Evaluating the Influence of Music on Shoppers' Flow in an Online Fashion Retail Environment

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Abstract

Through exploring *flow* within the Stimulus-Organism-Response paradigm, this paper aims to add a new dimension to the existing online SOR model and thereby extend the theoretical and conceptual understanding of *flow* and the impact of web atmospherics, namely music, in an online fashion retail setting.

A conceptual framework was developed based on prior literature, and an online survey was generated to test four hypotheses. The result to date suggests the presence of music is negatively associated with arousal/pleasure and arousal/*flow*. The full analysis is yet to be carried out, and this paper reports on the initial findings from the pilot study.

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Introduction

Consumers nowadays, especially in the developed economy, regularly shop and purchase products and services online (Strauss and Frost, 2012). Statistics published by the United Nations Conference on Trade and Development (2015) forecast that the global B2C e-commerce sales will reach $2.4 trillion in 2018, double the market value from 2013. Within the growth of online retailing, it has been recognised that there has been a shift towards the online retail environment to become a place that offers enjoyable experiences as well as value and convenience (Childers *et al*., 2001).

As well as being a hedonic element, music as an atmospheric stimulus has been evidenced to impact on consumer emotions (namely arousal and pleasure), cognitive judgement and subsequent behaviours in-store (Oakes, 2000; Oakes *et al*., 2014; Turley and Milliman, 2000). Practitioners have started recognising the importance and the choice of music played in their retail stores, and large retail management companies such as Hammerson, carried out an experiment in their shopping centres to see whether the music played in the background influenced the behaviour of the shoppers (BBC, 2015).

Despite many studies evidencing the impact of music in-store, there is a limited number of studies exploring the impact of music online (Fiore and Kelly 2007; Ding and Lin, 2012; Lai and Chiang, 2012; Kim and Lennon 2012; Cuny *et al*., 2015). Most of the variables in online models are still somewhat functional rather than hedonic or aesthetic attributes akin to other traditional models (Cheung *et al*., 2003). This may be because many online marketing studies were originally constructed on the basis that the online shoppers were thought to be more utilitarian in nature. Although convenience and price may be the main drivers for consumers to shop online, the relationship between online retail environment and consumer behaviour has been evidenced more significant than traditionally thought (Eroglu *et al*., 2003).

Within the online models, the theory of *flow* looks at online shopping as a holistic experience, and considers more aesthetic aspects of online retail, and is considered as a measurement of enjoyment of the online shopping experience (Hoffman and Novak, 1996; Skadberg and Kimmel, 2004; Koufaris, 2002). Despite the outcome of *flow* as being evidenced to be highly positive, little is known about the antecedents that optimise the *flow*. Whether a specific aesthetic web atmospheric stimulus, such as music, could enhance the state of *flow* is yet unknown. By following the style of research design by Richard and Chebat's (2015) and Gao and Bai's (2014) that has evidenced the impact of *flow* in an online environment, it is anticipated that the complex nature of *flow* construct enables the caption of both utilitarian and hedonic aspects of online consumer responses stimulated by music. This paper, therefore, aims to evaluate the relationship between music as a web atmospheric, shoppers' emotional state and the impact of *flow*, which is the measurement of enjoyment in an online retail environment that leads to a positive behavioural outcome.

To explore the above issues, this paper is structured as follows; A literature review is presented to define key terms and demonstrate the knowledge available in the field. In addition, gaps in the literature have been highlighted, and four hypotheses are drawn out from the prior literature which forms the basis of the conceptual framework. The data collected from the pilot study are analysed and reported. Finally, the paper concludes with consideration for the next steps for a full study.

Literature review

Shoppers are attracted to the time efficiency and amount of information available from online shopping, which can also offer greater value and convenience (Eroglu *et al.*, 2001). Because of this, online shoppers were originally thought to be utilitarian in nature and were believed to place greater emphasis on the price, convenience and functionality, and they associate online shopping experiences with attributes of functionality and rationality (Park and Kim, 2003). Nevertheless, there has been a shift in the view of the online retail environment as a place that could offer other values such as enjoyable and entertaining leisure experiences that satisfy shoppers' aesthetic and experimental desires as well as fulfilling the utilitarian accessibility (Childers *et al.*, 2001).

The fundamental trend of consumers' online consumption style has been recognised to place importance on hedonic enjoyment similar to offline shoppers, and the hedonic and experimental qualities of the online retail environment are the counterpart to the physical in-store retail environment and atmospherics (Koufaris, 2002; Eroglu *et al.*, 2003). It is, therefore, important to understand the role and influence of atmospheric stimulus in an in-store retail setting as well as in the online context.

The role of store atmospherics

Kotler (1973:50) introduced the concept of atmospherics in retail environment and defined it as "the conscious designing of space to create certain buyer effects, specifically, the designing of buying environments to produce specific emotional effects in the buyer that enhance purchase profitability", but also, "when atmospherics are deficient - discouraging any of these activities" (Mirella Yani-de-Soriano and Foxall, 2006:403).

The store atmospheric elements include colour (Babin *et al.*, 2003), scent (Michon *et al.*, 2005; Doucé and Janssens, 2013), and ambient factors such as music (Oakes, 2000; Oakes *et al.*, 2012) and lighting (Park and Farr, 2007). There are studies that suggest that these in-store atmospheric cues indeed have a significant impact on the shoppers' emotional and cognitive states, and subsequently the behavioural outcome (e.g. time or money spent in the store) (Tai and Fung, 1997; Turley and Milliman, 2000). Thus, traditional in-store atmospheric studies commonly suggest that skilful manipulation of all these atmospheric cues can lead to a favourable behaviour by influencing a variety of psychological, both emotional and cognitive, states of shoppers.

