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A review of studies on virtual layout and atmospherics - potential applications to the fashion industry

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ABSTRACT

Retail layouts and atmospherics have been widely investigated within the physical retail environment, Research suggests that there is limited understanding of these elements in the virtual environment despite the fact that they would appear to be the easiest and most effective combination to implement by online fashion retailers. Considering potential applications in the fashion industry, a review of current literature on layout and atmospherics has identified the freeform layout as a valuable format for online fashion retailing. The freeform layout has been found to increase consumers' hedonic motivations to purchase. Furthermore, design and visual cues have a significant influence on consumers, while aural cues despite being very important to the consumers' experience appear to be underexploited in the online fashion space. This paper contributes a review of established retail elements, and identifies those that adapt well from the offline to online retail environment.

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Virtual layout; virtual atmospherics; fashion retailing; online experience; e-commerce

Introduction

The fashion industry is considered to have made 481 USD billion in revenues through its e-commerce in 2018 and it is growing at a steady pace towards the predicted 712.9 USD billion by 2022 (Statista 2019). This sector is considered to comprise 6% of the e-commerce market share within the UK, with the strongest product growth rate of around 6.2% predicted for 2020 (Statista 2019). Given that these data were considered before the COVID19 pandemic started, it is difficult to know if these numbers remain meaningful, however, according to Briedis et al. (2020), since the beginning of the worldwide pandemic, online sales in fashion and beauty products have increased by 10%, on average. Evidence suggests that consumers are increasingly integrating the virtual environment into their everyday lives (Akman and Mishra 2017), especially due to changes in day-to-day routines. With less opportunity for physical shopping, the virtual environment has proved to offer a convenient and easier way to shop (Gross and Ackerman 2003; Young Kim and Kim 2004).

Manganari et al. (2009) theorised that virtual retail environments include four sections: virtual layout, virtual atmospherics, virtual theatrics, virtual social presence. Despite the

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extended research developed around the elements of layout and atmospherics for the physical environment, there are limited analyses with regard to the virtual environment, especially in the context of the fashion industry (Manganari et al. 2011). It is possible that this is due to the rapidly changing nature of both the industry and the online phenomenon (Caro and Martínez-de-albéniz 2015; Su and Chang 2018). Notably, virtual stores have interchangeable properties which facilitate shorter turnaround times and, arguably, lower levels of investment than physical stores, as well as providing opportunity for a quicker integration of the most up to date trends (Kaur 2016). It would appear to be of paramount importance for scholars and retailers to understand what aspects of the physical space offer the best solutions for the enhancement of consumer experience in the online environment.

Flagship stores in particular provide consumers with a unique retail experience, physically engaging consumers emotions, and entertaining them with various layouts and atmospherics (Park and Stoel 2005). Because fashion online purchases are more frequent, and are being increasingly considered as a leisure activity, more than a mere transaction (Lee and Lee 2019), retailers in the virtual environment could enhance consumer engagement by providing memorable online experiences (Morgan-Thomas and Veloutsou 2013). Omnichannel propositions – the integration of physical and virtual retail experience – should be considered as the only right option for the future (Tyrväinen and Karjaluoto 2019).

That said, the majority of retailers are still struggling to provide even the more basic enjoyable online experience to their customers. Hence, the need to identify easy-to-implement solutions to facilitate the move from selling only offline to also provide an online offer (Jaiswal and Singh 2020). This paper aims to identify those first, easy, and necessary elements that a retailer can implement before moving towards some more complex, online-dedicated solutions such as Virtual and Augmented Reality systems, tactile technologies, smell synthesisers. The aim of this paper is to analyse the physical elements of layout and atmospherics to better understand which are of easiest adaptation from the 'offline' to the 'online' fashion retail environment without the need for excessive retailer or consumer implementation costs.

The paper analyses the literature dedicated to these elements to provide suggestions regarding the easiest way to improve the online fashion retail experience. In particular, this paper considers store layout as the organisation of the retail space to better display the merchandise in order to ease the customer's journey and ultimately facilitate the purchase decision-making process (Mowrey, Parikh, and Gue 2018). Atmosphere is viewed as the feeling or mood that is triggered by the setting, whereas atmospherics is considered as the controllable elements of a retail store that can entice customers to approach the store, and which are designed and manipulated to persuade the customer to buy (Wu et al. 2014).

The design and development of appropriate layout and atmospherics are key to direct customers online experience (Manganari et al. 2009). Scholars have widely investigated the role of layout and atmospherics in the physical environment as important drivers of customer purchase behaviour (Bohl 2012; Behera and Mishra 2017; Helmefalk and Hultén 2017); and a substantial body of literature examines various effects that layouts and atmospherics have on online customer behaviour (Cheng, Chin-Shan, and Yen 2009; Ettis 2017; Floh and Madlberger 2013; Hasan 2016). However, a gap in knowledge has been identified regarding the simple steps that could be taken when retailers decide to move from offline retailing to online retailing in the fashion context.

This systematic literature review aims to provide an in-depth analysis of the phenomenon by understanding the characteristics which virtual fashion retailers can easily adopt through layout and atmospherics, by adapting well-known offline elements to the online environment.

Methodology

Conceptual framework

This paper analyses the current literature on virtual layout and atmospherics for the fashion industry through a systematic qualitative literature review, or meta-synthesis (Dijkstra, Van Beukering, and Brouwer 2020; Walsh and Downe 2005).The analysis is based on a conceptual framework (Figure 1) derived from the literature review (Sample, Hagtvedt, and Brasel 2020).

As explained in the Introduction, the focus of the paper are the concepts of store layout and atmospherics, hence, many elements that are exclusive of the online environment are not considered in the framework. Moreover, all those elements requiring the aid of auxiliary devices to provide the experience are also not considered in the framework. Further considerations on the newest technologies which can be implemented in the online environment, and which may be of interest to further explore are discussed in the Conclusion and Implications section.

