interesting follow-up would be an empirical study on how to answer properly in cases where a hotel would typically not respond.

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New technologies in the field of sensory marketing and customer experience: a systematic literature review

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ABSTRACT

Nowadays, we are noticing more and more new technological solutions that fit into the field of sensory marketing, the implementation of which is in a relatively preliminary stage. They are intended to improve customer experience. The main objective of the research is to determine the main topics covered in the literature. This article covers a systematic literature review of research conducted to date on new technologies that are part of the field of sensory marketing related to customer experience. The research search was based on two databases: Scopus and Web of Science Core Collections. Studies conducted between 2007 and May 2022 were included. Four inclusion criteria were used: database, terms, language, and cover period. No methods were used to assess the risk of bias in the included studies. 33 items of literature were qualified for qualitative synthesis. Based on the analysis, a conceptual framework of the most commonly used antecedents and outcomes in research was created, and two main research areas were identified: sense of telepresence and research by technology type. In view of this, further research directions based on the identified research gaps were indicated.

JEL classification: M30, M31, O33

Keywords: sensory marketing, new technologies, customer experience.

1. INTRODUCTION

New solutions that are part of the field of sensory marketing are being noticed increasingly nowadays (Flavián et al., 2019b). One of such solutions is modern technologies that are supposed to influence customer experience. Their implementation is in a relatively preliminary stage. However, it is worth noticing what impact these solutions have on customers. There is a belief (Ma et al., 2020) that multiple senses can be stimulated by virtual fitting rooms, posting videos where the model presents clothes, or photos with high magnification of the fabric – perhaps such techniques can stimulate the same regions in the brain as actual touch?

A systematic literature review was conducted to systematize the current state of research on new technologies that are part of the field of sensory marketing and their impact on customer experience. The results presented in the following chapters answer the research questions posed:

1. What main research areas have been covered in the existing literature?
2. What research gaps and directions for future research arise from the existing literature?

The structure of the rest of the article is as follows. The first part of the article is a theoretical background. The next part refers to the methods and materials used to conduct the systematic literature review. Then, its results are presented along with a breakdown of the research areas identified. The next section describes the directions for future research, that is what constitutes the essence of this publication. The conclusions and limitations of this review form the last part of the article.

2. THEORETICAL BACKGROUND

Sensuality fits into the field of marketing that is known as experiential marketing. Experiential marketing is a relatively modern concept that continues to expand the scope of covered marketing activities. For long, customers have been buyers of not just physical objects but of an experience (Boguszewicz-Kreft, 2010; Dziwanowska & Kacprzak, 2013). Schmitt (1999) distinguished 5 modules of experiential marketing:

- sensory module – contains activities that affect the senses of customers, and thus their perception and behavior; this module itself refers to the marketing field of sensory marketing (Krishna, 2010);
- affective module – refers to the feelings and moods of customers, which have a significant impact on their attitudes;
- cognitive module – forces the customer to think logically with the aim of creating a positive experience;
- behavioral module – involves enriching the experience through physical sensations;
- relational module – differs from the others in that the customer's experience depends on their social relationships (Dziwanowska & Kacprzak, 2013).

The concept of customer e-experience requires redefining the proposed modules and adding two new modules (Kacprzak, 2017): the utilitarian module, which mainly refers to the concept of use value, and the escapist module, which assumes such a strong shopping experience that will cause disconnection from reality and a loss of sense of time.

Although attempts to influence people's senses through marketing activities have accompanied commerce since its inception, the field of sensory marketing has been developing rapidly “only” for a dozen years or so. The elements of sensory marketing include sight, hearing, smell, touch, and taste (Grzybowska-Brzezińska & Rudzewicz, 2013). Research and theories within each have developed so much that they are themselves separate categories, such as audiomarketing, visual marketing, and aromamarketing.

The development of technology also results in the development of solutions used in marketing. More than 20 years ago, a shift from “atoms” (products and their brands) to “bits” (information and entertainment that the acquisition of a product brings) could be observed (Nordström & Ridderstråle, 2002). Today, the exact opposite process is coming, “by incorporating digital information into physical, solid products” (Schmitt, 2019, p. 1). The innovation of solutions such as the internet of things, virtual reality, or virtual assistants is not far from affecting the senses of customers, and their commercialization continues to spread (Schmitt, 2019).

The internet of things (IoT) implies that everyday objects can collect and process data via the internet or another network, enabling increasingly sophisticated services (Wortmann & Flüchter, 2015). An example of this is the smart fridge. Even the first prototypes assumed a number of functions not previously attributed to refrigerators such as generation of recipe suggestions based

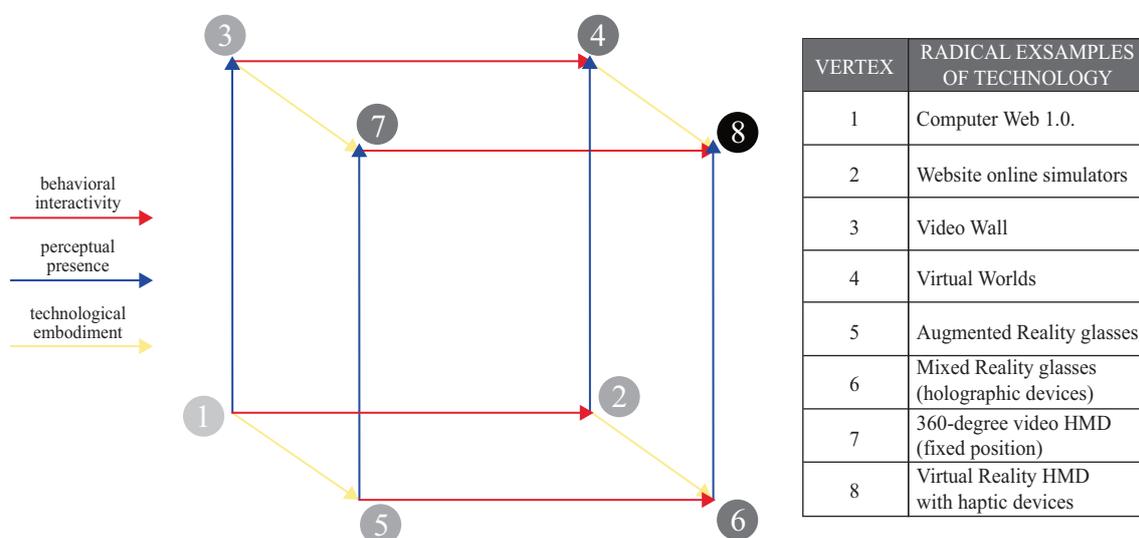
on the food stored in the fridge, multimedia presentation of cooking (via an internet connection), generation and updates of a store list and shopping list, warning about foods that are about to expire, displaying calories for various foods, scanning food and storing its information in a database, storing family information and medical records, or calculating the body mass index (BMI) to see whether the user is overweight or not based on his or her height and weight (Luo et al., 2009).

Augmented reality (AR), virtual reality (VR) or mixed reality (MR) are similar concepts, but only at first glance. Virtual reality rejects the outside world while using devices that block sensory perception of the real world (Hoyer et al., 2020). Among other things, VR technologies are being used in providing tourists with previews of experiences of sites, destinations, and attractions, such as hotels, cruise ships and the like, as part of a marketing strategy (Samuely, 2016). Augmented reality allows for the enhancement of information capabilities and user experience by adding an interactive experience in the real world (Hilken et al., 2017). An example is the Ray-Ban eyewear store, which has included technology in its shop window that allows a willing passersby to choose their favorite shape of glasses and virtually apply them to their face. Once the frames are attached to the face, they follow the model, twisting and turning the face in front of the camera (Radley, 2014). Mixed reality, on the other hand, is a combination of the virtual world and reality, allowing for a new visualization of the environment (Milgram & Kishino, 1994). Manufacturers such as Ford, for example, are using mixed reality applications to add new features to existing vehicles before the physical production of a prototype, allowing managers to evaluate and change a new concept faster and less expensively (Spears, 2017).

Computer programs that understand users' queries and are able to perform a certain limited set of actions for them are called virtual assistants, the basis of which is artificial intelligence (AI). A variation of such assistants is chatbots, which are able to carry on a conversation with the user using sound or text (Hoyer et al., 2020).

The boundaries between new-reality technology solutions have not yet been clearly defined by researchers and practitioners. An attempt to systematize existing and potential modern technologies is the EPI Cube model (Flavián et al., 2019b), which allows researchers to better understand their impact on the customer experience. The model (Figure 1) integrates technological (embodiment), psychological (presence), and behavioral (interactivity) perspectives. In addition, the EPI Cube is a practical tool for managers that can help them choose the most appropriate technologies with which to design value propositions for customers.

Figure 1
EPI Cube Model



Source: Flavián, C., Ibáñez-Sánchez, S., & Orús, C. (2019). *The impact of virtual, augmented, and mixed reality technologies on the customer experience*.

This model shows very well the boundaries between the types of reality discussed earlier – virtual, augmented, and mixed reality. If we add technological embodiment to the reality around us, we get augmented reality. Introducing an element of interactivity into it will result in mixed reality. Virtual reality, on the other hand, will be obtained through the final element of perceptual presence.

The relevance of experiential marketing to customer behavior is the subject of many studies conducted in various markets and target groups (Ławicki, 2010; Niezgodna, 2013; Litvinova et al., 2015; Skorek, 2016; García et al., 2018; Nasution et al., 2020). The impact of individual experience modules on values such as customer satisfaction or loyalty is also studied (Lee et al., 2011; Alkilani et al., 2012); sometimes even as regards a specific brand or product category (Kustini, 2011; Platania et al., 2016).