To uncover the phenomenon between atmospherics and shoppers' psychological responses and behaviour, the Stimulus-Organism-Response (SOR) paradigm and Mehrabian and Russell (M-R) model has been widely utilised and tested in in-store retail studies (Tai and Fung, 1997; Eroglu *et al.*, 2003). The SOR paradigm was conceptualized and developed into one of the principal environmental psychology models by Mehrabian and Russell (1974), and it originally explored the links between environmental and atmospheric cues (Stimuli), shoppers' internal emotional state (Organism) and approach/avoidance behavioural outcome (Response) of shoppers (Fig.1) (Mehrabian and Russell, 1974).
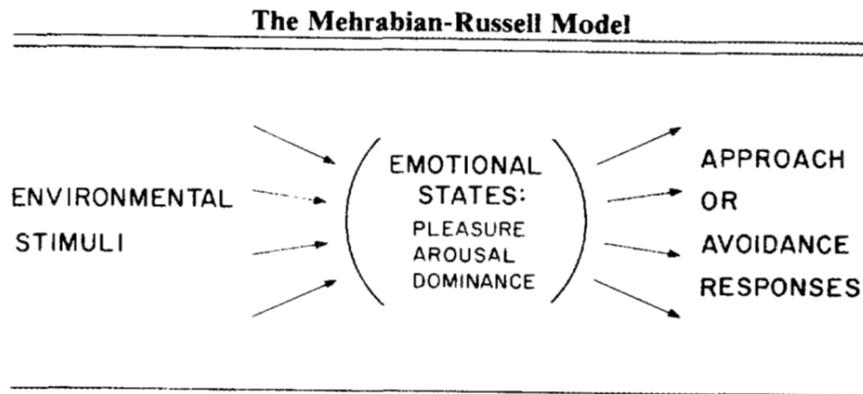
Fig.1 M-R model based on S-O-R paradigm (Donovan and Rossiter, 1982)

However, Lin (2004) has revised, modified and improved the SOR model by notifying the significant impact of atmospheric stimuli on shoppers' cognitive states, and emphasising the importance of cognitive processing within the model (Fig. 2). Thus, the current SOR model, including the model used in this study, places significant importance on shoppers' cognitive evaluation as well as emotional responses.
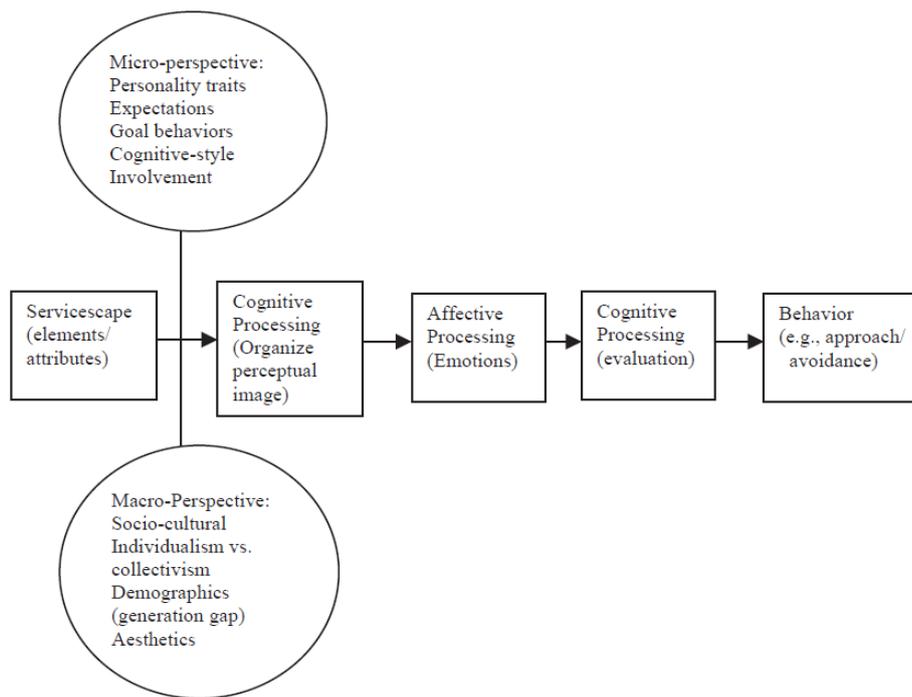
Fig 2. SOR model with consideration of cognitive processing (Lin, 2004)

Prior studies have evidenced that akin to the impact of traditional in-store atmospherics, manipulating web atmospheric characteristics can also significantly impact on shoppers' psychological, both emotional and cognitive, and behavioural outcomes, creating an effective and attractive online retail space (Childers *et al.*, 2001; Eroglu *et al.*, 2001; Eroglu *et al.*, 2003; Koo and Ju, 2010). Despite the wide awareness of the atmospherics in the in-store retail environment, the role and implication of web atmospherics is yet understudied and still an emerging topic.

Web atmospherics

Dailey (2004:796) defines web atmospheric as a "web interface component within an individual's perceptual field that stimulates one's senses" which can also "create positive effects in users in order to increase favourable consumer responses". An enjoyable online interface, including using audio and visual interfaces, would play an important role in improving the online shopping environment and experience and the role of web atmospherics can be more significant in than the in-store atmospherics as it can communicate non-tangible information (i.e. brand image) and improve shopping experiences by minimising the barriers of online shopping (Fiore and Kelly, 2007; Kim and Lennon, 2012).

The disadvantage of online shopping is not being able to experience the physical products, and the shoppers need to obtain information about both price and non-price attributes before they make an online purchase (Alba *et al.*, 1997). More information on salient attributes such as price could increase consumer price sensitivity for undifferentiated products whereas non-price determinant attributes can reduce the price-sensitivity on differentiated products. In other words, online shoppers rely on both low task-relevant online information (i.e. music, animation, colours) as well as high task-relevant information (i.e. price, size, quantity) (Eroglu *et al*., 2001) to comprehend and appreciate the online store and products on offer. Therefore, attributes such as website design and sensory content can be important for retailers in order to differentiate themselves from the competitors as well as providing technical functionality such as search and navigation capacity (Gai and Bao, 2013; Ding and Lin, 2012).