Figure 1 represents the conceptual framework that has been used to explain the main findings of this paper. On the right side of the framework the key elements of layout and atmospherics are presented, while the left side of the framework presents those elements that, according to the literature reviewed, are easily adaptable from the offline environment to the online environment. Findings are explained in the order of the elements presented in the left side of the framework by following the elements presented on the left side of the framework.

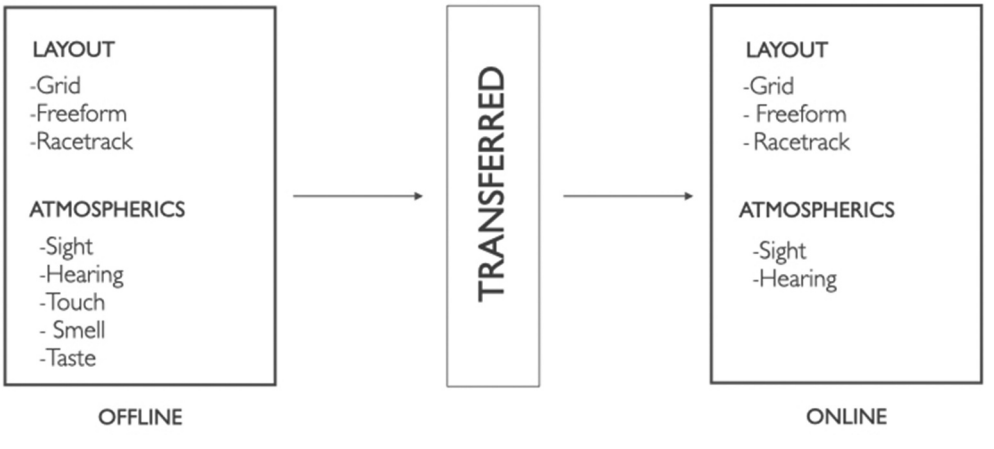

Figure 1. Conceptual framework.

Procedure of the systematic literature review

This systematic review is a meta-synthesis that, in accordance with Cronin, Ryan, and Coughlan (2008), was conducted following four main steps: literature search, screening and initial assessment, review and analysis, and writing up the results. The search for material was carried out through a university's library search engine, with access to 198 databases including Science Direct, Emerald, ProQuest, PsycArticles and PsycINFO. All these databases provided access to full-text articles. The search was limited to publication dates starting from the year 2000 to the present day. In 2000 the European Union issued regulations for e-commerce which then facilitated its emergence , thus, symbolically representing the beginning of e-commerce in Europe. For this reason, papers were selected from this starting date. Given the rapid advancement of the virtual environment overtime, articles before 2000 would provide an inaccurate representation of the current climate.

An initial search using general terms such as 'fashion e-commerce', 'web design', and 'e-commerce web design', returned 16,200 results. Many of these results included social media related articles, economic impact related papers, VR and AR related articles. As explained in the Introduction, these are all topics not considered relevant for the aim of this study.

In order to further refine search terms, Boolean operators were used to combine or exclude keywords in the search which resulted in a more focused and beneficial result. The following search terms were initially used: layout OR atmospherics AND (virtual OR online). These brought up a large number of results (2451). Hence the search terms were narrowed down further by adding additional terms: (layout) AND (atmospheric) AND (virtual) AND (online) AND (e-commerce) AND (fashion) AND (retail), which brought the articles found down to 113. It was also considered that different databases label the index terms and utilise specific search tools in their system differently from one another (Galvan and Galvan 2017).

The systematic review procedure consisted of the following steps. First, 8 duplications were identified by using EndNote software and excluded. Second, 33 titles and abstracts were read and rejected because their study failed to meet the inclusion criteria. Third, the articles were read fully and checked against the exclusion criteria; this being, to exclude articles with the same or similar keywords but with different meanings; studies that are not published in English and studies which were published before 2000. At this point, 72 papers were considered as meeting the study criteria (Figure 2). 24 additional studies were later identified and were added to the analysis.

Table 1 shows examples of the studies considered in this paper and highlights the main topics covered by the studies.

From offline to online layout

Vrechopoulos et al. (2004) based their work on the idea that the three most commonly used layouts for physical retail stores across most industries are grid, freeform and race-track. Later in 2008, Levy and Weitz claimed that these physical layouts had been transferred into the virtual retailing environment. Parboteeah, Valacich, and Wells (2009) was the first comprehensive study to investigate these virtual layouts as different