Various research is also being done on sensory marketing. The impact of each of the senses is being studied: smell (Morrin & Ratneshwar, 2003; Garg & Chhikara, 2019), hearing (Beverland et al., 2006; Craton & Lantos, 2011), taste (Babin et al., 2003), sight (Henderson et al., 2003; Kahn & Deng, 2010), and touch (Citrin et al., 2003; Peck & Childers, 2006). The multitude of studies being conducted is due to the rapid pace of change in the environment and the widespread use of newer and newer solutions that fit into this field. Sensory marketing is the subject of research in many markets, such as the tourism market (Kuczamer-Kłopotowska, 2017), food service (Ifeanyichukwu & Peter, 2018), and hospitality (Ali & Ahmed, 2019).

Several research studies have reviewed the literature related to the field of new technologies and marketing. Elradi et al. (2017) investigated the key aspects of 3D e-commerce research areas by using a systematic literature review approach. Yung and Khoo-Lattimore (2017) conducted a systematic literature review on VR/AR research in tourism. Suh and Prophet (2018) conducted a systematic literature review of immersive technology research in diverse settings, including education, marketing, business, and healthcare. Yussof et al. (2019) researched augmented reality in advertising and consumer behaviors. Khakpour et al. (2020) conducted a systematic literature review to investigate greenability of reality technologies including virtual, augmented, and mixed reality. Taufik et al. (2021) examined the validity of VR in this type of research (for example: is behavior in VR accurately captured, compared to behavior in real life) and the effectiveness of using VR as a tool to change behavior in consumer domains using a systematic literature review as a method. Querejeta Lomas et al. (2021) studied the impact and significance of AI in fashion e-commerce by conducting a systematic review of the literature. Verma et al. (2021), Chintalapati and Pandey (2022), and Mariani et al. (2022) provided an integrated view on the body of knowledge on artificial intelligence (AI) published in the marketing, consumer research, and psychology literature. Lavoye et al. (2021), Abderahman et al. (2021), Kumar (2022), and Chen et al. (2022) reviewed the state-of-the-art literature on AR in retailing, customer behavior, and retail marketing. Nicolescu and Tudorache (2022) analyzed the overall customer experience with customer service chatbots in order to identify the main influencing factors for customer experience with customer service chatbots and to identify the resulting dimensions of customer experience using the systematic literature review method. Düzgün et al. (2022) conducted a systematic literature review on knowledge-based authentication schemes for augmented reality head-mounted displays. Hentzen et al. (2022) provided a systematic review of the literature on artificial intelligence (AI) in customer-facing financial services. Ledro et al. (2022) made an analysis of the AI literature within the CRM domain.

To the best of the author's knowledge, this study is the first to systematize and discuss the literature regarding the relationship between new technologies in the field of sensory marketing and customer experience.

3. METHODS

The first step of the review was to search the list of publications based on the selected criteria. Inclusion criteria are presented in Table 1.

Table 1

The inclusion criteria applied in the systematic literature review

Criterion type	Criteria
Database	Scopus, Web of Science Core Collections
Publication type	article
Cover period	2007–2022 (May)
Search language	English

Source: own research.

Terms related to the topic of the systematic literature review being conducted were used as the primary criteria, such as: “digital sensory marketing”, “customer experience”, “virtual reality”, “augmented reality” or “internet of things”. In order to provide the appropriate quality of the identified records, the search was based on two databases cited among the most comprehensive in terms of the number of indexed citations: Scopus and Web of Science Core Collections (Gusenbauer & Haddaway, 2019). The search string entered in both databases was identical (the only difference was the way the fields were described – appropriate for each database):

- Scopus:

TITLE-ABS-KEY (“digital sensory marketing” OR “sensory marketing” OR “senses”) AND TITLE-ABS-KEY (“marketing” OR “consumer behaviour” OR “consumer behavior” OR “customer experience” OR “customer loyalty” OR “customer” OR “consumer”) AND TITLE-ABS-KEY (“offline” OR “online” OR “augmented reality” OR “virtual reality” OR “mixed reality” OR “internet of things” OR “artificial intelligence”)

- Web of Science Core Collections:

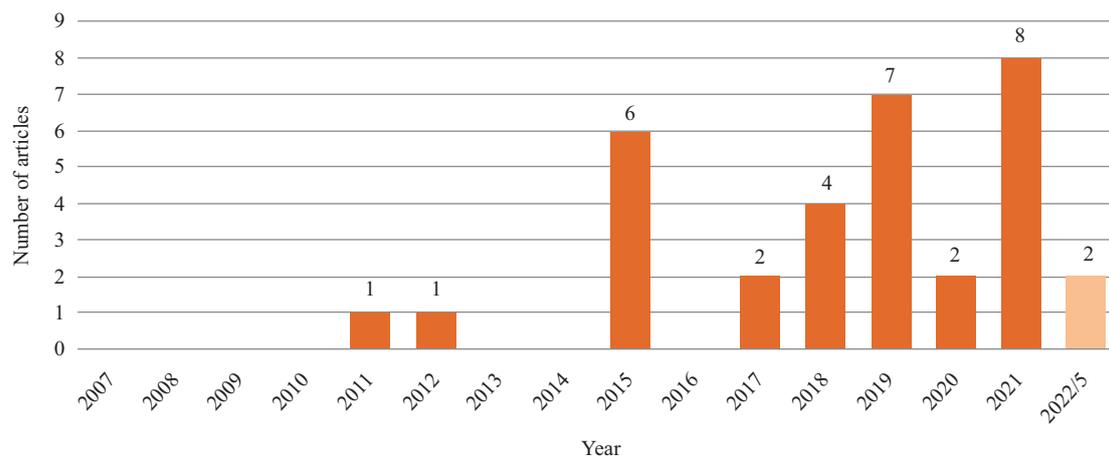
TS=(“digital sensory marketing” OR “sensory marketing” OR “senses”) AND TS = (“marketing” OR “consumer behaviour” OR “consumer behavior” OR “customer experience” OR “customer loyalty” OR “customer” OR “consumer”) AND TS = (“offline” OR “online” OR “augmented reality” OR “virtual reality” OR “mixed reality” OR “internet of things” OR “artificial intelligence”)

In the search string, there can be observed 3 subject areas included in the search. The first of them refers to the sensory aspect of the search (digital sensory marketing, sensory marketing, senses, marketing). Another one covers the customer behavior area (consumer behaviour, consumer behavior, customer experience, customer loyalty, customer, consumer).

The last one refers to new technologies included in the search (offline, online, augmented reality, virtual reality, mixed reality, internet of things, artificial intelligence).

Figure 2

The number of articles included in the qualitative synthesis

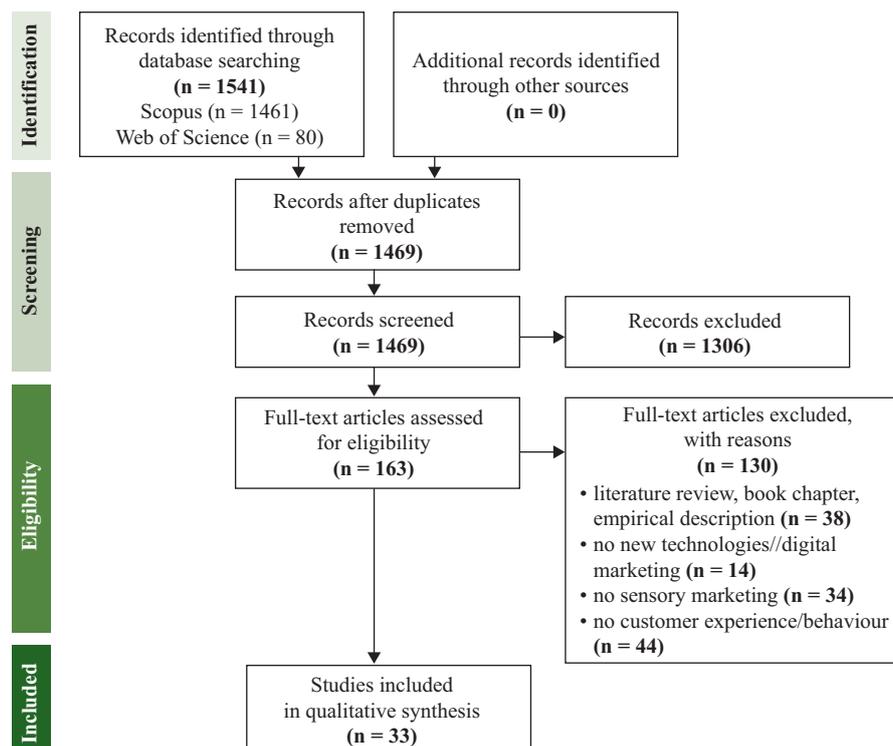


Source: own research.

The review included publications in English. The search took place on 19th May 2022 and was limited to the last 15 years, from 2007 to May 2022. The analysis of publications from the last 15 years makes it possible to show the development of topics related to new technologies within sensory marketing. No more limitations were applied in this stage of the search, in order to prevent omitting any significant results. The first stage resulted in 1541 publications from the two databases mentioned above (Scopus $n = 1461$; Web of Science Core Collections $n = 80$). All publications identified in this stage were exported to Mendeley software, a bibliography manager, which also served in the subsequent stages of this systematic literature review. After removing duplicates, the number of publications that advanced to the analysis stage based on title, abstract, and keywords was 1469.