Music as an effective tool to induce emotional and cognitive shopper response in an in-store retail environment

The impact of music has been researched and conceptualised by many, and the SOR paradigm has been widely applied in this field (Garlin and Owen, 2006). For example, Oakes (2000) based his Musicscape model on Bitner's (1992) Servicescape framework, which stems from the SOR paradigm and environmental psychology. Musicscape "provides a visual synthesis of relevant empirical research area" (Oakes, 2000: 540) demonstrating the influence of ambient factors in service retail spaces on consumer behaviour focusing particularly on music. Empirical evidence from previous research on music and consumer behaviour is used to form the framework that demonstrates the interaction between different musical variables and valence moderators affecting customer responses that subsequently generates general consumer behaviour (Oakes 2000). In comparison to the simple SOR and M-R model, the Musicscape model explores in detail each variable; independent musical variables, valence moderators, internal response moderators, and behavioural outcomes.

By using the above modelling, music as an atmospheric cue has been evidenced to induce positive emotional responses, and consequently achieve a positive store evaluation which can result in increased customer spending (Demoulin, 2011; Oakes and North, 2008; North and Hargreaves, 2003; North and Hargreaves, 1997).

However, music placed in a retail environment without any thought (so called Piped-music or Muzak) is criticised by individuals and organisations such as 'Pipedown' that inescapable so-called "piped music", which is forced to shoppers in a retail space, is not only irritating, but could affect human health (Pipedown, 2017). Major retailers such as Marks and Spencer are also making radical decisions to turn off music in their stores completely. To overcome this criticism, understanding the shoppers' cognitive processing as well as emotional responses is

the key to achieving a pleasurable and effective shopping experience with music. To elaborate, it has been evidenced that congruity (or 'fittingness' of the music within the environment) strongly influences the customers behaviour and choice in selecting products (North and Hargreaves, 1997) as shoppers respond to the retail environment holistically and an ambient cue is processed a part of the whole environment (Bitner, 1992; Lin, 2004). When the congruity between the music played, the product offered and other appropriate store atmospheric features are achieved, it triggers correct product association and positive cognitive evaluation of the store environment leading to a pleasurable shopping experience. Studies by Demoulin, (2011) and Spangenberg *et al.* (2005) both claim that congruity between the music and the general store atmosphere and products leads to a higher level of pleasure and arousal.

For instance, North *et al.*'s (1999) result show that customer's "primed" knowledge of musical origin leads to the purchase of wine from the associated countries. While French music was played, customers chose to purchase French wine over German wine and when German music was played, customers chose German wine. Furthermore, as well as music/product congruity, a particular genre of music can be associated with the particular retail atmosphere. For example, the study by North *et al.* (2016) suggests that shoppers are willing to spend more in a retail situation when the desired social identity is achieved by the association of classical music with high-class and sophistication (North *et al.*, 2016; North and Hargreaves, 1998). This indicates that playing classical music can achieve to promote luxury or high-end products in a retail store.

On the contrary, "Misfit" of the in-store music can potentially lead to misleading judgement about the brand or product positioning, and therefore can result in the shoppers' wrong and unwanted evaluation of the shopping experience and can damage the brand image (McColl-Kennedy and Sparks, 2003).

While compatibility between the in-store and online is not yet widely tested, music in in-store retail environment has been explored by many previous studies (North and Hargreaves, 1998; Turley and Milliman, 2000; Oakes, 2000; Oakes *et al.*, 2014)

Previous online atmospheric studies evidence that music has an impact on consumer emotions and behavioural outcome in an online retail setting comparable to in-store setting (Cheng *et al.*, 2009; Lai and Chiang, 2012), and some have examined the impact of music on emotional responses in an online fashion retail context (Kim *et al.*, 2009; Kim and Lennon, 2012).

Music as a web atmospheric stimulus

Although there is only a limited number of studies examining the influence of music as an atmospheric in an online retail setting, the impact of music is gaining more interest in the field of web atmospheric studies.

An empirical study by Chung *et al.* (2009) shows that, in fact, both music and colour influence the consumers' perception and their emotional responses online. Although Chung *et al.*'s (2009) experiment was conducted in a laboratory setting and not in a real-life simulation, the result shows a significant implication of the impact of two major web atmospherics stimuli (i.e. music and colour) on consumer emotions. These emotional responses can influence shoppers' attitudes, satisfaction, and buying behaviour. However, Chung *et al.*'s (2009) research do not explore any further impacts in regards to the relationship between those atmospheric cues, emotional responses, and shopping behaviour. In other words, it does not explain how those consumers' emotional states evoked by music leads to their subsequent behaviour.

In contrast to Chung *et al.*'s (2009) research, other studies such as Lai and Chiang's (2012), Ding and Lin's (2012) and Kim and Lennon's (2012) look at the influence of music on emotion as well as the subsequent consumer behaviour. Lai and Chiang's (2012) findings show that the participants had a higher level of pleasure, arousal and approach behaviour intention when background music was played compared to having no music. Interestingly, the timings of the placement of music varied the result. For example, playing background music after the start of browsing is evidenced to be more beneficial, but it is inappropriate to place background music at the start of browsing the shopping website. Similarly, Ding and Lin (2012) have come to the similar conclusion that music influences consumers' affective responses in the online environment, however, the variety in tempo can change the magnitude of the influence. For example, compared to slow tempo music, fast tempo music can lead to higher arousal enhancing pleasure which subsequently leads to higher purchase intent. This could also be the reason Kim and Lennon (2012) did not observe any influence of music on arousal in their online research as they were using slower music to focus on inducing pleasure and affective response of shoppers but not arousal. From Demolin's (2011) findings, pleasure is likely to proceed after arousal, but arousal does not proceed from pleasure. This is therefore not surprising that there was no observation of arousal if the music itself had the opposite effect to evoking arousal. The literature discussed above suggests the first hypothesis;

H1. Music as a web atmospheric stimulus induces the shoppers' state of arousal

Furthermore, Kim and Lennon (2012) have concluded that using music on apparel websites is one way to improve shoppers' risk perception by increasingly enhancing the state of pleasure. Pleasurable shopping experiences improve the shoppers' attitude towards the site and consequently induce a positive shopping outcome such as reduced perception of risk and increased purchase intent.

Above studies suggest that music as a web atmospheric stimulus can indeed influence the consumer's emotional and cognitive responses in an online retail environment. Nevertheless, there is an uncertainty and potential risk that consumers may perceive background sound as annoying, and this is the main reason holding retailers back from utilising the audio tools to enhance their website (Fiona and Kelly, 2007). Therefore, there is an apparent need for further research into the relationship between emotional and cognitive responses evoked by web atmospherics and consumer behaviour or indeed behavioural intentions in a real-life setting.