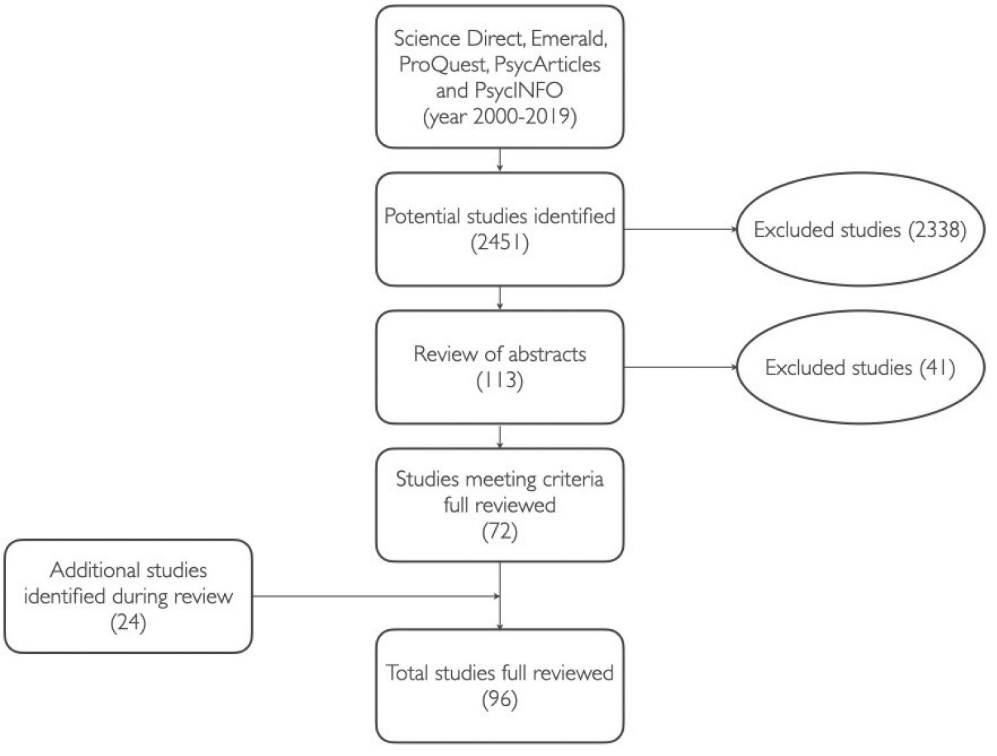

Figure 2. Flow chart of the literature review.

variables for online purchases. Scholars have established that virtual layouts have a significant impact on consumers' purchase intentions and buying behaviours (Liang and Lai 2002; Vrechopoulos and Atherinos 2009; Griffith 2005; Eroglu, Machleit, and Davis 2001; Hasan 2016; Cai and Yunjie 2011). Yet, there is a continuous need for a better understanding of which layout may be better and easier adapted in the fashion online environment.

To help the reader navigate through the next sections, in the physical environment the grid layout shows a hierarchy of displays (i.e., from one product category to its product subcategory, then to the end product) (Vrechopoulos et al. 2004), the freeform layout has features and aisles arranged in an asymmetrical form (Levy and Weitz 2008), the racetrack layout (or loop) has fixtures and merchandise arranged around one main aisle (Lin and Lo 2016) (Figure 3).

Grid layout

In most physical retail settings, the virtual grid layout is most commonly described and used as the quickest way for consumers to find their desired products (Griffith 2005). Vrechopoulos et al. (2004) referred to the virtual grid layout as the use of hierarchical effects models e.g., from one product category, to its product subcategory, then to the end product. The virtual grid layout is most commonly implemented for planned and

Table 1. Examples of literature scanning based on main topics covered.

Reference	Title	Main Topics Covered						
		Layout	**Atmospheric**	**Virtual**	**Online**	**E-commerce**	**Fashion**	**Retail**
Behera and Mishra (2017)	Impact of store location and layout on consumer purchase behaviour in organized retail.	X	X					X
Broekemier, Marquardt, and Gentry (2008)	An exploration of happy/sad and liked/disliked music effects on shopping intentions in a women's clothing store service setting		X	X	X	X	X	X
Cai and Yunjie (2011)	Designing not just for pleasure: effects of web site aesthetics on consumer shopping value.	X	X	X		X		X
Cheng, Chin-Shan, and Yen (2009)	The effect of online store atmosphere on consumer's emotional responses–an experimental study of music and colour.		X	X	X			
Chiu et al. (2014)	Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk.			X		X		X
Ettis (2017)	Examining the relationships between online store atmospheric color, flow experience and consumer behaviour.		X		X			
Floh and Madlberger (2013)	The role of atmospheric cues in online impulse-buying behaviour.		X		X		X	
Fuadi and Masudin (2016)	The design of hybrid virtual store layout: a simulation experiment.	X						X
Hasan (2016)	Perceived irritation in online shopping: The impact of website design characteristics.	X		X		X	X	X
Hassouneh and Brengman (2015)	Retailing in social virtual worlds: developing a typology of virtual store atmospherics.		X			X		X
Helmefalk and Hultén (2017)	Multi-sensory congruent cues in designing retail store atmosphere: Effects on shoppers' emotions and purchase behaviour.		X					X

(*Continued*)

Table 1. (Continued).

Reference	Title	Main Topics Covered						
Hwang and Jeeyun (2020)	Interacting with background music engages E-Customers more: The impact of interactive music on consumer perception and behavioral intention		X	X	X	X		X
Jakhar et al. (2020)	Prioritization of dimensions of visual merchandising for apparel retailers using FAHP		X	X	X	X	X	X
Jang, Baek, and Choo (2018)	Managing the visual environment of a fashion store: effects of visual complexity and order on sensation-seeking consumers.	X	X				X	
Jang et al. (2018)	Store design: Visual complexity and consumer responses.	X	X					X
Jiang, Eunju, and Chae (2019)	The Effect of Sustainable Fashion Brand's Advertising Color and Expression on Consumers' Emotions and Perceptions-Focus on Instagram.		X	X	X		X	
Kaushik et al. (2020)	Why do online retailers succeed? The identification and prioritization of success factors for Indian fashion retailers.		X	X	X	X	X	X
Kim, Choi, and Lee (2015)	Web atmospheric qualities in luxury fashion brand web sites.		X			X	X	
Kim (2019)	Imperative challenge for luxury brands		X	X	X	X	X	X
Lin and Lo (2016)	Evoking online consumer impulse buying through virtual layouts schemes.	X		X				
Manganari et al. (2011)	Virtual store layout effects on consumer behaviour: applying an environmental psychology approach in the online travel industry.	X		X				X
Parsons and Conroy (2006)	Sensory stimuli and e-tailers		X	X	X	X		X

(*Continued*)

Table 1. (Continued).