Figure 3

The PRISMA flow chart showing phases of the selection process of systematic literature review



Source: own research.

The preliminary inspection to which these articles were subjected helped reduce this number by almost 90% (a decrease of 1306 records). The main reasons for this were other scientific fields investigated in the article and the topic, which was not directly compatible with the search. As a result of this reduction, 163 articles were qualified for the next stage and evaluated on the basis of the full text. At this stage, eligibility criteria were added – the record cannot be a literature review, a book chapter or an empirical description. After reading these articles, about 80% of them (a decrease of 130 records) were rejected on the basis of eligibility criteria mentioned, but also for reasons such as that the article was not related to the field of new technologies, sensory marketing, and customer experience (which appeared only after reading the full text). The final number of articles included in the qualitative synthesis was 33 (Figure 2). A full list of the identified publications is included in Appendix 1. The elaboration upon Appendix 1 is included in subchapters 4.2. and 4.3. The process of the described analysis with the listed stages is shown in the PRISMA flow chart (Moher et al., 2009) (Figure 3).

4. RESULTS

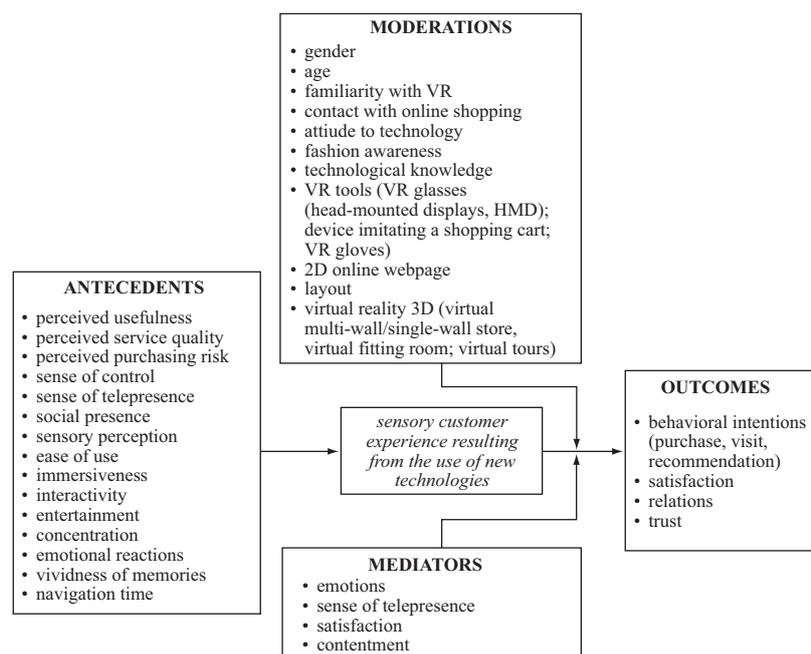
The subject of the 33 studies classified for qualitative synthesis is new sensory marketing technologies and customer experience. As a result of the analysis of the collected material, a model was created of the most frequently studied antecedents, moderators, mediators, and outcomes of the sensory customer experience resulting from the use of new technologies, and two main themes were identified: sense of telepresence and type of technology.

4.1. Conceptual framework of antecedents, moderators, mediators, and outcomes

The framework of the antecedent-moderator-mediator-result model (Mohammed et al., 2010) was imposed on the articles included. Antecedents are understood as input variables that lead to outcomes. The relationship between these variables and outcomes is explained by mediators and its direction and strength are influenced by moderators (Baron & Kenny, 1986).

Figure 4

Conceptual framework – synthesis of antecedents, moderators, mediators, and outcomes



Source: own research.

Generalizing the results of the 33 publications included in the qualitative synthesis, a conceptual framework is proposed as shown in Figure 4. Among the input variables, subjective feelings and perceptions of the users of the solutions under study are most frequently indicated. These include the perceived usefulness and quality of services, the sense of telepresence and social presence (understood as the awareness of the possibility of interacting with other participants and entities), the time it takes for users to learn about and then use the technology, or emotional reactions.

The variables explain the relationship between the customer experience resulting from the use of new technologies and marketing effects. It should be noted that these variables are determined by past experiences. Customers representing older generations may be characterized by greater reluctance toward, and sometimes even fear of, new technologies. Young people, on the other hand, will be eager for new experiences related to their use. The loneliness of shopping in a 3D virtual store may result in its negative evaluation by those who need even a minimal level of interaction with other shoppers. Such psychological barriers as well as gateways mean that a user's approach to shopping in a modern form may be predetermined by their attitude toward new technologies.

Any modern solutions that were analyzed in terms of the variables listed were moderators. These are presented in the following subsections, which describe the identified subject areas. Demographic (mainly gender and age) and psychographic (mainly related to new technologies, that is, familiarity with them, knowledge of them or previous experiences) factors were also moderators in the aforementioned studies: VR glasses (Martínez-Navarro et al., 2019; Herz & Rauschnabel, 2019; Meissner et al., 2020), VR gloves (Van Kerrebroeck et al., 2017), devices imitating a shopping cart (Carlson et al., 2011), virtual shop (Loureiro et al., 2021), virtual fitting rooms (Huang et al., 2019), virtual tour (Ba et al., 2012). Indirect mediating effects were emotions accompanying the use of new technologies, a sense of telepresence (Waterlander et al., 2015; Peng & Ke, 2015; Spielmann & Mantonakis, 2018; Park et al., 2018; Violante et al., 2019; Melo et al., 2022), which in the case of some studies was not a studied variable, but a mediating factor, and customer satisfaction and contentment, which were also not always an outcome, but an indirect effect. All of these affect the basic but all-important marketing effects of behavioral intentions (purchase, visit, recommendation), satisfaction, and even trust. Among these effects, researchers pay special attention to 3 of them: purchase intention, satisfaction, and customer relationship. Purchase intention is a customer's preference to buy a product or service. A customer who learns the value of a good is able to determine whether he or she would purchase it in the future (Younus et al., 2015). Customer satisfaction, on the other hand, is a response to customer fulfillment. In other words, it is the customer's judgment that the features of a given product or service, or the good itself, provide a sufficient level of customer fulfillment (Oliver, 1997). The relationship with the customer, on the other hand, is a category that includes both elements pertaining to the relationship itself, such as its durability or strength, but extending this concept will also arrive at other marketing effects, such as the aforementioned customer satisfaction, customer commitment, or loyalty (Dziewanowska, 2012, pp. 53–54). For each of the above-mentioned marketing effects, the customer's decision is influenced by both factors that characterize the product or service as well as external factors, including the technological solutions used by companies.

4.2. Sense of telepresence

The first research area highlighted by the analysis is the sense of telepresence. Of all the identified research areas, this one appears most often (30% of publications), even if not as the main one, then accompanying other areas. To get a good understanding of what telepresence is, it is necessary to start with the definition of presence, which is the sense of being in a given environment. This perception is a certain phenomenon since it is not mediated. If a medium

presents us with another reality, the perception is based on two environments. Thus, telepresence can be called the primacy of an imposed environment over the reality in which we physically find ourselves (Steuer, 1992). In other words, it is a person's subjective experience of actually being in a given environment.

There is no universal approach to operationalizing telepresence. However, researchers most often refer to the vividness of the information (operationalized as the width and depth of the message, colors, graphics, quality and resolution) and the interactivity of the technology (operationalized as control, speed, and feedback) (Algharabat & Dennis, 2011).

Waterlander et al. (2015) validated a virtual supermarket by comparing virtual and real food shopping behavior. A virtual supermarket is a computer-generated model with which participants can experience and interact intuitively in real time. Game technology is used to simulate a real supermarket shopping experience, where study participants buy virtual food products. Photographs of real food products are used to compose virtual food products, and prices are displayed on virtual shelf labels. The second objective of the aforementioned study was to obtain feedback from the participants on their perceived sense of presence in a virtual supermarket. Customer shopping patterns in the virtual supermarket were comparable to those in real supermarkets. Additionally, the vast majority of participants experienced a medium to strong sense of presence in the virtual supermarket.

Peng and Ke (2015) analyzed users' perceptions of the authenticity and trustworthiness of virtual prototypes of the three-dimensional (3D) virtual world, as well as users' potential purchasing behavior in a real-life situation. The results showed that users of the 3D virtual world felt a strong sense of telepresence and social presence. The sense of telepresence positively influences online users' trust in virtual prototypes and thus increases the intention to purchase them in the real world. Users' sense of social presence, in turn, interacts positively with users' perceptions of authenticity and trust, and thus purchase intention.

Spielmann and Mantonakis (2018) examined how interactivity encourages telepresence capable of influencing customer attitudes toward an advertised object, such as a city, vehicle, or hotel. After comparing its level with online videos and virtual tours (that is, by clicking the mouse, moving the view of the environment with the mouse, zooming in and out with the touchpad), they found that telepresence was a key factor in creating more memorable brand experiences. Activities performed during virtual tours resulted in higher levels of immersiveness.

Park et al. (2018) studied the use of virtual reality (VR), examining the extent to which participants experience a sense of telepresence and whether this is related to their behavior. They used a 3D modeling computer program to create virtual clothing stores. The VR stores were tested in a Virtual Reality Design Laboratory equipped with the necessary technology to create immersive VR experiences. The researchers showed that there was indeed a high correlation between telepresence, in their study measured as the perception of actually being in a retail store, and the participants' intention to purchase clothing in that store.