An interesting study carried out by Cuny *et al.* (2015) demonstrates that immersion and aesthetic experience fully mediated the relationship between music and behavioural intentions in an online setting. Although it was tested in a virtual art gallery and not the more common online retail environment, the result indicated that music encouraged the state of immersion in shoppers enabling them to have more enjoyable and stimulating shopping experience. The result also shows that the more intense the aesthetic experience, the stronger behavioural intentions are online. Immersion, in Cuny *et al.*'s study (2015), refers to a psychological condition that can generate both positive and negative states as a result of aesthetic experience. An immersed person becomes absorbed and totally involved in the experience and feels isolated from the outside reality. While Cuny *et al.* (2015: 1027) indeed distinguish the state of immersion and *flow*, they also state the relationship and similarity of both by saying that "*flow* is a specific type of experience that stems from immersion, although immersion does not always lead to *flow*", and *flow* "corresponds to an optimal consumption experience that is extremely enjoyable and that depends on a state of immersion continuously felt".

Theory of flow

The state of *flow* was first extensively defined and introduced by Csikszentmihalyi (1990) and can be described as the cognitive state of individuals when they are totally involved, and feel in control of the holistic experience. It is considered as an implication of enjoyment of online shopping experience (Hoffman and Novak, 1996; Skadberg and Kimmel, 2004). In recent years, the significance of *flow* in the online shopping environment has caught many researchers' attention, and it has been considered as one of the most important factors that influence the success of online retailers, as the consequence of *flow* in an online retail environment has been evidenced to encourage consumer intentional behaviours such as purchase and return intentions as well as impulse buying (Hsu *et al*., 2012; Noort *et al*., 2012; Gao and Bai, 2014; Richard and Chebat, 2015).

Although the concept of *flow* is widely appreciated in online retail studies, it is concerning that the characteristics of *flow* remain vague, and there is a lack of consistency in operational definitions and understanding of *flow* used by different researchers (Novak *et al*., 2000; Koufaris, 2002; Hoffman and Novak, 2009). While there are various definitions and characteristics o*f flow*, a grounded theory of *flow* by Pace (2004) suggests that many of the concepts and relationships of the *flow* state on the web are identical to the dimensions of *flow* proposed by Csikszentmihalyi, and the characteristics of *flow* in a web environment is empirically evidenced to be enjoyment, time distortion and telepresence (Skadberg and Kimmel, 2004). These characteristics share the fundamental aspects of *flow* in any context, such as a feeling of immersion, total involvement, and loss of self. However, some scholars define *flow* in terms of *experience* (Csikszentmihalyi and Csikszentmihalyi, 1988; Clarke and Haworth, 1994; Ellis *et al*., 2994), some define it as a *state* that is characterised by multiple dimensions (Csikszentmihalyi, 1990; Webster *et al*., 1993; Hoffman and Novak, 1996), and sometimes a mixture of both (Pace, 2004). This leads to the criticisms that the term *flow* is ill-defined and used too broadly (Koufaris, 2002). Despite the outcome of *flow* being evidenced to be highly positive, yet little is known about what causes *flow* and the antecedents which can optimise *flow*. This demonstrates the necessity to widen the theoretical knowledge and conceptual understanding of *flow* (Gao and Bai 2014).

Flow and its relationship with shopper psychological responses

Many researchers suggest that the emotional state of the shoppers is closely related to the *flow* (Novak *et al*., 2000; Wang *et al*., 2007) as well as it is considered as an outcome of online atmospherics (Eroglu *et al*., 2003; Koo and Ju, 2010). According to Koufaris (2002), the emotional and cognitive components of the *flow* state in an online shopping context, namely intrinsic enjoyment and perceived control. These variables are akin to the pleasure and dominance dimension of the environmental psychology, and compatible with the SOR paradigm discussed above in the in-store retail environment. Although Eroglu *et al*. (2001) does not directly relate SOR paradigm to the state of *flow*, their adopted M-R model for online context has shown a positive relationship between atmospheric stimulus and emotional and cognitive responses that subsequently affects consumer behaviour and money spent in an online shopping context (Eroglu *et al*., 2001).

For instance, in line with the findings of Novak *et al*. (2000), Richard and Chebat's (2016) study shows that higher arousal and dominance directly influences the state of *flow*. It also has a direct effect on the purchase intentions which coincides with Siekpe's (2005) findings, and this forms the second hypothesis;

H2. The state of arousal induced by music stimulus positively influences shoppers' flow state

It has also been evidenced that there is a positive relationship between arousal and pleasure, as well as the hierarchical order that emotions precede cognitions (website attitudes) while navigating through a website (Richard and Chebat, 2016). As such, the third hypothesis is;

H3. The state of arousal induced by music stimulus positively influences shoppers' state of pleasure

Furthermore, Richard and Chebat (2016) also evidenced that *flow* leads to higher pleasure, and pleasure induced by arousal or *flow* also leads to the website entertainment which subsequently positively influences cognitive responses such as website attitudes and product attitudes which result in greater purchase intentions (Fig. 3). Drawing from this conceptualisation, the fourth hypothesis is;

H4. The state of flow induced by the state of arousal positively influences shoppers' state of pleasure
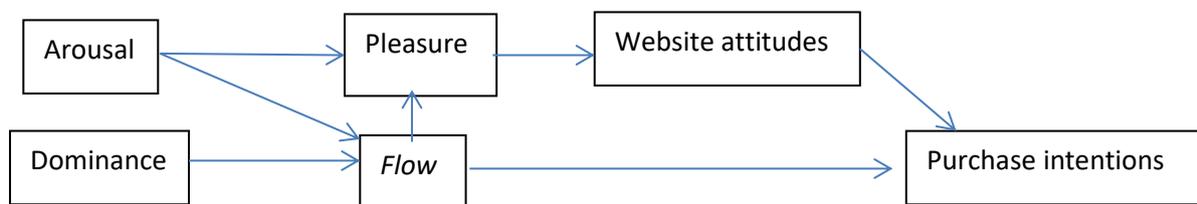
Fig.3 Visual representation of the findings by Richard and Chebat (2016)

To summarise, the above diagram highlights the close relationships between the web atmospherics, shoppers' emotional states, shoppers' *flow*, and possible positive shopping outcomes, and the emotional states of the shoppers are the key to yield and optimise the state of *flow*. The next section, thus explores what catalyst induces the emotional states of shoppers that lead to the state *flow* in an online retail environment.

