

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

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Dedication

To my mother Yasuko, my father Anan

To my husband Thomas

To all my family and friends

Abstract

Music is widely considered to be an important atmospheric which influences shoppers' emotions, cognitive evaluations and behavioural outcomes in a traditional in-store retail environment. Nonetheless, there is only limited knowledge on the role of music and its impact in an online retail context. '*Flow*' as a measure of shopper enjoyment has been found to have a positive influence on online shoppers' intentional behaviour. To the author's knowledge, there is no comprehensive framework that captures music as a web atmospheric and its impact on shoppers' *flow* due to a lack of empirical evidence. Therefore, the aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment. A conceptual framework was developed based on the Stimulus-Organism-Response framework. Following the between-subject control and intervention approach, a data collection tool that emulates a real-life online shopping experience was designed. A non-probability online questionnaire was conducted using 462 participants. After the preliminary data analysis, structural equation modelling (SEM) was used to test direct, indirect and moderation effects of the hypothesised relationships. The analysis found that music has no direct effect on shoppers' state of *flow* or arousal. Nonetheless, the multi-group analysis evidenced that music is a moderating variable, strengthening the relationship between shoppers' arousal and *flow*. Furthermore, the SEM also confirmed that the pathways from shoppers' arousal to *flow*, arousal to pleasure, *flow* to pleasure remained the same whether participants were exposed to music or not. This indicates that music did not change the relationship structure of the constructs. This thesis contributes to theory by firstly offering empirical evidence investigating the relationship between music as a web atmospheric and shoppers' state of *flow*. Secondly, the findings offer a new understanding of the moderating effect of music as a web atmospheric. Thirdly, this study provides a theoretically grounded framework, which captures the relationship between music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure in an online fashion retail environment. Lastly, this study contributes to the methodology in the field of music as a web atmospheric by replicating an authentic shopping environment in order to capture shoppers' real-time online shopping experience.

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supported me and provided me with a place of rest and breather throughout the PhD. Other family members also deserve my warmest gratitude for their never-ending beliefs in my capabilities and offering unconditional love and support. My puppy dogs, Toffy and Pinoko, they are a big part of my life, and they always kept me smiling with their unconditional love and cuddles.

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List of abbreviations

| | |
|-------|---|
| B2C | Business to consumer |
| PAD | Pleasure-Arousal-Dominance |
| SMEs | Small and medium enterprises |
| BPM | Beats per minute |
| SOR | Stimulus-Organism-Stimulus |
| TRA | Theory of reasoned action |
| TPB | Theory of planned behaviour |
| TAM | Technology acceptance model |
| CFA | Confirmatory factor analysis |
| SME | Structural equation modelling |
| PA | Product attitudes |
| PP | Purchase intentions |
| SNS | Social networking service |
| CFI | Comparative Fit Index |
| TLI | Tucker-Lewis index |
| RMSEA | Root Mean Square Error of Approximation |
| SRMR | Standardized Root Mean Square Residual |
| GFI | Goodness of Fit Index |
| AGFI | Adjusted Goodness of Fit Index |
| CR | Composite Reliability |
| AVE | Average Variance Extracted |
| MSV | Maximum Shared Variance |
| ASV | Average Shared Variance |
| S.E. | Standard error |
| C.R. | Critical ratios |

List of disseminated works

Conference proceedings

Fujiwara, A., Resnick, S., Cassidy, K. and Brown, A., 2017. "Evaluating the Influence of Music on Shoppers' Flow in an Online Fashion Retail Environment", *BAM conference, 5-7/09/2017 Warwick University, UK.*

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Symposium papers and poster presentations

Fujiwara, A., 2016. "Exploring the impact of music on shoppers' flow state in an UK online retail environment", *Marketing and Music in an Age of Digital Reproduction, 17/11/2016 University of Stirling, Scotland.*

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Fujiwara, A., 2016. "Going with the Flow: *The impact of music on shoppers' flow experience in an online retail environment*", *NTU Doctoral School Research Festival, 2/12/2016, Nottingham Trent University, UK.*