The results obtained by Violante et al. (2019) show that the use of virtual technology in marketing efforts allows marketers to identify and respond to opportunities through new technologies that are faster, more efficient, and less expensive, as well as better respond to customers' needs by providing virtual experiences where they want them, how they want them, and when they want them. The researchers have created a VR environment showcasing a 360° virtual supermarket allowing for the creation of highly immersive sensory experiences. The virtual supermarket was designed to look like the actual aisles and shelves of a regular store, making for a very user-friendly and real experience – users could walk through the aisles of the virtual supermarket to see the products on the shelves as if they were in a real store. Study participants were invited to visit the entire virtual supermarket, taking as long as they needed. In the end, they evaluated the virtual supermarket and its impact on engagement. The results showed that in retail, VR experiences allow users to immerse themselves in realistic scenarios where they

can virtually explore products, brands and services, exploring and manipulating visual images, features and functions in different ways.

Melo et al. (2022) conducted a study to obtain information on the impact of VR technology and gender on the user's sense of presence, satisfaction, emotions, and attitudes. They conducted a study with a gender-balanced sample of users, comparing two VR configurations (audiovisual and multisensory), taking into account the user's gender. The virtual environment represented a 3D replica of an actual tourist location in Portugal. Navigation through the virtual world was possible through either a real walk (limited to the tracking area of the VR configuration) or teleportation by pressing the trackpad of the VR controller indicating where to teleport to. The results collected through a questionnaire showed that women scored significantly higher in terms of spatial presence in the various VR configurations and demonstrated greater engagement and overall presence in the audiovisual setting.

The immersiveness of the technological solutions discussed is one of their most key features. Their goal is to draw the customer into the world of a particular store or brand, absorbing him or her with the product or service in a way that is the least different from reality while maintaining the most realistic sensory perception possible. Thus, telepresence as a subjective feeling of being actually in an imposed reality is almost synonymous with maximum immersion. Researchers so often undertake to analyze this phenomenon because new technologies are supposed to provide customers with a real shopping experience without leaving home. In addition to noting the functional advantages of these solutions, the participants in the studies discussed above are also positive about them, as they are in themselves something new and arouse a desire to use them.

4.3. Type of technologies studied

Some of the studies do not directly address the impact of new technologies on customer experience, but with this concept in mind, make a functional comparison between them. Among the studies within new sensory marketing technologies, there are several solutions that researchers are most interested in. VR goggles, also called head-mounted display (HMD), is a device that allows the user to completely disconnect from reality and move into the virtual world by fully engaging visual perception. If this solution is also accompanied by others who engage cognition through the other senses, it is a very effective solution with a high level of immersion. Another frequently studied subject is the comparison of different types of display and the materials displayed on them (in 2D, 3D or using several displays). These comparisons make it possible to choose the solution best suited to a particular type of customer. Somewhat fitting into this theme are the so-called virtual fitting rooms. This is one of more convenient solutions for customers, and thus eagerly analyzed by researchers. However, this does not mean that other possibilities of the virtual environment are overlooked.

4.3.1. VR goggles/head-mounted display

The results of a study conducted by Martínez-Navarro et al. (2019) indicate differences in purchase intent depending on the VR format and device used. The effectiveness of VR devices (PC monitor, powerwall, head-mounted display) and VR content formats (360° and 3D) in attracting positive customer responses was studied, which was then compared to the responses from customers of physical stationary stores. The analysis of the results of the questionnaire survey showed that there were no differences in the sense of presence and affect depending on the VR format and device. The model tested by the researchers suggests a dual pathway for VR's influence on customers' purchase intentions in virtual stores: one through emotion and sense of presence, and the other through affect triggered by the virtual environment and brand recall.

Herz and Rauschnabel (2019) sought an answer to the question of what benefits and risks influence customer responses to VR devices, and how VR-specific factors such as virtual presence, virtual embodiment, and their interplay influence adoption among users. The results indicate that customers have a moderately positive attitude toward using VR glasses, while the intention to purchase again remains relatively low. Additionally, the results of the survey show that customers are inclined to see the ability to explore new places and access entertainment as the main benefits of VR glasses. Respondents perceived less value for VR glasses in terms of utilitarian and embodied benefits, and they attribute relatively low importance to the fashion element of VR glasses, particularly in terms of comfort and perceived fashionability.

VR devices are in close contact with the human senses, mediating user experiences, creating immersive and sensory-stimulating experiences that enhance tourists' information-seeking processes and thus help them make final decisions (Huang et al., 2016). In view of this, Flavián et al. (2019a) used the S-O-R (Stimulus-Organism-Response) model in their study to better understand the impact of this particular feature of VR devices on tourists' responses. Conducting a study on the travel market, they highlighted that VR head-mounted monitors generate more immersive experiences, greater sensory stimulation, higher engagement levels, and stronger behavioral intentions toward a destination than desktop PCs or cell phones. The same researchers in 2021 analyzed the impact of technological embodiment on the emotional responses and engagement of potential guests in the context of a hotel's virtual reality experience. The results of the laboratory experiment showed that compared to desktop PCs and cell phones, virtual reality devices generated more positive emotional responses and higher levels of psychological and behavioral engagement. Meissner et al. (2020) compared customer choices on virtual shelves in two environments: a highly immersive VR environment using a head-mounted display and hand-held controllers, and a low-immersion environment in which products are displayed on a desktop computer screen as rotating 3D models. Empirical results show that customers using high-immersion VR choose more differentiated products and are less price sensitive. However, choice satisfaction did not increase with high-immersion VR.

4.3.2. 3D virtual environment

Carlson et al. (2011) sought to answer the question of whether, in a virtual store, the presence of multiple walls minimizes the time it takes a user to find products. They hypothesized that a five-wall immersive display would, on average, yield significantly faster navigation times than a single-wall display. This hypothesis was confirmed, and what is more, participants in the five-wall environment found that the device imitating a shopping cart was easier to use than in the single-wall environment. This study indicates that using multiple walls to provide a greater immersive experience improves the ability to locate items in a virtual shopping situation.

Ba et al. (2012) compared customer service quality and user satisfaction in 3D virtual worlds with satisfaction with online services. Two online 2D and 3D environments were designed. The SecondLife platform was used to create a virtual water cruise based on the image of real cruises. The participant was able to have direct contact with customer service. In the 2D version, a mockup of the cruise service website was designed with photos, text, and videos. A pop-up chat window was embedded in the site to get information about the cruise service from an active customer service representative. The results of this study showed that users of 3D virtual worlds gained a better sense of being in an online environment, and the use of a 3D customer service platform could increase user satisfaction by providing a higher quality of customer service in an immersive environment.

Huang and Tseng (2015) examined the relationship between vivid (visually clear and intense) consumption memories and four types of exploratory online consumption behavior (that is, concentration, exploratory consumption behavior, playfulness, and time distortion). This study used software to try on clothes. The study exhibited playful and exploratory consumption behavior

immediately after using interactive augmented reality technologies to activate vivid memories. This study also showed that the degree of autotelic need for touch influences the formation of self-references and the activation of vivid memories.

Yoon et al. (2015) investigated whether different visual cognitive styles (understood as approaches to processing visual information) affect the sense of presence (that is, simulated experience in a virtual environment) and how visual cognition and presence affect user satisfaction with an integrated 3D system. There are two basic styles: spatial visualization and object visualization. In broad terms, object visualization is defined as the representation of the literal appearance of individual objects in terms of their form, size, shape, color, and brightness. Spatial visualization, on the other hand, refers to a relatively abstract representation of the spatial relationship between objects. A group of survey respondents of 181 students (90 male, 91 female) from various disciplines participated in an experiment using a virtual environment stimulus and received a questionnaire. The questions in the questionnaire were designed to measure the participants' propensity to use object visualization or spatial visualization, their sense of presence and satisfaction. The results showed a relationship between visual cognition, presence, and user satisfaction in the virtual environment. Significant gender differences were also observed in satisfaction, as well as in visual information, which affect the user experience of the embedded interface of the 3D virtual environment. It was found that for women, the style of visualization of objects influenced their sense of presence in the virtual environment, while for men it was spatial visualization.

Krasonikolakis et al. (2018) investigated the impact of the atmosphere of the retail store on customer behavior in 3D online shopping environments. They found that ease of navigation is influenced by types of store layout in 3D online environments. This research showed that the layout of the store is an important determinant of the cognitive mapping.

Xu et al. (2020) in their paper presented an AR (augmented reality) fashion show system that uses personalized 3D models of users. This system allows ordinary customers to participate in a fashion show in their real environment. A preliminary evaluation was conducted to validate this system. It showed that it is effective and can help customers make better decisions about buying clothes, which could have potential applications in the future.

Jitkusolrungrueng and Vongurai (2021) set out to study the impact of virtual reality on the purchase intention for cutting tools at trade shows in Thailand. This study showed that customers' intention to purchase cutting tools using VR technology depends on a sense of authenticity, credibility, and functional value.

Cowan et al. (2021) sought answers to the question of how media-induced presence (360 VR and video) leads to increased attitudes and purchase intentions, and how this effect depends on customer knowledge of product categories, as well as haptic information. 360 VR (compared to low-presence media) evokes more favorable ratings. However, in-store 360 VR evokes less positive reactions. When customers are highly knowledgeable about a product, 360 VR reduces customer reactions to a brand. On the other hand, when customers have low product knowledge, 360 VR increases customer reactions to the brand.