Context

According to the Centre for Retail Research (2015), the UK has one of the highest percentages of consumers shopping online in the developed world. Total UK online sales figure in 2014 were estimated to be the highest in Europe at around USD 63.64 billion, experiencing growth of 15.8% per annum. In 2014, 72% of all adults bought goods or services online (ONS 2014).

The fashion industry was chosen for this study as it is a dominant sector in the UK online retail. Clothes were the most popular online purchase in 2014, bought by 49% of all adults and 70% of all internet users in the UK. The UK online fashion retail market is steadily growing and is forecast to reach £19 billion by 2019 (ONS, 2014; Mintel, 2014).

It is apparent that the presence of music holds a high importance in fashion retail. For example, fashion brands such as Abercrombie & Fitch and Victoria's Secret recognise the importance of music and brand association and have implemented extensive music strategies such as making their in-house playlists available on their websites and on apps, which in effect, seeks to bind shoppers to the brand. Clarke *et al*. (2012) believe that shopping for fashion items can be categorised as hedonic or recreational rather than task-oriented shopping. With recreational

shopping, the experience of the purchase may be more important than the acquisition of the product, as consumers tend to pursue hedonic motives that include multi-sensory and emotional aspects (Clarke *et al.*, 2012; Park *et al.*, 2006).

Although larger retailers can achieve a price advantage or a bigger marketing scope, Small and Medium Enterprises (SMEs) can compete and provide differentiation based on product quality, customer service, or the store ambience. In other words, small fashion retailers may be able to achieve a competitive advantage by means of a differentiated servicescape or a unique shopping experience (Clarke *et al.*, 2012). Being able to personalise and have a control over the store ambience, especially music, can be a significant advantage of an SME as "piped music" can be avoided and shoppers can appreciate music as an aesthetic aspect of the store environment.

Within small fashion business markets, there is a trend, and an increased popularity towards vintage clothing and vintage fashion has become a mainstream rather than niche subculture (Clarke *et al.*, 2012; Cassidy and Bennett, 2012). Vintage stores have relatively low barriers to entry into the fashion retail sector due to the low start-up costs, and may, therefore, represent a strong sustainable business opportunity. After conducting a study on a vintage fashion SME, Clarke *et al.* (2012) suggest that music is something that owner-managers of small fashion stores can pay more attention to, in that they may derive benefits from choosing the "right" music.

Therefore, a vintage fashion retail in the UK has been chosen as the context to be explored for this paper.

The development of the conceptual framework

Gao and Bai (2014) based their conceptual framework based on SOR paradigm and evidenced in their study that specific website atmospheric characteristics impact the state of *flow*. According to Gao and Bai (2014), there are three categories of web atmospheric characteristics; Informativeness, Effectiveness, and Entertainment.

Gao and Bai (2014) evidenced that there is a significant link between the web atmospheric characteristics, shoppers' emotional states leading to online purchase intent, and it can be assumed that web atmospherics act as an antecedent for inducing shoppers' emotional states. While Informativeness and Effectiveness provide utilitarian information about the products or service such as richness of the information available and how accurate and conveniently information is presented, Entertainment provides low-task relevant cues that do not directly offer descriptive information to attain shopping goals. On the other hand, Entertainment, such as music, pictures, videos, and interactivity, enables the website to be more entertaining, leading increased level of shoppers' attention and perceived control when visiting the site (Gao and Bai, 2014).

The shoppers' emotional state is also evidenced to be closely related to and also influence the state of *flow*. Therefore, the web atmospherics can be assumed to be an antecedent of *flow* with shoppers' emotional states as a mediating variable.

As discussed earlier, music is a highly influential stimulus on shoppers' emotional states in both in-store and online retail environments. In particular, music has been evidenced to induce the state of arousal both in online and in-store retail settings (Lai and Chiang, 2012; North and

Hargreaves, 1998). Synthesising these findings suggests that the importance of arousal and pleasure mediating between web atmospherics and the *flow* state, and subsequent purchase intentions, could consequently mean that musical stimulus may have a significant impact on online purchase intentions, as music has already been evidenced to impact arousal and pleasure in an online as well as off-line shopping context.

To summarise the findings, music is a site entertainment which is both a sensory and hedonic element that reflects the fun and excitement of the website (Gao and Bai, 2014). Music can also induce an emotional state of arousal and subsequently pleasure (Sherman *et al.*, 1997; Garlin and Owen, 2006). The state of arousal is evidenced to lead to *flow* (Novak *et al.*, 2000; Richard and Chebat, 2015). The *flow* state, as well as state of arousal, also leads to the state of pleasure. Pleasure is evidenced to lead to further cognitive evaluation such as product and risk perception (Richard and Chebat, 2015; Kim and Lennon, 2012) and subsequently to lead to a behavioural outcome (Eroglu *et al.*, 2003; Kim *et al.*, 2009). These relationships frame the hypotheses for the antecedent effect of music on *flow* through inducing shoppers' state of arousal while shopping online.