Reference	Title	Main Topics Covered						
Sarah et al. (2021)	Examining the Influence of Atmospheric Cues on Online Impulse Buying Behavior across Product Categories: Insights from an Emerging E-Market		X	X	X	X		X
Savelli, Cioppi, and Tombari (2017)	Web atmospherics as drivers of shopping centres' customer loyalty.		X	X				X
Shatnawi, Ashour, and Kakeesh (2020)	Investigating the impact of atmospherics and online flow cues on visiting intentions: the case of Jordan'virtual tourist centre		X	X	X	X		
Sundström, Hjelm-Lidholm, and Radon (2019)	Clicking the boredom away – Exploring impulse fashion buying behavior online		X	X	X	X	X	X
Tankovic and Benazic (2018)	The perception of e-servicescape and its influence on perceived e-shopping value and customer loyalty.					X	X	
Vrechopoulos and Atherinos (2009)	Web banking layout effects on consumer behavioural intentions.	X		X				
Wu et al. (2014)	How can online store layout design and atmosphere influence consumer shopping intention on a website?	X	X		X			
Young Kim and Kim (2004)	Predicting online purchase intentions for clothing products.				X	X		X

repeat purchases, like food shopping (Massara and Pelloso 2016). In 2000, Shim, Eastlick and Lotz reported that when the grid layout is used in the virtual environment, positive attitudes are formed more for cognitive products (books and electronics) than for sensory and experiential products such as apparel.

In the fashion industry, the grid layout is not considered the best solution even in the physical environment (Vrechopoulos et al. 2004; Manganari et al. 2011). In the physical environment, the layout consists of long aisles focused primarily on maximising merchandising, by placing products into categories and groups along with limiting white space (Orvis 2017). The physical fashion retail store normally presents white space, as 'white space' increases interaction by preventing distractions that slow the consumer down

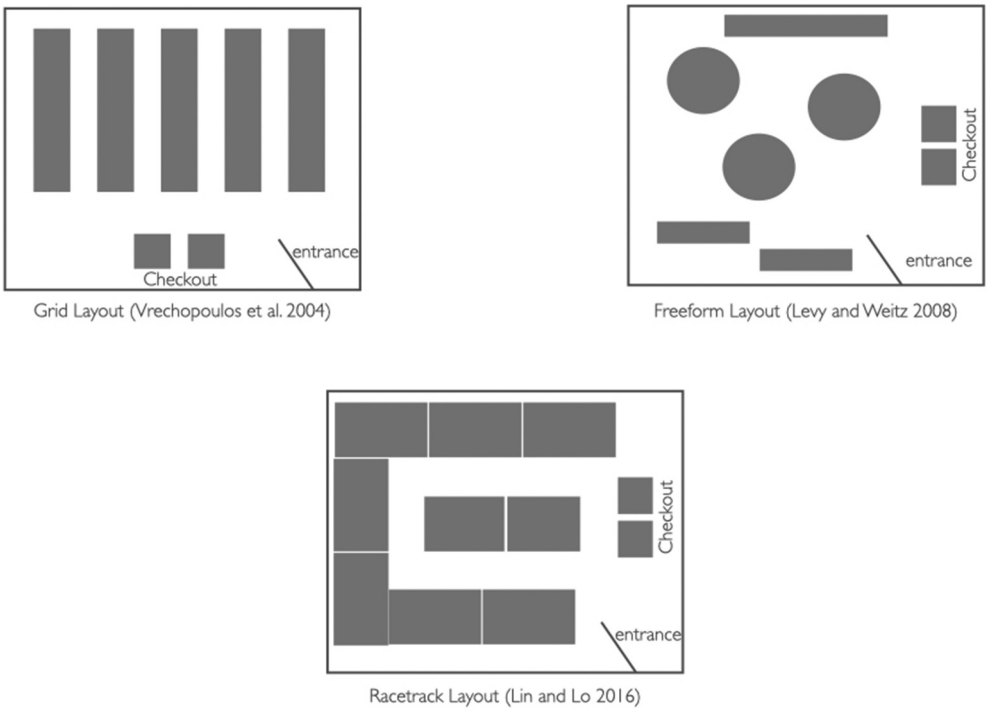

Figure 3. Representation of the three main layouts used in the retail physical environment.

(Moore, Doherty, and Doyle 2010). Moreover, white space is also considered an area that can signal exclusivity and where consumers can pause and reflect on their potential purchases (Moore, Doherty, and Doyle 2010). Thereby, when the white space is missing, customers feel frustrated by the lack of shortcuts and visual breaks from the merchandise, resulting in them feeling overwhelmed (Orvis 2017). The grouping of products in the physical grid layout is another factor that may confuse and annoy consumers, leading them to avoid the purchase of the selected items, and to a negative feeling regarding the experience (Orvis 2017).

However, when considering the virtual store, the perception of the grid layout providing ease-of-use has made this layout the favourite for routine purchases (Vrechopoulos et al. 2004). This is because the virtual layout effectively guides the eye, making it quicker and more pleasant to scan objects on screen (Soegaard 2019). Furthermore, the consistency of the grid layout in the virtual environment helps the consumer's brain to make judgements on further steps to take, in a fraction of a second (Babich 2017). The grid layout in the virtual environment connects and reinforces the hierarchy of the design which the brain decodes as a set of rules to follow, making it easier and more natural to use (Babich 2017).

Lin and Lo (2016) explored the relationship between the grid layout and purchase intentions in the virtual environment. Compared to other layouts, it was found that the grid layout fails to increase motivations to purchase and browsing time. Many researchers have linked longer browsing times with increased purchase intentions and basket size (Guo et al. 2019; Kumar and Tomkins 2010; Park et al. 2012). In the fashion domain, longer

browsing times are key when it is considered that buying clothes is generally a manifestation of consumers' current and future self (Gentina, Shrum, and Lowrey 2016). Therefore, the lack of the grid layout in increasing browsing time might significantly affect customers' purchase intentions, thus, lead to lower profitability (Vrechopoulos et al. 2004).

Findings suggest that in the virtual environment users who, are exposed to a layout that is perceived as easy to use, experience low levels of arousal (Lin and Lo 2016). The fashion industry is associated with hedonic consumption and eliciting emotions, and the lack of emotional stimuli and entertainment-oriented arousal associated with the grid layout might significantly affect the hedonic consumption (Rahman and Mannan 2018; Young Kim and Kim 2004). Hence, the adoption of this layout in the fashion virtual environment is not found to increase consumers' purchase intentions, nor is it found to increase their browsing time (Rahman and Mannan 2018; Young Kim and Kim 2004). Therefore, the grid layout, when implemented in the fashion virtual environment, may not be the best solution if compared to other virtual layouts.