Chapter One: Introduction

This study aims to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment. Music is widely considered to be an important atmospheric, which influences shoppers' emotions (namely arousal and pleasure) and cognitive evaluations in a traditional in-store retail environment (North and Hargreaves, 1998; Turley and Milliman, 2000; Oakes, 2000; Morrison and Beverland, 2003; Beverland, *et al.*, 2006; Morin *et al.*, 2007; Knoferle *et al.*, 2012; Oakes, *et al.*, 2013, Petruzellis *et al.*, 2014; Roschk *et al.*, 2017). Nonetheless, there is only limited knowledge on the role of music and its impact in an online retail context. Given the growth of online shopping, the online retail environment is increasingly seen as a critical 'context' for retail research. Within this context, web atmospherics are more frequently being considered as a key source of differentiation (Childers *et al.*, 2001). In the past few decades, the online retail environment has become a shopping platform that offers enjoyable experiences that satisfy shoppers' aesthetic needs as well as fulfilling utilitarian goals (Childers *et al.*, 2001). Offering an enjoyable online shopping experience provides a means to engage with shoppers and provoke desirable marketing outcomes (Hoffman and Novak, 2009; Rose *et al.*, 2012; Wang *et al.*, 2017). It is crucial to widen the theoretical understanding of the effect of web atmospherics, such as music, which have a potential to facilitate an enjoyable online shopping experience.

Shoppers' state of '*flow*' has been considered as an indicator of shopper enjoyment in an online retail environment. The concept of *flow* has been considered important as it has been shown to have a positive influence on shoppers' behavioural intentions (Skadberg and Kimmel, 2004; Hoffman and Novak, 2009; Gao and Bai, 2014; Richard and Chebat, 2016). Gao and Bai (2014) have found that website atmospheric characteristics directly affect *flow*. Nevertheless, no empirical study, to date, has investigated the direct effect of music on shoppers' state of *flow*. Thus, the contribution of this thesis is to offer an empirical evidence, which evaluates the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment. Although the concept of *flow* is widely recognised in online retail studies, the characteristics of *flow* remain vague. 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). Despite the outcome of *flow* as being evidenced to be highly positive in an online retail environment, little is known about what enhances shoppers' state of *flow* (Gao and Bai, 2014). This study contributes to widen the theoretical understanding of *flow* by evaluating the relationship between music as a web atmospheric and *flow* and offering an empirically tested framework.

This first chapter offers a foundation for this research. It begins with a background and the context of the research, which offers a summary of the rationale for the study with reference to the gap in the literature. This leads to clear articulation of the aim and objectives of the study. This is followed by a brief description of methodology. The findings and contribution are then summarised, followed by an outline of the structure of the thesis.

1.0 Background to the research

Levinson (1990:273) defines music as “sounds temporally organised by a person for the purpose of enriching or intensifying experience through active engagement”. Structurally, music commonly possesses three characteristic elements; time, pitch and texture, which collectively creates a holistic musical piece. Music acts as a trigger in the nervous system stimulating cognitive and emotional processes (Bruner II, 1990).

In a *physical retail environment*, music represents an aesthetic feature, and can influence a variety of shoppers' emotions and cognitive evaluations. Music is a powerful atmospheric stimulus that triggers shoppers' emotions such as arousal and pleasure, which in turn influences cognitive evaluation and shopper behaviour (North and Hargreaves, 1998; Turley and Milliman, 2000; Oakes, 2000; Morrison and Beverland, 2003; Beverland, *et al.*, 2006; Morin *et al.*, 2007; Knoferle *et al.*, 2012; Oakes, *et al.*, 2013, Petruzellis *et al.*, 2014; Roschk *et al.*, 2017). Many studies have provided empirical evidence that music has a positive impact on shoppers' emotions, as well as controlling subsequent shopping behaviours such as activity speed, choice and judgment.

Retail practitioners have also started to recognise the importance of the music choices played in a physical retail environment. Music is increasingly seen as a store feature that helps shopping environments to offer holistic “experiences” rather than just a place

to buy products or services. Large retail management companies such as Hammerson have been carrying out experiments in their shopping centres to evaluate how music influences shoppers' behaviour (BBC, 2015). Furthermore, the “background music business” is on the rise. The global background music market was estimated at 1.35 billion USD in 2017 and the market is projected to reach 2.2 billion USD in 2025 (Coherent Market Insights, 2019; Orbis Research, 2019). Background music businesses design and license customised music playlists for retailers such as Jamendo Licensing or Soundtrack, enabling retailers to access music that fits the profile of their target customers (Smith, 2013). This is accessed through a subscription based in-store music service, attractive for the UK and other upcoming markets because of its ease and relatively low-cost instalment facility (Akervall and Laurens, 2017). All these initiatives have been made possible by the digitalization of music consumption, allowing the market entrance for artists and their music to be incorporated into numerous settings including as background music in retail environments (Musicbusinessworld, 2019). Digitalization of music has also enabled low cost streaming and copying, which means that consumers, including retailers who wants to utilize music in their stores, can now benefit from a wider range of music at a minimal cost (Aguir and Martens, 2016). Recent statistics indicate that music streaming revenue accounts for almost half (47%) of the global recorded music industry revenue, driven by a 32.9% increase in 2017-18, in paid subscription streaming. At the end of 2018, there were 255 million users of paid streaming services, such as Spotify and iTunes, which accounted for 37% of total recorded music revenue (IFPI, 2019). In addition, using specific filters on online music databases means a playlist can be easily organised and tailored to suit individual retailer needs (The Guardian, 2018). This ease of streaming, an easy to use subscription system, cost reductions, and customization of music have become attractive propositions for retailers to use music as an in-store atmospheric.