From reading the literature, it was clear that the key issues to be addressed in this paper are the issue of music as a web atmospheric stimulus and the emotional and cognitive response of the shoppers within an online retail environment. SOR paradigm has been widely used for studies of the influence of store atmospherics, shoppers' emotional and cognitive responses, and subsequent behavioural outcomes. Furthermore, other recent *flow* models are based on SOR paradigm such as Gao and Bai's (2014) as well as Richard and Chebat's (2015). Thus, the current conceptual framework is generated based on SOR paradigm and previous *flow* models to address the hypotheses (Fig. 4).
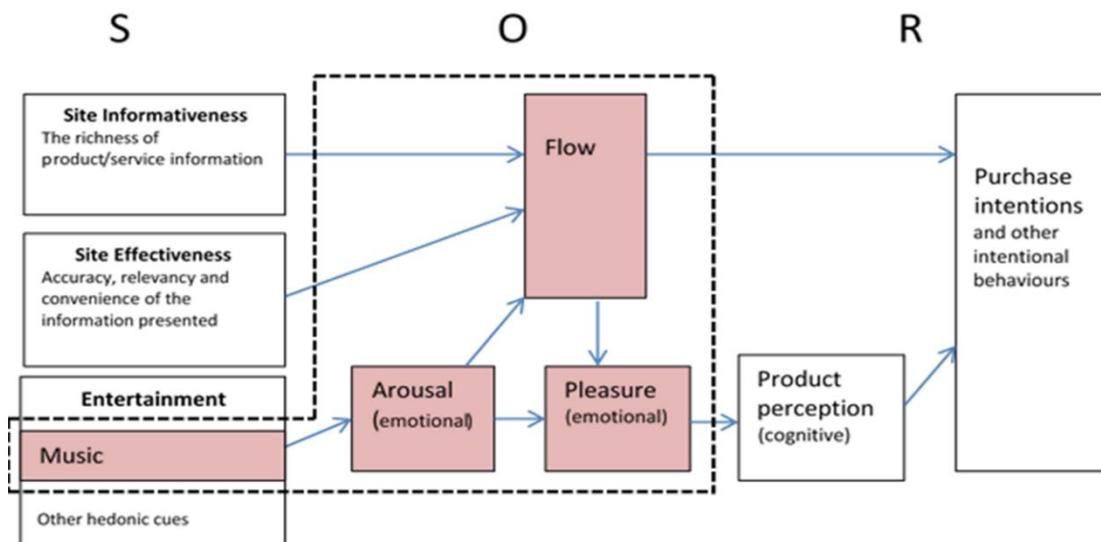
Fig. 4 Conceptual framework based on SOR

Following the above four hypotheses, the main aim of this study is to evaluate the highlighted section within the dotted line of the framework; the relationship between music as a web atmospheric stimulus and shoppers' state of arousal, the state of arousal induced by music stimulus and shoppers' *flow*, the state of arousal induced by music stimulus and shoppers' state of pleasure, and the state of *flow* induced by the state of arousal and shoppers' state of pleasure.

Within the existing web atmospheric studies using SOR paradigm, the focus predominantly remains on the establishment of relationships between web environmental stimuli, shoppers' emotional and cognitive states and behavioural consequence, and *flow* is not typically considered within the Organism element (Eroglu, 2003; Koo and Ju, 2010; Kim and Lennon, 2012; Ding and Lin, 2012). Dailey (2004) proposes a model showing the relationship between web atmospherics, emotional and cognitive states, and *flow*, however, the model remains conceptual and not empirically tested. While many SOR based models overlook *flow*, Cuny *et al.*'s (2015) study on music, immersion and intentional behaviour introduces a new dimension of "immersion" within the Organism element although Cuny *et al.* (2015) clearly differentiates immersion and *flow* as explained earlier. Both Cuny *et al.*'s (2015) and Gao and Bai's (2014) model proposes *flow* or immersion as another dimension as an Organism element within SOR paradigm, however, those models do not include emotional and cognitive states. In other words, by evaluating the relationship between shoppers' emotional responses and *flow*, this study provides a new understanding of the relationship within the Organism element of SOR paradigm as well as the relationship between music as a stimulus and psychological responses.

Method

The online survey was generated following the style of Richard and Chebat's (2015) and Gao and Bai's (2014) measurement model of emotion, *flow*, and purchase intentions. In addition to questions on participant demographic, the survey consists of 3 item scales (27 questions), all drawn from past studies that examined consumer emotion, behaviour and experience of *flow* in an online context. The questions have been based on or drawn out from the existing literature mainly from the two studies by Richard and Chebat's (2015) and Gao and Bai's (2014). Detailed survey questions, justification of the terms and questions used, and references are shown below in the table in Appendix 1. The participant evaluation system is in the form of 5 point Likert scale. The main difference between the method of above two studies and the method for this study is that there are two variations of survey for this study; one with music and the other without music, while exploring the selected website. This means that music is the independent variable. Having two variations of the survey will provide a comparative data to determine if the presence of music in online store environment correlates greater with the shoppers' positive emotional response and the state of *flow* compared to no music.

Two types of surveys were constructed on Google Forms and include; participant information sheet, consent form, and survey completion instructions. Survey 1 asks participants to visit the chosen retailer's website and once having explored the website, to complete the survey. Survey 2 asks participants to follow the exact same procedure, however, this survey is linked to a YouTube playlist video. The participants who received this survey are instructed to play the YouTube video prior to entering the retail website. This enabled music to be played while they explore the website.

A similar study looking at online fashion retail was conducted by Kim *et al*. (2009). They used a mock apparel website to examine the impact that music played in the background and product presentation had on online consumer emotional and cognitive responses using SOR paradigm and PAD emotional measures. Although Kim *et al*.'s (2009) study evidenced there was no significant effect for music on the shoppers' emotion in an online environment, the validity of this result is questionable, impart due to the research design, which this study can learn from and improved for this study. To elaborate, there were only five product items chosen for the mock apparel website whereas real apparel websites would normally have much more choice. Therefore, to improve on the reality of the retail environment, an existing local vintage fashion

shop, which has both an online and offline presence, and sells both women and men clothing has been chosen for this study.

In Kim *et al*.'s (2009) study, pop music was the only genre of music they considered, and musical genre congruity with the other components of the website was not reflected. Musical congruity with other store aspects has been proven to have a significant impact on arousal and pleasure and also reflects the store image, identity and character, therefore, not considering musical congruity can impact the overall shopping experience (Oakes *et al*., 2014). For this reason, after being granted access, the store owner was consulted around a relevant genre of music played as part of this study. The genre of the music selected for this study is aligned with the music they play in the store. Although the store staff may not consciously choose what music they play in the store, the genre of music usually reflects the store image, identity, and character. A suitable playlist of this genre was searched on YouTube, and permission was granted from the video owner for the playlist to be used for this study.