Freeform layout

The literature proposes that a virtual freeform layout provides consumers with considerable freedom, flexibility and browsing time (Levy and Weitz 2008; Vrechopoulos et al. 2004). For e-commerce websites to emulate this physical layout, they need to provide a search engine on the home page or display items across each page permanently (Stenstrom et al. 2008). From a business point of view, the virtual freeform layout is simple to generate, as it follows no defined pattern. Moreover, properties from this kind of virtual layout can be easily manipulated to adhere to the latest trends, and guarantee a dynamic retail experience (Lin and Lo 2016). Yet, this layout is not perceived as the easiest to use online, while it is in the physical environment, and persuade consumers intentions to stay in the online retail store (Manganari et al. 2011; Lin and Lo 2016).

However, Vrechopoulos et al. (2004) considered the freeform layout as the most pleasant, entertaining, and stimulating layout for the online environment. Massara and Pelloso (2016) agreed, by adding that the freeform layout is the best suited for hedonic shopping motivations in relaxed shopping environments. Furthermore, Tuch et al. (2009) expanded Vrechopoulos et al.'s (2004) research, by explaining that a webpage with higher environmental complexities is more likely to induce emotional stimuli and arousal. Neuroscientific evidence by Biederman and Vessel (2006) also supported this argument, that the positive information that the brain tries to interpret from the layout's stimuli, can increase neural activity in areas associated with decision making. This can cause a greater release of endorphins, which might boost the pleasant effect discussed by Vrechopoulos et al. (2004).

Despite this, Lin and Lo (2016) argued that although, when used online, the freeform layout appeared to increase positive reactions from the user, it did not increase arousal as previously hypothesised. It is suggested that this is because the freeform layout was becoming more common for the virtual environment, which resulted in the layout not being perceived as strange or unusual, thus, not generating arousal (Lin and Lo 2016). Although there is no unanimous agreement regarding the virtual freeform layout, it may be argued that mostly this layout generates pleasantness and arousal, both considered as

facilitators in promoting purchase intentions (Blazquez et al. 2019; Chen, Yeh, and Lo 2017; Ha and Lennon 2010; Ramkumar and Jin 2019). There is an increase in consumers choosing to shop fashion at home, and apparently, this is due to a relaxing environment which might facilitate the hedonic purchase (Rahman and Mannan 2018). Hence, the positive effects generated by the freeform layout may be considered particularly desirable for the fashion industry.

Racetrack layout

Across all industries, the racetrack layout has been studied significantly less than the other layouts. With the racetrack layout, the entire virtual store is arranged into individual or semi-separate areas, which usually match a theme (Lin and Lo 2016). Department stores most commonly use the racetrack layout in their physical stores, by splitting their products into categories (Fuadi and Masudin 2016; Paolanti et al. 2018). In the virtual environment, the racetrack layout is used lead consumers around the designated path to reach their desired product (Lin and Lo 2016; Manganari et al. 2011; Vrechopoulos et al. 2004). Once consumers have reached their desired product, they could have passed through the entire stores' product line, which is the opposite of what happens with the grid and freeform layouts which allow consumers to quickly reach their desired product without going through other products (Behera and Mishra 2017).

This layout has been the most effective in physical fashion retailing by increasing time spent within the store (Paolanti et al. 2018), which, it has been suggested correlates with increased purchase intentions (Helmefalk and Hultén 2017; May So, Wong, and Sculli 2005). However, the transition from physical to the virtual environment has not gone as smoothly as expected (Lin and Lo 2016). The properties of racetrack layout are hard to emulate in the virtual environment, without appearing over complicated and time consuming (Lin and Lo 2016). Vrechopoulos et al. (2004) suggested that the tracks' tunnel-like format can be configured for the virtual environment by providing limited selections for the consumer on the homepage before they continue their exploration.

Griffith (2005) proposed that the virtual racetrack layout can lead the consumers to a negative opinion regarding the products, by complicating the process of recalling and ease of finding the products. Moreover, the author reported consumers' negative attitudes towards the racetrack layout in the virtual environments, which led to negative effects on the retail experience. This phenomenon has been linked to consumers' perceived attitudes towards online shopping (Javadi et al. 2012). Online shopping is considered to save consumers time and be more efficient than physical shopping (Jiang, Yang, and Jun 2013; Sharma 2018). The virtual racetrack layout does not correspond with this idea of saving time (Manganari et al. 2011). On the contrary, this layout is perceived as the least desirable by consumers in the virtual environment (Vrechopoulos et al. 2004). Moreover, it is considered as the most complicated layout, which generally causes consumers to feel frustrated, due to the impossibility of finding the desired product quickly (Lin and Lo 2016).

In current business practices, the racetrack layout is rarely used online, and this is limiting academic research regarding its actual effects, especially on purchase intentions (Manganari et al. 2011). Many studies have mentioned the layout and described its

characteristics, yet, little has been explored regarding the racetrack layout implemented online (Manganari et al. 2011; Young Kim and Kim 2004; Wu et al. 2014).

However, based upon these findings, it can be presumed that the racetrack layout cannot be easily transferred to the virtual fashion environment, and it will not repeat the benefits noticed in the physical environment (i.e., time spent within/on the store, ease of use, purchase intentions). Finally, the racetrack layout offers limited positive effects for the fashion industry if compared to the other layouts previously discussed.

The most effective layout for the virtual fashion industry in synthesis

The characteristics of the grid layout suit utilitarian shopping motives, as it is most commonly used for planned and repeat purchases like food shopping (Massara and Pelloso 2016). In the fashion industry, the grid layout might not elicit purchase intentions because of its lack of emotional stimuli in evoking entertainment-oriented arousal, which is associated with hedonic consumption (Rahman and Mannan 2018). Also, with its failure to increase browsing time, it might deeply affect consumers' purchase intentions (Lin and Lo 2016).