Kamil et al. (2021) evaluated the effectiveness of interactive virtual reality in the design of home interiors for real estate purchase decisions. They designed a user interface that, when enhanced, allowed respondents to navigate through an interactive virtual environment similar to a home. The survey included 30 respondents between the ages of 25 and 40 (including potential real estate customers). The results of the questionnaire survey showed that 90% of the respondents believed that interactive virtual reality was effective in helping them make real estate purchase decisions.

Loureiro et al. (2021) conducted a study to extend the S-O-R (Stimulus-Organism-Response) model. The virtual environment simulated a shoe store with which participants could interact. The wall textures were prepared using simulated shelves and printed brand advertisements.

All participants began their exploration of the virtual environment at the entrance to the store, standing in front of the counter. They could move in any direction to explore the items inside the store. The moving distance was limited by the cables of the head-mounted VR goggles and by the simulated walls of the virtual environment. Escapism, as one of the customer experience modules, stimulates customers' cognitive and affective states that increase their pleasure. Customers' sense of pleasure increases vividness and in-store presence in virtual reality, which positively influences their intentions. In addition, the relationship between perceived presence and behavioral intentions is stronger with calm background music, while the relationship between arousal and pleasure is stronger when customers listen to music with upbeat rhythms in the virtual store.

4.3.3. AR-based solutions

Huang and Liao (2017) demonstrated that augmented reality (AR) generates more multisensory experiences than other forms of technology when it comes to hedonic values. They identified several experience-related values that influence customers' intention to visit virtual fitting rooms, including control, concentration, and pleasure.

The goal of Huang et al.'s (2019) study was to examine the psychological factors influenced by augmented reality (AR) services, an augmented reality fitting room system. The results show that modality, a synchronous sense of ownership control, and the ability to reprocess the AR try-on system positively affect customer experience. Both body observation and modality awareness significantly modify the effect of AR fitting system features on customer experience.

Scholz and Duffy (2018) explored how the customer-brand relationship could be facilitated through augmented reality. Through an ethnographic study of how customers use Sephora's mobile app for AR shopping in their own homes, they found that a close relationship could be formed through how the branded AR app is integrated into the customer's personal space and sense of self.

Petit et al. (2021) examined how customers' food purchase intentions change depending on the visualization mode (3D vs. AR) and product format (served vs. packaged). They showed that AR visualization of the food served improves simulation of the eating process compared to 3D visualization. They also showed that 3D visualization increases purchase intention for packaged versus served products, while the opposite is true for AR visualization.

The results of Batat's (2021) study suggest that AR can positively or negatively affect customers' perceptions of their restaurant experience along five dimensions, namely sensory (intensity of the five senses), affective (pleasure), behavioral, social, and intellectual dimensions. These dimensions can improve the customer experience and can be managed by restaurateurs to improve positive attitudes toward AR in the restaurant industry.

4.3.4. Technologies focused on sensory perception

Overmars and Poels (2015) conducted a study to identify elements of product presentation design that interact with the sense of touch to create an emotional connection between customers. The results show that an interface using pictorial interactivity to simulate stroking gestures elicits more positive emotional responses and suppresses the negative emotions associated with an interface using static images.

The study by Van Kerrebroeck et al. (2017) aimed to identify specific tactile features worth including in e-commerce, the type of customer value they can provide, and the factors in and barriers to customer acceptance of tactile technologies in online shopping. The study found that touch-enabled technologies can provide utility and hedonistic value to customers, mainly at the prepurchase stage. Valuable uses invented by customers are mainly related to offering information on material and geometric properties of products. An obstacle for customers seems to be the need for a special output device, such as a glove. Liu et al. (2019) studied various customer hand

movements and how each facilitates mental simulation of touch. Rotating the product 360 degrees makes it easier for customers to simulate haptic sensations in their minds. Touchscreen gestures create stronger haptic imagery than airborne gestures and mouse interaction. Using touchscreen gestures, customers can directly touch product images, although contact is mediated by the touchscreen. In addition, customers can interact with products using natural tactile gestures and get the kinesthetic experience that is often associated with the actual touch experience.

Luo et al. (2019) examined the impact of sensory feedback (visual and tactile) and its convergence with customers' online shopping experience. The results show that a customer's evaluation of a product can be shaped by sensory feedback enabled by interaction technologies. The researchers pointed out that sensory congruence is critical in determining whether sensory feedback is helpful in shaping customers' evaluation of a product. They suggest that marketers should use interactive images to showcase a product, increasing its tangibility, and thereby reducing customers' perceived purchasing risk. Specifically, by presenting products that have a similar haptic feel to the surfaces of touchscreen devices, marketers should encourage customers to view products via touchscreen devices, allowing them to become more familiar with the product. However, if the haptic attributes of products conflict with the feel of the touchscreen surface, they should use gesture-based devices in the air to avoid sensory incompatibilities.

Pelet et al. (2019) investigated the opportunities and risks that arise from the application of artificial intelligence (AI) and the internet of things (IoT) to the multisensory brand experience of guests in 4- and 5-star hotels. They showed that both hotel managers and guests seem to believe that the use of IoT can stimulate guests' sensory experiences and increase satisfaction and loyalty. The same team of researchers in 2021 examined how stimulating the senses of guests at upscale hotels through IoT devices affected their emotions, affective experiences, well-being, and ultimately their behavior. The results showed that while the senses of smell, hearing, and sight influenced guests' emotions, the senses of touch, hearing, and sight influenced guests' affective experiences. The senses of smell and taste influenced the guests' eudaimonism. The sense of smell had a greater impact on eudaimonism and behavioral intentions among women than among men.

Brengman et al. (2022) sought answers to the question of how conventional VR ads can be enhanced by incorporating the sense of smell and whether doing so actually provides a more engaging experience. The results indicate that the compatibility of a product's smell (with sound) is a factor that increases the attractiveness of an offer, although the incompatibility of a product's smell with an offer is not necessarily a factor that decreases it.

The research discussed above shows that new immersive technology solutions aim to absorb the customer to the highest possible degree (preferably fully) in order to influence the customer's purchase experience through the senses. The higher the level of immersion, the more influence marketers have on the customer. It is noticeable that researchers prefer to focus on one selected technology or on a specific aspect of customer experience. The influence on the evaluation of a particular product or service seems to be a key issue, but not the most important one. After all, it should not be forgotten that nowadays it is not always the good purchased that is at the center of the purchasing process, but the purchasing situation itself.

5. FUTURE RESEARCH DIRECTIONS

The results of the presented research not only provide theoretical input, but help marketing specialists to better adapt modern solutions that make the customer's purchasing process more attractive. It should also not be forgotten that modern technological solutions are only part of the marketing strategy, and the relevance of these solutions in the overall marketing effort is still not clearly defined. One of the disadvantages of the new technology market (which, from a social point of view, is an advantage) is the speed of changes that occur on it. This causes a constant

need to update the state of research. Based on the results of the research presented in the literature review conducted, thematically divided research gaps have been identified. The identified research gaps relate to the type of technologies studied and their characteristics, customer characteristics, marketing effects, and the markets studied.

5.1. Research gap based on type of technology

The first category of research gaps relates to the type of technology being studied. The most common technological tool used in research is VR glasses (Martínez-Navarro et al., 2019; Herz & Rauschnabel, 2019; Flavián et al., 2019a; Meissner et al., 2020). This may be due to the fact that this device is becoming increasingly more common, both in terms of its use and availability on the market. The fact that users are using this type of device more frequently makes it necessary to study it from many angles. Indeed, it is no longer a study of a prototype, but increasingly a purchasable product. There is no shortage of examples of research on this device, but certainly not all aspects of it have been taken into account. Very rarely do researchers undertake comparisons of specific devices (at the level of the same sense, of course, so that the results can be comparable). The reason for this may be a barrier in the form of access to technology. Just as VR goggles are increasingly available, VR gloves (Van Kerrebroeck et al., 2017) or other devices that allow transfer to a virtual environment are rare and most often require creation and preparation specifically for the study, at considerable cost. After analyzing the studies presented, one can find comparisons of low-immersive solutions, such as 360° video or interactive advertising, but there are no analyses that undertake a direct comparison of technologies with a relatively high level of immersiveness, such as VR or AR. This comparison can be based on the selection of specific devices and testing them on a narrow target group, or based on the particular sense they affect. VR technologies most often come in the form of physical devices, while AR takes the form of applications that allow virtual modification of reality. With this in mind, it remains to be seen whether the level of immersiveness, which according to the EPI Cube model discussed above is lower for AR compared to VR, will prove to be more effective. After all, a higher level of immersiveness of the technologies in question is not synonymous with a higher degree of impact on the customer. In fact, it may work more effectively, but the question is whether it is necessary to reach the maximum level of immersiveness to achieve a satisfactory effect in the form of the assumed marketing effects.

5.2. Research gap based on characteristics of technology

Related to the previous one, the next category of research gaps concerns the characteristics of the technologies in question. The sense of telepresence, which has been the subject of many of the aforementioned studies (Waterlander et al., 2015; Peng & Ke, 2015; Spielmann & Mantonakis, 2018; Park et al., 2018; Violante et al., 2019; Melo et al., 2022), is worth investigating through its comparison between different tools with different levels of immersiveness. The relationship between the sense of telepresence and elements of customer experience is also lacking in the current research. Are customers succumbing to the virtual environment so absorbed by it that telepresence reduces the need for social presence? Or does the virtual world lack the social context and sense of being in the company of others? The purchasing process is often not just an individual decision, but the result of the need of the purchasing center. In addition to positive or negative attitudes towards new technologies, it is important to analyze whether customers appreciate the hedonistic or utilitarian aspects of these solutions more. Does the customer rate the solution highly because it actually meets his or her expectations, or is it the effect of the first contact with such new tools? In addition to escapist and functional elements, future research may focus on the aesthetics of the given solutions and their entertainment aspect. Spreading

a brand's signature scent in a showroom in the form of an online store or technologies that would allow a company to provide online visitors with a taste of the latest product in its assortment sounds futuristic. Despite the myriad solutions that may come to mind, unfortunately, the state of development of scent and taste technologies for online commerce is not as advanced as in the area of technologies related to other senses. Testing such technologies is thus even more challenging. However, given the importance of online shopping and the rapid pace of evolution of sensory technology, as well as developments in the IT discipline, the future of further research in this area seems to be heading in this direction.