Furthermore, the way music was played in the background was also being considered. Kim *et al*. (2009) recognise that their major weakness of their research design was that the music was played in the background by another audio player device rather than played from the device which participants were shopping on. This could be a major issue as music played in the background in the room may not be perceived as a website attribute. Therefore, this study has developed the telepresence design (Kim *et al*., 2009); music is played on the same device as the one used to shop with, merging music into one virtual shopping experience, by embedding the web link to the YouTube music video, enabling and ensuring the music to be played on the same device.

The survey is currently under distribution to around 1,000 mixed gender potential participants. The surveys have been promoted and circulated via social media websites as well as via email. Social media websites have been proven to be the most effective way to distribute the survey due to the common sharing function. Snowball sampling has also been utilised from existing contacts and participants. The target returned usable sample is anticipated to be around 250, which is an average sample size for *flow* and web atmospheric studies.

Initial Findings

A pilot study was conducted and data was collected from 126 respondents; 64 who *did not* listen to music while browsing the website (Gender: Male = 18, Female = 46, Age: M = 34.3, SD = 10.9), and 62 who listened to music while browsing the website (Gender: Male = 16, Female = 44, Age: M = 28.5, SD = 11.3).

From the literature, the main results anticipated for the initial data analysis are;

- Higher correlation between music and arousal compared to no music
- Higher correlation between arousal and *flow* with music compared to no music
- Higher correlation between arousal and pleasure with music compared to no music
- Higher correlation between *flow* and pleasure with music compared to no music

Cronbach's Alpha reliability test

Following the measurement scales used in previous studies by Gao and Bai (2013) and Richard and Chebat (2016), Cronbach's alpha reliability test was performed for each latent construct tested. Cronbach alpha coefficient to two decimal places for each construct are as follows; Arousal .68, Pleasure .84, Dominance .72, Site Entertainment .91, Site Informativeness .87, Site effectiveness .80, *Flow* .64, Product Attitude .84, Purchase Intensions .92 (see Table 1). Most of the scales achieved Cronbach alpha coefficient of >.70 or just below .70, which indicates that the scales are reliable.

Table 1. Cronbach's Alpha Reliability Test Result

Construct	Cronbach's Alpha	Number of items
Arousal	.68	3
Pleasure	.84	3
Dominance	.72	3
Site Entertainment	.91	3
Site Informativeness	.87	3
Site Effectiveness	.80	3
Flow	.64	3
Product Attitude	.84	3
Purchase Intensions	.92	3

Pearson's Correlation Analysis

To test the strength and direction of the linear relationship between the variables, Pearson's bivariate correlation analysis was performed.

The correlation analysis indicates that there was a negative correlation between the variable music (participants who *did not* listen to the music and who listened to the music while browsing the website), and 2 arousal levels; "Relaxed/Stimulated" ($r = -.11$, $p > .05$) and "Sleepy/wide-awake" ($r = -.03$, $p > .05$) although not significant. There was a positive correlation between the variable music and another arousal level ("Calm/Excited"), but also not significant ($r = .14$, $p > .05$). This result was unexpected, as, from the literature, it was anticipated that the presence of music would correlate to a higher arousal level (see Table 2).

The above result can be clarified from the result from the range of the responses shown in the crosstab analysis which was also performed alongside the correlation analysis. The spread of responses for arousal level compared between the two groups of participants indicate that the presence of music leads to both higher and lower arousal level of respondents. The responses from participants who listened to the music were more wide-ranging whereas the responses from participants who *did not* listen to the music concentrated strongly to "neutral".

The correlation analysis between arousal and *flow* questions showed some significant correlation within the two groups of participants. For participants who *did not* listen to the music, the answers for the question "I forgot about immediate surroundings" significantly correlated with all the questions for arousal; "Relaxed/Stimulated" ($r = .31$, $p < .05$), "Calm/Excited" ($r = .30$, $p < .05$), "Sleepy/Wide-awake" ($r = .29$, $p < .05$). Furthermore, the answers to the question "I was not conscious of how long I have been browsing" also

significantly correlated with "Calm/Excited" ($r = .32$, $p < .05$). For participants who listened to the music, the question "I forgot about immediate surroundings" showed negative significant correlation coefficient with "Calm/Excited" ($r = -.33$, $p < .05$), and "I was not conscious of how long I have been browsing" also showed negative significant correlation coefficient with "Relaxed/Stimulated" ($r = -.30$, $p < .05$). This is an interesting finding that suggests when the participants *did not* listen to the music, the higher level of arousal correlated with *flow*, whereas when the participants listen to the music, the level of arousal negatively correlated with *flow* (see Table 3).

The correlation analysis between arousal and pleasure also showed some significant correlation within the two groups of participants. For participants who *did not* listen to the music, "Sleepy/Wide-awake" very significantly correlated with "Annoyed/Pleased" ($r = .51$, $p < .01$) and "Dissatisfied/satisfied" ($r = .46$, $p < .01$), and significantly correlated with "Unhappy/happy" ($r = .35$, $p < .05$). "Relaxed/Stimulated" also significantly correlated with "Dissatisfied/Satisfied" ($r = .27$, $p < .05$). For participants who listened to the music, "Relaxed/Stimulated" showed negative correlation coefficient with "Dissatisfied/Satisfied" ($r = -.26$, $p < .05$) and "Unhappy/Happy" ($r = -.27$, $p < .03$). Similarly, to the *flow*/arousal correlation, this is an interesting finding that when the participants did not have the music, the higher level of arousal correlated with pleasure whereas when the participants had the music, the level of arousal negatively correlated with pleasure (see Table 4).

The correlation analysis between pleasure and *flow* indicated that for participants who *did not* listen to the music, the answers to the question "I forgot about immediate surroundings" very significantly correlated with all the questions for pleasure; "Annoyed/Pleased" ($r = .46$, $p < .01$), "Dissatisfied/Satisfied" ($r = .38$, $p < .01$), "Unhappy/Happy" ($r = .37$, $p = .00$). The answers for the question "My attention was focused on the activity" significantly correlated with "Annoyed/Pleased" ($r = .25$, $p < .05$) and "Unhappy/happy" ($r = .35$, $p = .01$). The answer to the question "I was not conscious of how long I have been browsing" also significantly correlated with "Annoyed/Pleased" ($r = .35$, $p < .05$) and "Dissatisfied/Satisfied" ($r = .29$, $p < .05$). Whereas for participants who listen to music, the answers to the question "I forgot about immediate surroundings" significantly correlated with "Annoyed/Pleased" ($r = .31$, $p < .01$), and the answers to the question "I was not conscious of how long I have been browsing" very significantly correlated with "Annoyed/Pleased" ($r = .46$, $p < .01$) as well as significantly correlating with "Dissatisfied/Satisfied" ($r = .32$, $p < .05$) and "Unhappy/Happy" ($r = .32$, $p < .05$) (see Table 5).