Nonetheless, Marks and Spencer, one of the biggest UK retailers, has decided that playing so-called "piped music" in their stores has a negative effect on shoppers. Therefore, they have made a decision to turn off music in all their stores.

This growing interest from both academics and retailers suggests that knowledge and awareness of the appropriate use of music in a retail environment have become increasingly important.

Despite a significant number of studies undertaken in physical in-store retail settings, the understanding of the use of music and its impact on shoppers' enjoyment and emotions is scarce in *online retail settings*. In fact, the author could not find a single retailer that uses music for its website as an atmospheric. Recent online blog posts and trade articles also revealed a negative attitude towards the use of music on websites amongst web designers. Many advise against the use of music on websites altogether, unless music is the product being sold. This negative attitude towards the use of music in an online retail environment may stem from the scarcity of empirical evidence about its value and contribution. Only a limited number of studies have looked at music and its impact as a web atmospheric on shoppers' arousal and pleasure in online settings (Ding and Lin, 2012; Lai and Chiang, 2012; Kim and Lennon, 2012). There is also a lack of understanding about how the presence of music as a store atmospheric integrates with the retail space and shapes shoppers' overall holistic perceptions of the online retail environment (Morin *et al.*, 2007). Furthermore, there is a lack of empirical evidence about how music as a web atmospheric influences shopper enjoyment (Wang *et al.*, 2017). Thus, academic research has not yet been able to provide practitioners with effective implementation guidelines on music as an online atmospheric. This scarcity may be the result of accurately measuring the dynamics of the presence of music on online shopping experience. There are methodological difficulties in capturing empirical data namely being able to replicate a real-time online shopping experience. Studies, which have been conducted have constructed artificial websites designed especially for the experiment (Kim *et al.*, 2009; Ding and Lin, 2012; Lai and Chiang, 2012; Kim and Lennon, 2012) while other studies have taken place in a laboratory setting (Chung *et al.*, 2009). In general, there have been weaknesses with research design in overcoming the challenges to replicate an authentic online shopping experience.

The growth of online shopping has been a major market driver for "business to consumer" (B2C) commerce. The global B2C e-commerce is forecasted to reach 4.88 trillion USD in 2021, double the market value from 2017 (Statistica, 2018). The UK has one of the highest percentages of consumers shopping online in the developed

world with a current average weekly spend online of £1.2 billion - an increase of 14% compared with 2016 (ONS, 2017b). The UK online fashion retail industry is one of the most dominant sectors in this market with a forecast of just under £29 billion sales over the next five years (Intel, 2017a). UK's online fashion retail market continues to grow with further opportunities driven by recent technological advancement. In addition, the presence of music holds high importance in fashion retail. Music is known to possess a powerful ability to connect emotions of self with public realms, and its ability to represent and make sense of individual and collective identity (Hesmondhalgh, 2008; Sinclair, 2017). Fashion brands such as Abercrombie & Fitch and Victoria's Secret have made in-store playlists available on their websites and apps in order to bind shoppers to the brand. Shoppers subsequently associate themselves not only with the brand but also with the music that represents the brand. Clothes shopping can be categorised as a recreational shop. In recreational shopping, the experience of the purchase is more highly valued than the acquisition of the product (Clarke *et al.*, 2012). Therefore, adding a hedonic element, such as music, to the shopping experience can be important in order to meet shoppers' needs that include multi-sensory and emotional aspects. This is the justification for selecting UK online fashion retail as the context of this study.