Given that the topic of new technologies in sensory marketing has been in development for years and only today is seeing a big jump in its development, researchers can undertake to analyze the effectiveness of the solutions in question over a long period of time. This is because there is a lack of studies showing the impact of new technologies on a particular customer over the years. Today, customers may be fascinated by this kind of solution, but in hindsight, when it becomes commonplace, perceptions may change.

5.3. Research gap based on customer characteristics

Customers who use new technologies are mostly young people who have grown up with them. The most common group of participants in the described studies are students – people under the age of 30 (Carlson et al., 2011; Peng & Ke, 2015; Overmars & Poels, 2015; Huang & Liao, 2017; Krasnikolakis et al., 2018; Violante et al., 2019; Meissner et al., 2020). It is worth conducting a survey to study the perceptions of customers of other generations and compare them. Similarly, when it comes to other variables. Demographic factors (such as income, level of education, place of residence) or psychographic factors (such as stress level, level of self-esteem, attitude to fashion, propensity to risk, propensity to save) are as possible as those that can determine the power of modern solutions to influence specific customers. Marketing science distinguishes many typologies of customers, indicating their types, most often based on personality type. Comparing the effectiveness of a given solution in relation to a customer type or personality type provides important information for businesses. Also, there are less common characteristics, such as fear of technology. It can play a big role because the effect of touch technology is not yet known. One of the solutions that uses glove technology has actuators, which some customers may find disturbing. It seems interesting to compare perceptions of new sensory marketing technologies in a cross-cultural context. This is also related to the fact that new technologies are increasingly being used in less developed countries, and for the time being the vast majority of such studies are conducted in developed countries. Comparing the effectiveness of the same solutions on customers in less and more developed countries will be an important answer not only for marketing theorists but also for practitioners implementing these innovations. Observing and comparing stationary purchases with those made online will also provide an answer to the question related to price sensitivity. Are they more or less sensitive to product prices in a virtual store?

5.4. Research gap based on marketing effects

Among other things, the use and improvement of tools from new experience marketing technologies is aimed at improving customer experience. Among the studies conducted to date, one encounters those that analyze the impact of these solutions on customers' behavioral intentions (such as intent to purchase, visit, or recommend), satisfaction, or customer trust. However, customer experience is a much broader concept in which many aspects are overlooked in the conducted studies. Described in the theoretical section, the concept of a modular approach to e-experience marketing points to 7 modules. The sensory and escapist modules are the ones on which most research is focused. However, too little attention is paid to the emotional,

behavioral, and relational module. The social presence aspect has already been mentioned with the research gap related to the features of modern technologies, but the emotions accompanying the customer in a virtual shopping situation and his or her behavior are still the subject of very little research. Examining customer attitudes here seems to show the difference in the importance of the customer's cognitive, affective, and conative reactions. Does the customer recognize the shapes and colors of familiar products just as easily in a virtual environment, or worse? Does the layout of a virtual store affect the amount of time a customer has to navigate to identify a particular product? How does this time differ between VR and AR solutions? Will in-store music have an identical impact on the customer in a virtual store compared to a stationary store? Generalizing these questions, one should compare the difference in effectiveness of identical marketing solutions used for stationary and virtual stores.

5.5. Research gap based on market investigated

The use of new sensory marketing technologies is most applicable to the shopping process. For this reason, most of the research is based on an artificial shopping situation in which the customer moves through a virtual store (in most cases, a supermarket with many products) (Waterlander et al., 2015; Krasonikolakis et al., 2018; Violante et al., 2019). In addition to supermarkets, there is often the clothing industry mainly based on the use of new technologies in the form of virtual fitting rooms and furniture showrooms, which allow you to easily arrange the space of your choice. There are also examples from the tourism market (Ba et al., 2012; Huang et al., 2016; Spielmann & Mantonakis, 2018; Flavián et al., 2019a; Pelet et al., 2019; Melo et al., 2022) that allow virtual tours of a place before actually visiting it. Still, other questions arise: are virtual tours more likely to evoke telepresence when the destination is farther away from the customer's location, or does the physical proximity of the product help the customer better visualize and authenticate their virtual tour? Researchers are also focusing on the cosmetics industry (Scholz & Duffy, 2018), where customers can test the selected products themselves, thanks to an application based on augmented reality, even before purchasing them. In view of this, it is worth extending the research to other industries, such as fitness or education. After all, the use of new technologies is not limited only to the virtual purchase of products. Often, purchasers of services can also enjoy new solutions, such as a virtual trainer in the case of workouts at the gym or the ability to virtually adjust a hairstyle before it is actually done at a hair salon. What is more, customer perception can vary depending on the situation in which these modern tools are used. A customer who appreciates the advantages of a virtual environment in the case of a shopping situation in a virtual supermarket may already evaluate the same tool differently in the context of a different industry. In view of this, it is possible to compare perceptions of the rightness and usefulness of new technologies in selected markets, as well as the category of the good being purchased – a product or service.

6. CONCLUSIONS AND LIMITATIONS

This paper systematically reviews the literature on new technologies that fall into the field of sensory marketing and how they relate to customer experience. These topics are eagerly taken up by researchers, as they make it possible to analyze the phenomena we are dealing with today. New technologies related to virtual, augmented or mixed reality, the internet of things or the virtual environment in the broadest sense are constantly being improved in order to better understand the customer. This is because they are tools that are used to diversify the market offer and, by extension, customer experience. For this reason, these solutions are analyzed in terms of many aspects described earlier. Therefore, the relevance of studying this phenomenon is high.

Generalizing the results obtained, the use of new technologies by marketers in many markets is enjoying a positive response from their users. One of the modules of sensory marketing is the escapist module (Kacprzak, 2017), which assumes such a strong shopping experience that will cause a disconnection from reality and a loss of the sense of time. Researchers refer to it by analyzing the level of telepresence, simultaneously compared with the intention of making a purchase. Very often, the level of immersiveness positively correlates with purchase intention. The use of new technologies that interact with the customer's senses also leads to better shopping experiences, enjoyment, satisfaction, and even trust. The fact that the described technological solutions are in their preliminary stages is proven by examples of studies that focus on the typically technical-mechanical aspects of these solutions. We are talking, among other things, about the convenience of using the devices, the customer's reaction time to certain stimuli or the identification of barriers to using these devices.

When interpreting the results of this review, certain limitations must be taken into account. The search was limited to studies described in English. The review also omits grey literature, for its lower level of reliability and the absence of peer review. Only articles from two databases were included in this review: Scopus and Web of Science Core Collections. These are among the largest databases where one can find relatively most articles related to a particular area of science, but not all items of literature are included. This causes the review to overlook articles that the aforementioned databases do not cover. Furthermore, the review showed that new technologies that fit into experiential and sensory marketing are a subject of research analyzed from many angles. This is both a strength, as this area of marketing is widely analyzed, and a weakness, as a search for studies focusing on only one specific aspect (such as customer satisfaction or buyer trust) would significantly reduce the number of identified studies to just a few. This, in turn, still leaves the way open for researchers wishing to undertake analysis of this problem.

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APPENDIX 1

List of identified publications included in the qualitative synthesis

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2011	Proceedings of the ASME 2011 World Conference on Innovative Virtual Reality, WINVR 2011	Carlson P., Kirpes C., Pavlik R.A., Vance J.M.	Comparison of single-wall versus multi-wall immersive environments to support a virtual shopping experience	N/A	23	a multi-wall and single-wall immersive environment	to compare the use of a multi-wall immersive environment to a single-wall immersive environment	the use of multiple walls to provide an increased sense of immersion improves the ability of consumers to locate items within a virtual shopping experience
2012	10th Workshop on E-Business on E-Life: Web-Enabled Convergence of Commerce, Work, and Social Life, WEB 2011 (2012)	Ba S., Ke D., Stallaert J., Zhang Z.	Comparing the quality of customer service in 3D virtual worlds to web-based service	media richness theory	189	2D and 3D online environment	to compare the service quality and user satisfaction in 3D virtual worlds to web-based service	users of 3D virtual worlds felt a better sense of being in the online environment and using the 3D platform for customer service can increase user satisfaction by providing higher customer service quality in the immersive environment
2015	Journal of Electronic Commerce Research	Huang T., Tseng C.	Using augmented reality to reinforce vivid memories and produce a digital interactive experience	script theory	336	an ARIT try-on environment	to investigate the relationship between vivid memories and exploratory consumption experience in an ARIT context according to script theory; to investigate how consumers' sense of ownership affects the relationship between vivid memories and exploratory consumption experience in an ARIT context; to investigate how consumers' autotelic need for touch affects the relationship between vivid memories and exploratory consumption experience in an ARIT context	vivid memories positively influence exploratory consumption experience (that is, concentration, exploratory behavior, playfulness, and time distortion); the degree of autotelic need for touch influences the formation of self-referencing and activation of vivid memories
2015	International Journal of Human Computer Studies	Yoon S., Choi Y., Oh H.	User attributes in processing 3D VR-enabled showroom: Gender, visual cognitive styles, and the sense of presence	object–spatial–verbal cognitive style model	181	a 3D VR showroom	to investigate whether different visual cognitive styles influence the sense of presence (that is, simulated experience in VEs) and how visual cognitions and presence affect user satisfaction of the 3D integrated system, as well as to uncover empirical evidence of gender influence on those relationships	the results demonstrated significant gender differences in satisfaction as well as in processing visual information that influences user experience of the 3D VR embedded interface; women's object visualization style was found to affect their sense of presence in VEs; for men, it was spatial visualization
2015	Nankai Business Review International	Peng Y., Ke D.	Consumer trust in 3D virtual worlds and its impact on real world purchase intention	media richness theory	156	a Second Life Virtual World	to examine the three-dimensional (3D) virtual world users' perceptions of authenticity and trustworthiness in the virtual prototypes and users' potential purchase behavior in the real-world settings	the research results showed that 3D virtual world users obtained a high sense of telepresence and social presence; the sense of telepresence positively leads to users' perceptions of online trust in the virtual prototypes and thus increases their intention to purchase real-world objects; users' sense of social presence is positively associated with their perceptions of authenticity and online trust and, therefore, their purchase intention

continued Appendix 1.