The result indicates that higher level of pleasure correlates with *flow*, which was expected from the literature. Nevertheless, the correlation was stronger for participants who did not listen to the music compared to participants who did.

Table 2. Correlation Analysis of Music and Arousal

	Relaxed/Stimulated	Calm/Excited	Sleepy/Wide-awake
Music/No-music	$r = -.11$, $p = .23$	$r = .14$, $p = .88$	$r = -.03$, $p = .78$

Table 3. Correlation Analysis between Flow and Pleasure

		Relaxed/Stimulated	Calm/Excited	Sleepy/Wide-awake
No-music	I forgot about immediate surroundings	r = .31 p = .01	r =.30 p =.02	r =.29 p =.02
	My attention was focused on the activity	r = .17 p = .19	r =.24 p =.06	r =.21 p =.09
	I was not conscious of how long I have been browsing	r =.19 p =.13	r =.32 p =.01	r =.19 p =.13
Music	I forgot about immediate surroundings	r = -.14 p =.27	r = -.33 p =.01	r = -.06 p =.63
	My attention was focused on the activity	r =.07 p =.58	r =.01 p =.96	r = -.06 p =.65
	I was not conscious of how long I have been browsing	r = -.30 p =.02	r = -.15 p =.24	r = -.20 p =.12

Table 4. Correlation Analysis between Pleasure and Arousal

		Relaxed/Stimulated	Calm/Excited	Sleepy/Wide-awake
No-music	Annoyed/pleased	r = .19 p = .14	r =.24 p =.05	r =.51 p =.00
	Dissatisfied/satisfied	r = .27 p = .03	r =.14 p =.28	r =.46 p =.00
	Unhappy/happy	r =.20 p =.11	r =.12 p =.34	r =.35 p =.01
Music	Annoyed/pleased	r = -.19 p =.13	r = -.11 p =.40	r = .10 p =.44
	Dissatisfied/satisfied	r = -.26 p =.04	r = -.06 p =.64	r = -.14 p =.92
	Unhappy/happy	r = -.27 p =.03	r = -.09 p =.51	r = -.05 p =.71

Table 5. Correlation Analysis and Flow and Pleasure

		Annoyed/Pleased	Dissatisfied/Satisfied	Unhappy/happy
No-music	I forgot about immediate surroundings	$r = .46$ $p = .00$	$r = .38$ $p = .00$	$r = .37$ $p = .00$
	My attention was focused on the activity	$r = .25$ $p = .04$	$r = .17$ $p = .17$	$r = .35$ $p = .01$
	I was not conscious of how long I have been browsing	$r = .35$ $p = .01$	$r = .29$ $p = .02$	$r = .16$ $p = .22$
Music	I forgot about immediate surroundings	$r = .31$ $p = .01$	$r = .13$ $p = .31$	$r = .18$ $p = .15$
	My attention was focused on the activity	$r = .21$ $p = .10$	$r = .15$ $p = .25$	$r = .15$ $p = .25$
	I was not conscious of how long I have been browsing	$r = .46$ $p = .00$	$r = .32$ $p = .01$	$r = .32$ $p = .01$

Conclusion

These initial results indicate that there was a strong correlation relationship between the variables, and the presence of music somewhat influenced those results (negative or positive). Interestingly, the presence of music led to a negative correlation between arousal and pleasure, and between arousal and *flow*. However, the presence of music did not correlate with the level of arousal either. The result indicated that the presence of music was associated with both increased and decreased level of arousal. It was also indicated that the level of pleasure correlates with *flow* in the online fashion retail environment, which accords with previous literature (Richard and Chebat, 2016). Nevertheless, there was a stronger correlation between pleasure and *flow* for the participants who did not listen to the music compared to participants who did. This indicates that music somehow decreased the strength of the relationship between pleasure and *flow*. These results from the initial findings suggest that the relationship between the observed variables and the latent construct was not as predicted from the literature, and did not correspond to the initial correlation hypothesis.

Two explanations for this outcome are as follows; Firstly, although the choice of music was in line with the genre and style of the music that is played in the physical store, it was not suited to the products offered, and therefore not result in product congruency. Secondly, the presence of music may have negatively affected shoppers' *flow* as it disturbed the shopping experience instead of enhancing it. Nevertheless, although the findings from the pilot study indicated some association between the variables, the correlation analysis is not sufficient enough to explain the phenomena and the relationship between the variables. Therefore, the following analytical suggestions are recommended for a further study;

It is difficult to directly observe constructs such as *flow*, and they can only be measured through observable indicators that vary in validity (Steenkamp and Baumgartner, 2000). By utilising a

structural equation modelling (SEM) application via confirmatory factor analysis (CFA), evidence of construct validity (i.e. how well the different indicators capture *flow*) can be tested (Babin *et al*., 2008). SEM also enables the examination of the theoretical model by examining the effect of constructs across multiple variables via direct, indirect or bi-directional paths of influence. This is to demonstrate the extent to which one variable affects or predicts another variable (Baumgartner and Homburg, 1996). This feature of SEM plays a key role in the analysis of the results of this study, as from the pilot study, it was evidenced that there was some link between the presence of music, emotional states and *flow*, however, it was also evidenced that the interrelationship between the above variables and constructs have a complex intertwining relationship. In addition, Steenkamp and Baumgartner (2000) believes that the ability of SEM to identify errors of measurement and remove them from the data makes SEM extremely useful for theory testing for marketing models, which fits into the objectives of this study. Therefore, a better suited analytical method will be utilised for the full study using SEM.

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