In the fashion industry, the racetrack layout is known to be the most effective in the physical environment because it increases the time spent within the store, and consumers' purchase intentions (Paolanti et al. 2018). However, the transition of this layout from the physical environment to the virtual environment has not produced the same result (Lin and Lo 2016), being perceived as the most complicated and frustrating layout (Manganari et al. 2011).

Hence, the freeform layout would be the best form of layout for fashion retailers to implement in their virtual environment (Lin and Lo 2016). This layout is perceived as the most pleasant, entertaining, and stimulating layout by consumers (Vrechopoulos et al. 2004). Moreover, in the virtual environment, the freeform layout generates a higher level of emotional stimuli; these stimuli help in releasing more endorphins, which are signifying in an increase of consumers' positive feeling and purchase intentions (Lin and Lo 2016).

Furthermore, the freeform layout is considered the best layout for hedonic shopping motivations, which the fashion industry represents (Blazquez et al. 2019), and hedonic values are generally positively related to repeated purchases (Chiu et al. 2014). Finally, from a managerial point of view, the freeform layout is the easiest to generate and manipulate in order to keep the pace with the ever-changing fashion trends (Lin and Lo 2016).

From offline to online atmospherics

The term atmospherics refers to a physical space and its properties. Yet, this term has been adapted to the virtual environment as the design of the virtual world (Abbott, Chiang, and Hwang 2000; Vrechopoulos et al. 2004). There is no unanimous consensus on defining virtual atmospherics, and the concept generally encompasses all the aspects of the virtual environment. As anticipated in the Introduction, this paper considers atmospherics as the controllable elements of a retail store that can entice customers to

approach the store, and which are designed and manipulated to persuade the customer to buy (Wu et al. 2014).

It is argued that atmospherics in the virtual environment might have a stronger impact on consumers' behaviours and purchase intentions than atmospherics in a physical environment (Ettis 2017; Sai, Prashar, and Sahay 2019; Floh and Madlberger 2013; Chau et al. 2007; Lian and Lin 2008; Schlosser, White, and Lloyd 2006; Shih 2004; Song and Kim 2012; Liang and Lai 2000; Kim, Choi, and Lee 2015).

Scholars have evaluated the influence of atmospherics on consumers' behaviour within the physical retailing environment (Biers and Richards 2005; Burke 2002; Dailey 2004; Eroglu, Machleit, and Davis 2003; Liang and Lai 2002; Turley and Milliman 2000; Tractinsky et al. 2006; Vrechopoulos et al. 2004); they have investigated the effects of different types of atmospherics, such as sound (Wann-Yih et al. 2010), colour (Lee and Rao 2010; Cyr, Head, and Larios 2010), lighting (Ryu and Jang 2007), and scent (Gefen and Straub 2004). Yet, there is a need for further investigation and analysis of these aspects in relation to the virtual environment.

Scholars suggest that appealing atmospherics not only increase successful purchase intentions for virtual retail stores, but also generate desirable virtual communities for consumers to engage with (Carroll 2012; Jang, Baek, and Choo 2018; Savelli, Cioppi, and Tombari 2017). Arguably, there is a positive relationship between the information displayed by atmospherics and consumers' emotional states within the virtual environment (Wu et al. 2014). It is believed that the functional characteristics of virtual atmospherics create effective responses among shoppers (Roy and Tai 2003), and that emotional states and moods are the outcomes of consumers' reactions to these atmospherics (Cheng, Chin-Shan, and Yen 2009; Tankovic and Benazic 2018). However, it is unclear whether established atmospherics from physical stores can cross over into the virtual environment, or if they will stimulate similar responses from consumers/users.

Eroglu, Machleit, and Davis (2001) theorized that virtual retail stores could combine various specific atmospheric cues, which would influence consumers' shopping behaviours. These atmospheric cues can lack tactile tangibility within the virtual environment; however, atmospherics for the virtual environment do not need to be spawned from the physical environment (Hassouneh and Brengman 2015). It is beyond doubt that recent technological advancements allow the introduction of many new stimuli which are exclusively designed for the online environment. These new technologies create an immersive experience for the consumer and may even exceed the offline experience in terms of involvement and engagement (Moorhouse, Claudia Tom, and Jung 2018).

VR and AR environments, or smell and touch stimuli may help retailers in providing consumers with extraordinary and seamless omnichannel experiences (Hilken et al. 2018). Yet, the aid of supporting devices like oculus, tactile technologies, smell synthesisers, is usually required to access these experiences. Such technologies are still not available at a mass level and are often a very expensive purchase for the average consumer, and even more expensive as an implementation for the small or independent retailer (Plotkina and Saurel 2019). Although a further analysis and better understanding of these technologies and the kinds of stimuli they trigger in consumers is very relevant for the fashion industry and is needed for future advancement in online practices, it lays outside the scope of this paper.

Young, Kim and Kim (2004) suggest that the virtual environment could not engage with all the senses and use emotional stimuli. However, initial research has shown that atmospherics linked to the design of the virtual environment, such as background colours, fonts, and images, are becoming increasingly important in helping to provide consumers with an enhanced retail experience, blend of cognitive information and hedonic services (Jean 2001; Srinivasan, Anderson, and Ponnavolu 2002).

As represented in the conceptual framework showed in the Methodology section (Figure 1), and in line with the aim of this paper, the discussion of atmospherics focuses mainly on visual and audio cues. These have been identified in the literature as the easiest to transfer from offline to online environments without the need for excessive investments for both the consumer and the retailer.