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2015	International Journal of Design	Overmars S., Poels K.	A touching experience: Designing for touch sensations in online retail environments	emotions theory	43	two product presentation formats (static interface, interactive interface)	to identify product presentation design elements that appeal to the sense of touch and therefore affect the extent to which the displayed product can be experienced emotionally	interactive cues enhance the realism of tactile human-product interactions in mediated environments
2015	Journal of Medical Internet Research	Waterlander W., Jiang Y., Steenhuis I., Ni Mhurchu C.	Using a 3D virtual supermarket to measure food purchase behavior: A validation study	N/A	123	a virtual supermarket	to validate the Virtual Supermarket by comparing virtual and real-life food purchasing behavior; to obtain participant feedback on perceived sense of "presence" in the Virtual Supermarket.	shopping patterns in the Virtual Supermarket were comparable to those in real life; overall, the Virtual Supermarket is a valid tool to measure food purchasing behavior
2017	International Journal of Retail and Distribution Management	Van Kerrebroeck J., Willems K., Brengman M.	Touching the void: Exploring consumer perspectives on touch-enabling technologies in online retailing	the Technology Acceptance Model; the Unified Theory of Acceptance and Use of Technology	37	a haptic touchscreen tablet; a haptic glove and virtual environment	to identify the specific touch-related properties worthwhile to enable in online retailing and the type of customer value that can be provided, as well as the drivers of and barriers to consumer acceptance of touch-enabling technologies for online shopping	touch-enabling technologies can provide utilitarian and hedonic value to consumers, mainly at the pre-purchase stages in the path-to-purchase
2017	Internet Research	Huang T., Liao S.	Creating e-shopping multisensory flow experience through augmented-reality interactive technology	virtual liminoid theory	336	an ARIT try-on environment	to investigate what features and elements are involved in decorating psychological states when e-shoppers are engaged in online fitting; which decorating psychological states accelerate immersion in virtual avatar decoration in an e-shopping context; what design features of ARIT induce e-shoppers' decorating psychological states and engagement in online fitting	haptic imagery (that is, the effect of actual touch) and sense of self-location (that is, the emphasis on creating a feeling of real space) positively influenced perceived sense of body ownership, perceived ownership control, and self-explorative engagement
2018	Journal of Business Research	Spielmann N., Mantonakis A.	In virtuo: How user-driven interactivity in virtual tours leads to attitude change	theory of telepresence	92	An online video or virtual tour	to provide insights into the process mechanisms that occur in virtual tours, contributing to research on online interactivity and the influence of consumer-driven online interactions on consumer perceptions and behavior	when users interact in virtual tours via their input (rather than being passive in front of an online video), they are able to transform more information, which results in stronger attitudes; users in virtual tours are more immersed and better able to construct, store and understand advertiser representations
2018	Fashion and Textiles	Park M., Im H., Kim D.	Feasibility and user experience of virtual reality fashion stores	emotions theory, theory of telepresence	40	a VR environment	to identify advantages and challenges of using an immersive VR technology in the fashion retail context for practitioners and scholars; to understand VR user experience of virtual stores and how it affects shopping outcomes	the immersive experience of VR was positively related with important shopping outcomes such as pleasure, attitude toward virtual stores, and purchase intention

continued Appendix 1.

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2018	European Journal of Marketing	Krasonikolakis I., Vrechopoulos A., Pouloudi A., Dimitriadis S.	Store layout effects on consumer behavior in 3D online stores	the Technology Acceptance Model; the stimuli–organism–response (S–O–R) model	59	a 3D virtual store	to investigate the effect of the retail store's atmosphere on consumer behavior in 3D online shopping environments, focusing on store layout as a critical influential factor	online shopping enjoyment, entertainment and ease of navigation were shown to be influenced by the store layout types of 3D online environments; conversely, online customer experience was not influenced by the store layouts; online shopping enjoyment in terms of store layout evaluation was shown to have a predicting power on online purchase intentions, whereas online customer experience, ease of navigation and online shopping enjoyment were shown to have a predicting power on word-of-mouth intentions; finally, telepresence moderates the degree of store layout influence on customers' online shopping enjoyment
2018	Journal of Retailing and Consumer Services	Scholz J., Duffy K.	We ARE at home: How augmented reality reshapes mobile marketing and consumer-brand relationships	triple articulation of media technologies framework	31	a mobile AR shopping app	to investigate what are consumers' activities and experiences with an AR shopping app that they use within their domestic space and what consumer-brand relationships arise as the retailer is invited into consumers' familiar environments	the intimate, familiar, casual, and relaxing atmosphere of consumers' homes allows them to interact with a brand in ways that feels personal and supportive of self-expression and self-experimentation
2019a	Journal of Travel & Tourism Marketing	Flavián C., Ibáñez-Sánchez S., Orús C.	Integrating virtual reality devices into the body: Effects of technological embodiment on customer engagement and behavioral intentions toward the destination	the stimuli–organism–response (S–O–R) model	202	360-degree videos with different devices (desktop PC, laptop, tablet, mobile phone, VR HMD)	to analyze how the degree of technological embodiment (high: VR HMD, medium: mobile phone, low: desktop PC) affects the customer pre-experience with a destination	compared to desktop PC and mobile phones, VR head-mounted displays generate more immersive experiences, higher sensory stimulation, more engagement, and stronger behavioral intentions toward the destination
2019	Advances in National Brand and Private Label Marketing	Pelet J., Lick E., Taieb B.	Internet of things and artificial intelligence in the hotel industry: Which opportunities and threats for sensory marketing?	a holistic concept of customer experience	224	IoT and AI solutions	to investigate which opportunities and threats the use of artificial intelligence (AI) and the internet of things (IoT) may have in relation to the multisensory brand experiences of guests in 4- and 5- star hotels	both hotel managers and guests seem to believe that the application of IoT may stimulate guests' sensory experiences and increase their satisfaction and loyalty
2019	International Journal of Interactive Design and Manufacturing	Violante M., Vezzetti E., Piazzolla P.	How to design a virtual reality experience that impacts the consumer engagement: The case of the virtual supermarket	consumer engagement theory	50	a 360 degree virtual supermarket	to develop an immersive virtual reality online shopping environment that includes the major advantages of offline and online shopping and to study its effect on consumers' behavior	applying virtual technology to marketing activities allows marketers to identify and respond to opportunities through new technologies which are faster, more effective, and lower cost and to become more responsive to consumers' needs by providing virtual experience where they want it, how they want it and when they want it

continued Appendix 1.

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2019	Journal of Services Marketing	Huang T., Mathews S., Chou C.	Enhancing online rapport experience via augmented reality	self-determination theory (SDT); the concept of self-evaluation; consumer–augmented reality rapport experience	207	an AR try-on system	to draw on self-determination and self-evaluation theories to examine the psychological factors impacted by augmented reality (AR) services, an augmented reality try-on system	modality, synchronous sense of ownership control and re-processability of an AR try-on system positively affect the consumer's rapport experience; both body surveillance and fashion consciousness significantly moderate the effects of AR try-on service system characteristics on consumer rapport experience
2019	40th International Conference on Information Systems, ICIS 2019	Luo C., Shen Y., Liu Y.	Look and feel: The importance of sensory feedback in virtual product experience	virtual product experience (VPE);	N/A	a simulated online shopping webpage	to explore the impacts of sensory feedback (that is, visual feedback and haptic feedback) and its congruence on consumers' online shopping experience	consumers' product evaluation would be shaped by sensory feedback enabled by interaction technologies; sensory congruence is critical in determining whether sensory feedback is helpful in shaping consumers' product evaluation
2019	Journal of Business Research	Martínez-Navarro J., Bigné E., Guixeres J., Alcañiz M., Torrecilla C.	The influence of virtual reality in e-commerce	the VR experience: affect, cognition and conation	178	PC desktop; powerwall; HMD	to analyze the effectiveness of VR devices (PC monitor, powerwall and head-mounted displays (HMD)) and VR content formats (3D and 360°) in eliciting positive consumer responses and to compare these to responses evoked in physical store settings	virtual stores are more effective in generating cognitive and conative responses; brand recall appears to be significantly more distinct in all v-commerce conditions than in a physical store; emotions experienced in a virtual store impact on sense of presence, which, in turn, increases consumers' purchase intentions; the consumer's affective assessment of a virtual environment impacts on brand recall, influencing his/her purchase intention; discomfort perceived in a virtual store does not influence sense of presence or brand recall
2019	Technological Forecasting and Social Change	Herz M., Rauschnabel P.	Understanding the diffusion of virtual reality glasses: The role of media, fashion and technology	the Technology Acceptance Model	611	VR glasses	to propose and empirically test a comprehensive framework for the study of consumer reactions to VR glasses	consumers have a moderately positive attitude toward using VR glasses, while (re)purchase intention remains comparatively lower; consumers tend to react positively to VR glasses if they associate them with hedonic benefits; neither perceived physical risk nor psychological risk significantly impact people's attitudes toward VR glasses; however, people do fear health risks associated with the actual use of the device

continued Appendix 1.

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2019	Journal of Management Information Systems	Liu Y., Jiang Z., Chan H.	Touching the future: The effects of gesture-based interaction on virtual product experience	virtual product experience (VPE);	183	two websites with either 3D or 2D product presentation / mouse or Leap Motion (a mid-air gesture controller)	to investigate how gesture-based interaction modes, namely, mid-air gesture and touchscreen gesture, compared with mouse-based interaction, affect consumers' virtual product experiences (VPE) by eliciting mental imagery (that is, haptic imagery and spatial imagery)	touchscreen gesture outperforms mid-air gesture and mouse-based interaction in terms of eliciting haptic imagery, and this effect is mitigated when 3D presentation is used; mid-air gesture outperforms touchscreen gesture and mouse-based interaction in terms of eliciting spatial imagery when 3D presentation is used; both haptic imagery and spatial imagery can further reduce consumers' product uncertainty
2020	Journal of Business Research	Meissner M., Pfeiffer J., Peukert C., Dietrich H., Pfeiffer T.	How virtual reality affects consumer choice	a consumer decision-making and choice behavior; a VR experience	296	a head-mounted display/ a regular computer screen	to investigate how experiencing products in high-immersive compared to low-immersive VR affects consumer choice	consumers in high-immersive VR choose a larger variety of products and are less price-sensitive; choice satisfaction, however, did not increase in high-immersive VR
2020	Thematic Area on Human Interface and the Management of Information, HIMI 2020, held as part of the 22nd International Conference on Human-Computer Interaction, HCI 2020	Xu S., Yuan J., Sun X., Liu Y., Liu Y., Cheng K., Masuko S., Tanaka J.	Augmented reality fashion show using personalized 3D human models	N/A	10	an AR fashion show	to validate an AR fashion show system	an AR fashion show system is effective and can help customers make better decisions on the purchase of clothes, having potential applications in future
2021	Journal of Distribution Science	Jitkusolrungrueng N., Vongurai R.	Distributing data in virtual-reality: Factors influencing purchase intention of cutting tools	a narrative theory; customer experience	500	two metalworking exhibitions	to investigate the impact of virtual reality on real world purchase intention of automotive cutting tools in Thailand's exhibitions	authenticity, functional value, and trustworthiness induced higher experiential value towards purchase intention; those variables are stimulated by telepresence and perception narrative towards VR experience; consumer's purchase intention towards VR experience on engineering cutting tools rely on consumer's sense of authenticity, trustworthiness, and functional value
2021	Journal of Business Research	Cowan K., Spielmann N., Horn E., Griffart C.	Perception is reality ... How digital retail environments influence brand perceptions through presence	virtual experience	128	360-virtual reality	to evaluate how presence induced by media (360-VR versus video) leads to heightened attitudes and purchase intentions and how this effect depends on consumer's knowledge of the product category as well as haptic information	when consumers have vast product knowledge, 360 VR decreases consumer responses toward the brand; alternatively, when consumers have low product knowledge, 360 VR enhances consumer responses toward the brand; introduction of haptic instructions attenuates the unilateral negative effect of product knowledge; mental imagery underpins these relationships

continued Appendix 1.

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2021	Technological Forecasting and Social Change	Batat W.	How augmented reality (AR) is transforming the restaurant sector: Investigating the impact of “Le Petit Chef” on customers’ dining experiences	a multidimensional customer experience theory	20	the AR video-mapping technology	to understand how the restaurant sector is changing and the impact AR and video mapping are having on the customer’s dining experience	AR plays an essential role in terms of improving the overall food well-being of consumers and thus can lead to positive post-consumption behaviors; AR can affect consumers’ perceptions of their restaurant experiences according to the five dimensions of the customer experience framework: sensory, affective, behavioral, social, and intellectual dimensions
2021	International Journal of Contemporary Hospitality Management	Pelet J., Lick E., Taieb B.	The internet of things in upscale hotels: Its impact on guests’ sensory experiences and behavior	a holistic concept of customer experience	357	IoT and AI solutions	to examine how stimulating the senses of guests at upscale hotels through IoT devices affected their emotions, affective experiences, well-being, and ultimately their behavior	while the senses of smell, hearing, and sight influenced guests’ emotions, the senses of touch, hearing, and sight influenced guests’ affective experiences; the senses of smell and taste influenced guests’ eudaimonism; the sense of smell had a greater impact on eudaimonism and behavioral intentions among women than among men
2021	Journal of Hospitality Marketing & Management	Flavián C., Ibáñez-Sánchez S., Orús C.	Impacts of technological embodiment through virtual reality on potential guests’ emotions and engagement	theory of technological mediation; the Embodiment-Presence-Interactivity Cube; customer experience	141	a VR headsets	to analyze the impact of technological embodiment on potential guests’ emotional reactions and engagement in the context of a hotel-based virtual reality experience	compared to desktop computers and mobile phones, virtual reality devices evoke more positive emotional reactions and higher levels of psychological and behavioral engagement; emotions and psychological engagement mediate the impact of embodied virtual reality devices on behavioral engagement
2021	Journal of Business Research	Loureiro S., Guerreiro J., Japtura A.	How escapism leads to behavioral intention in a virtual reality store with background music?	the stimuli–organism–response (S–O–R) model; the PAD (pleasure, arousal, dominance) model	200	a VR store	to extend the S-O-R framework by considering escapism as a stimulus and incorporating vividness and telepresence as an organism and to examine the role of calm versus upbeat music tempo in the background	background music has an important role in a VR store, as it has in a real store; music has been considered to influence the time spent at a store, the pleasure of being in the store and the desire to purchase; however, it depends on whether the music is congruent with the environment or not
2021	Malaysian Journal of Computer Science	Kamil M., Yahya N., Abidin I., Norizan A.	Development of virtual reality technology: Home tour for real estate purchase decision making	the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model	30	an interactive virtual reality walkthrough application	to evaluate the effectiveness of interactive virtual reality walkthrough applications in home interior design for the real estate purchase decision	90% of respondents believe that an interactive virtual reality walkthrough application is effective in assisting the real estate purchase decision

continued Appendix 1.

YEAR	JOURNAL	AUTHORS	TITLE	THEORETICAL FRAMEWORK	STUDY SAMPLE SIZE	NEW TECHNOLOGY SOLUTION STUDIED	AIM OF THE STUDY	RESULTS
2021	Journal of Retailing	Petit O., Javornik A., Velasco C.	We eat first with our (digital) eyes: Enhancing mental simulation of eating experiences via visual-enabling technologies	customer experience	approx. 200	an AR software	to better understand the effect of 3D packaged food (with both sensory and instrumental properties) on purchase intention	AR visualization of served food improves simulation of the eating process over 3D visualization, with a positive effect on purchase intention; 3D visualization improves purchase intention for packaged products (high instrumental properties) over served products (low instrumental properties) while the opposite is true for AR visualization; 3D increases purchase intention by eliciting mental simulation of the eating outcome when the food is visible due to transparent (vs. opaque) packaging (displaying both sensory and instrumental properties), but no such differences emerge for AR
2022	Frontiers in Psychology	Brengman M., Willems K., De Gauquier L.	Customer engagement in multi-sensory virtual reality advertising: The effect of sound and scent congruence	digital sensory marketing	235	VR ads; a head-mounted VR device	to identify what the added value is of augmenting a conventional VR ad with sound and/or scent appeals, taking into consideration product odor congruence, and to disentangle the mechanism through which sensory-enriched VR affects customer engagement	whether sound is enabled or not, adding a product-congruent scent (e.g., rosemary herb for a cream cheese ad), consistently results in a more compelling sensory experience than without enriching the VR ad with any scent; the incongruent scent conditions of this study's experiment do not result in significantly lower sensory experiences among consumers than the conditions without scent augmentation; adding an incongruent smell results even in a slightly better sensory experience than without adding any scent to the VR ad
2022	Multimedia Systems	Melo M., Coelho H., Gonçalves G., Losada N.	Immersive multisensory virtual reality technologies for virtual tourism: A study of the user's sense of presence, satisfaction, emotions, and attitudes	N/A	74	two VR setups (audiovisual vs. multisensory)	to investigate the influence of immersive multisensory VR setups and gender on the sense of presence, satisfaction, user emotions, and user attitudes	the female sample scored significantly higher spatial presence across VR setups and reported more involvement and overall presence in the audiovisual condition; multisensory stimulus can mitigate possible gender differences in passive VR scenarios; the capability of the VR system to make users feel physically present in the virtual environment contributes significantly to the development of positive emotions and enjoyment, which can contribute positively to the user's consumer behavior towards touristic products and services