Visual atmospherics

Young Kim and Kim (2004) predicted that atmospherics could not cross over from physical environments to virtual environments for fashion retailing, due to the clothing product itself being an item which is experienced through one or more of the senses. Therefore, the consumers' ability to examine the product using their primary senses before purchasing is very limited, even with atmospherics such as information about the product material, exact measurements, 360-degree videos and audio descriptions (Young Kim and Kim 2004). Yet, technological advancement in recent years has allowed significant improvement of the online experience and some atmospherics have been successfully transferred and sometimes enhanced online.

McKinney (2004) expanded on Turley and Milliman's (2000) theory regarding atmospherics for the physical environments and adapted them to the virtual environment. These atmospherics were categorised as external variables, internal variables, layout and design factors, point of purchase elements and consumer service. According to the author, external variables refer to the links between the physical environments and the virtual environment i.e., company information, addresses, and contact information. These external variables enhance consumers' trust levels and break down negative barriers which have commonly been associated with shopping in the virtual environment (Hongyoun Hahn and Kim 2009). Internal variables refer to the links between the product, or products department, within the virtual environment (McKinney 2004).

Layout and design factors are considered to be elements of the virtual environment aesthetics e.g., photos, font and colour scheme (McKinney 2004). Point of purchase elements are classed as options available at the time of purchase, e.g., different types of delivery, add on items and membership bonus, (McKinney 2004). These can also be seen in the physical environment whereby purchase elements are placed near the checkouts to entice consumers to spend that little bit extra (Durmaz 2011).

Karimov, Brengman, and Van Hove (2011) outlined atmospherics for the virtual environment as follow: visual design, including layout and colour; content design, such as information/products; and social cues, which are embedded into the website allowing viewers to connect.

Earlier studies established the significance of visual atmospherics as the main sensory cue in online fashion retailing (Then and DeLong 1999). Three important visual aspects for

this sensory atmospheric (sight) were identified as affecting both the physical and virtual environments: various angles and views of the product – i.e., front and back, images of the product in its closest representation to end-use – i.e., clothes worn by a model, and the product being displayed in conjunction with similar items (Then and DeLong 1999). This suggestion was the first sensory atmospheric to cross over from the physical retailing environment to the virtual environment and one which is still most commonly used (Sundström, Hjelm-Lidholm, and Radon 2019; Tractinsky et al. 2006; Wu et al. 2014; Jang, Baek, and Choo 2018).

More recently, Kaushik et al. (2020) investigated elements of success for online retailers by identifying key aspects necessary to enhance the user experience. The authors suggest that a way to provide consumers with further information regarding the product is to provide consumers with multiple enlarged images. This aspect allows the user to better investigate the product and somehow overcome the lack of tactile information. Similarly, Jakhar et al. (2020) identified as one of the most important aspects for successful online retailing, the presence of pictorial presentation and the presence of a number of pictures, followed by product information. The authors also suggest the opportunity to integrate the experience with 3D virtual fitting rooms. However, this type of technologies although important to consider for future development, may be too complex for a retailer attempting to offer an online experience for the first time.

Scholars have attempted to define virtual atmospherics by creating specifically dedicated grouping. Eroglu, Machleit, and Davis (2001, 2003) classified virtual atmospherics in a general way, by separating them into high-task-relevant factors and low-task-relevant factors. The difference between these is that high-task-relevant factors relate to utilitarian shopping habits and these factors help the consumer to achieve their shopping goal (Babin, Darden, and Griffin 1994); while low-task-relevant factors relate to hedonic shopping activities and refer to these atmospherics as decorative purposes and entertainment (Childers et al. 2001). Although low-task-relevant factors are considered inconsequential to consumers' completion of the shopping goal, they can provide a hedonic experience while navigating the website (Eroglu, Machleit, and Davis 2001). Such hedonic experience might significantly influence consumers' shopping motivations considering the hedonic nature of the fashion product.

With regards to low and high-task-relevant atmospherics, Shatnawi, Ashour, and Kakeesh (2020) have identified that an improve in layout design, information quality and visual appearance are positively affecting consumers' visit intention. Although this research is founded on a tourism website case study, these findings can easily be extended to the fashion industry when considering similar findings from other researchers. Particularly, Sarah et al. (2021) identified an easy navigation, and attractive colours and images as the most influencing cues for the fashion industry. The authors found visual cues being particularly important for the fashion industry for two main reasons: the strong competition of the industry and the impulsive nature of the fashion purchase. Notably, the authors consider visual cues also hyperlinks and guides which facilitate the navigation and that could be compared to in-store signage.

Another element that sometimes is overlooked as visual atmospheric and that can be easily transferred from the offline to the online environment is advertisement. Often used in-store in form of posters, brochures, and leaflet, to trigger impulse buying, enhance new products, or create dedicated sections in-store (Youn and Faber 2000), advertisement

could be used online as well to create a specific atmosphere and influence brand attitude (Shaouf, Lü, and Xiaoying 2016).

The advancement in technology and the use of artificial intelligence techniques (e.g., programmatic advertisement) is allowing online retailers to customise and manipulate the virtual environment in order to suit individual consumers' needs (Vrechopoulos 2010). In particular, mass-customisation is allowing brands to create targeted content to show products of interest on the customer's landing page. Hassouneh and Brengman's (2015) argued that advertisement is not an atmospheric for the physical environment, because of its inability to target consumers individually (Eugeniusz 2017). Yet, in the online environment, advertisement can be used as part of the virtual atmospherics, and by targeting consumers individually, retailers can create a unique virtual experience that cannot be replicated in the physical environment (Jiang, Ko, and Chae 2019; Eugeniusz 2017; Vladimir, Budiselić, and Srbljić 2015).

Aural atmospherics

Elliott and Speck (2015) in their research identified some key influencers of consumers attitude towards retail websites. One of these factors is aural atmospherics as part of the product information. According to the author, in line with many scholars before them, product information is an element that increases attitude to online shopping, spending, and satisfaction. Elliot and Speck work (2015) considers music and audio stimuli also as an important element of what they identified as the entertainment factor. According to the authors, this entertainment dimension appears to have effects on consumer attitude that are similar to the ones generated by product information, with the additional benefit of facilitating repeated purchases and e-loyalty.

Elliott and Speck (2015), and also Kim, Choi, and Lee (2015) considered music and audio presentations as key elements of the entertainment dimension of the online purchasing experience. More recently, audio cues have been identified also as important influencers of Generation Y luxury fashion perception online (Kim 2019).

Aural stimuli have been considered important elements for e-commerce experiences by many scholars. Parsons and Conroy (2006) in their work determined that consumers have some desire for sensory stimuli such as music. In particular, the authors found that consumers are willing to spend more time browsing if audio cues match their likes. Notably, a few years after, Floh and Madlberger (2013) still found that a very small number of retailers are actually using audio content to entertain their users.

Moreover, most of the e-stores included in the study used music only as complementary of video stimuli and not as a stand-alone cue. This aspect is worth further analysis considering that background music is one of the principal atmospherics in physical stores and have been demonstrated having a significant impact on consumers attituded towards a retail store and a brand (Broekemier, Marquardt, and Gentry 2008). Sometimes music has been even identified as the most important characteristic together with the quality of products in affecting consumers in-store shopping experience (Triantafillidou, Siomkos, and Papafilippaki 2017).

More recently, as reported by Tarafder (2019) informal studies have flagged that consumers tend to partially judge fashion products also by the genre and volume of music present in-store. Riedel and Mulcahy (2019) designed their research on aural and

visual cues to study if adding touch stimuli to the online experience could provide benefit to the consumer journey. Yet, the authors did not disclose if the number of retailers using aural stimuli has significantly increased compared to what Floh and Madlberger discovered in 2013.

Studies on aural cues effects on fashion shopping behaviour are less frequent if compared to studies on visual stimulation, and this may depend on the nature of the fashion product. Yet, there are some new interesting studies highlighting the positive potential of implementing interactive music as part of the e-commerce experience. In particular, Hwang and Ho (2020) found that aural cues are positive influencers of consumer engagement in the shopping tasks and that this may lead to stronger purchase intentions and a more positive attitude towards the brand.

It appears that aural stimuli are mostly not leveraged as they could by retailers to provide an enjoyable and engaging online experience. Although the importance of visual cues is undeniable for the fashion sector, further understanding of the potential implications of a greater use of aural stimuli could be important to provide further easy-to-implement suggestions to online fashion retailers, and also to further advance knowledge on online shopping experiences.

Conclusion and implications

This paper aimed to investigate the main literature regarding virtual retail layout and atmospherics, to understand what forms of these important futures are easier to transfer from the physical to the virtual environment for the fashion industry. The study provides an in-depth analysis of the phenomenon by understanding the characteristics which the virtual fashion industry can adapt through layout and atmospherics.

From the analysis presented, it emerged that the best layout to implement in the virtual fashion retail is the freeform layout (Lin and Lo 2016). This because the layout is perceived as the most pleasant, entertaining, and stimulating layout by consumers (Vrechopoulos et al. 2004); and it generates a higher level of emotional stimuli that might help in increasing consumers' purchase intensions (Lin and Lo 2016).

With regards to the two atmospherics this paper focused on, findings suggest that the visual and aural cues are the easier and most effective atmospherics at the moment to implement for the sector (Jiang, Eunju, and Chae 2019; Sundström, Hjelm-Lidholm, and Radon 2019). In particular, multiple enlarged images and pictorial presentations help the consumer overcoming the lack of tactile stimuli (Kaushik et al. 2020), 360-degree videos (Young Kim and Kim 2004) and clothes worn by models. Together with these elements which help the consumer have a clearer idea of the product and gather more information, customised advertisement can be used to create targeted content and provide the consumer with a unique personalised experience (Jiang, Eunju, and Chae 2019).

For what concerns aural atmospherics, it has been highlighted that they are considered positive influencers of consumer engagement in the shopping tasks and could strengthen purchase intentions and a more positive attitude towards the brand. (Hwang and Ho 2020). Yet, it appears these stimuli are not exploited at their maximum and are still mostly used as complementary of video content.

Retail and fashion managers who are interested in starting to develop an online offer are suggested to focus on the following characteristics in terms of layout and

atmospherics. The design of the layout should be easy to navigate and provide a good amount of information. The freeform layout is considered the one that most influences consumer purchase intentions. Furthermore, a large number of images with clear enlargements will facilitate consumers to better understand the product. Visual stimuli are key for the fashion industry, hence, 360-degree videos together with garments worn by models could also help. Advertisements could be used to provide a unique virtual environment for the user once he/she lands on the website page. Finally, a more focused use of aural stimuli could help in engaging the consumer with the shopping task and could even strengthen positive attitudes and purchase intentions.

Limitations and future research development

The quickly changing nature of the online retail phenomenon might influence the results of this study. Moreover, since the large majority of the research papers analysed involved participants which are usually students at undergraduate to postgraduate level, further research might consider investigating different consumers, by including various geographic, ethnic, and cultural variables. Future development should consider primary research to validate or refute the findings of this paper. Further, practice-based research might be carried out on virtual atmospherics and layout for the fashion industry to enhance the limited research which is currently published and to be up to date with technological changes.

For example, a different mix of layout and atmospherics could be used for visual elicitation to better understand the most effective combination to provide an enjoyable online experience. Further investigations could focus on exploring potential differences if similar layout and atmospherics are used on mobile website versions. Factors such as shopping motivations and consumer personalities could be added to understand if the combination of layout and atmospherics vary according to different motivations or personality.

Further analysis of the potential benefit that touching technologies can bring to the shopping experience could be conducted combining them with a different mix of layout and atmospherics.

Finally, other elements that could be introduced in the analysis are those online-only elements such as shoppable advertisements, social media shopping experience, live-stream commerce, virtual and augmented reality, 3D fitting rooms, to evaluate the different degrees of engagement and enjoyability that these factors can add to the more basic online solutions.

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