Flow is considered a measure of shopper enjoyment in an online shopping experience (Koufaris, 2002; Skadberg and Kimmel, 2004; Hoffman and Novak, 2009). The notion of *flow* can be defined as a state in individuals when they are totally involved and feel in control of the holistic experience (Novak *et al.*, 2000; Hoffman and Novak, 2009). In the physical shopping environment, shoppers, *mind and body* are fully engaged with a range of environmental stimuli, such as noise, smell and lighting. An exposure to various stimuli leads shoppers to become fully immersed the shopping experience (Parsons, 2002). This means that atmospheric stimuli can effectively and significantly influence shoppers' emotional, cognitive and behavioural outcomes. However, in an online retail environment, the shopper's *mind* is focused on the shopping experience, but their body is not integrated fully into the store environment as they are in their own surroundings (i.e. at home). Web atmospherics can achieve their full potential to affect shoppers' emotional, cognitive and behavioural outcomes when shoppers are immersed in the online shopping experience. Thus, *flow* can be considered a suitable indicator to evaluate the effect of atmospheric stimulus on shopper enjoyment, as it measures the shoppers' state of immersion (Parsons, 2002).

Despite the growing interest in the impact of web atmospheric and the shoppers' state of *flow* in online marketing studies, to date, no study has looked at the relationship between music as a web atmospheric and shoppers' state of *flow* in an online retail environment. Gao and Bai (2014) consider music as a hedonic atmospheric cue that is classified as an aspect of *Site Entertainment*. According to Gao and Bai (2014) *Site Entertainment* reflects the aspects of website design that provide sensory and hedonic elements such as colour, music, action, pictures, graphs, videos, and interactivity (Cheng and Well, 1999; Eroglu *et al.*, 2003; Gao and Bai, 2014). Gao and Bai (2014) have shown that perceived *Site Entertainment* directly affects shoppers' state of *flow*. Gao and Bai (2014), however, did not test the individual effect of music on *flow*. Nevertheless, from Gao and Bai's (2014) findings, it can be inferred that music has a potential to directly affect shoppers' state of *flow*. In addition, previous studies have found that shoppers' state of *flow* is strongly associated with shoppers' arousal and pleasure (Novak *et al.*, 2000; Wang *et al.*, 2007). Arousal and pleasure are key emotional dimensions considered within a shopping experience. Arousal is a state of feeling that relates to mental alertness, and it describes the extent to which a shopper feels stimulated, alert or active in an environment. Pleasure is the extent to which a shopper feels pleasant, happy, good or satisfied in the retail environment (Mehrabian and Russell, 1974). Shoppers' arousal has been found to directly affect the state of *flow* and *pleasure* (Richard and Chebat, 2016). Existing literature also suggests that music as a web atmospheric has the potential to affect shoppers' arousal (Garlin and Owen, 2005; Kampfe *et al.*, 2010). Collectively, these findings indicate that shoppers' arousal has a potential to mediate the relationship between music as a web atmospheric and shoppers' state of *flow*. Nevertheless, no study, to date, has examined the mediation effect of shoppers' arousal between music as a web atmospheric and *flow*.

To date, the theory of *flow* has not been applied to explain the relationship between music as a web atmospheric and shoppers' emotions in an online retail context. Thus, this study aims to evaluate the extent to which music directly affects shoppers' state of *flow*, and also indirectly affects shoppers' state of *flow* through arousal. Although not the primary focus of the study, the outcome of *flow* will also be considered. The literature suggests that *flow* has a positive influence product attitudes and purchase intentions (Hoffman and Novak, 2009; Hsu *et al.*, 2012; Gao and Bai, 2014; Richard and Chebat, 2016). These constructs will be tested as a potential outcome of *flow*.

In summary, it is evident that there is a lack of clear conceptualisation and understanding of music as a web atmospheric and its impact on shoppers' state of *flow* in an online retail environment. Conceptualising and evaluating the relationship between music as a web atmospheric and shoppers' state of *flow* will provide a better theoretical understanding of the role of music and shoppers' state of *flow* in an online retail environment. It will also further the understanding of the key predictor of shoppers' state of *flow*, and consequently lead to better understanding of online consumer behaviour.

The contribution of this research, therefore, is to provide an empirical study, which evaluates the direct effect of music as a web atmospheric on shoppers' state of *flow*, and the indirect effect of music on *flow* through arousal in an online retail environment.

1.1 Research aim and objectives

The aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment.

To achieve the research aim, four key objectives of the study have been generated:

1. To establish whether music as a web atmospheric directly affects shoppers' state of *flow* in an online retail environment.
2. To establish the relationships between music as a web atmospheric, *flow*, arousal and pleasure in an online retail environment.
3. To confirm the relationship between *flow* and its outcomes in an online retail environment.
4. To develop a conceptual framework that captures the key relationships between music as a web atmospheric, shoppers' state of *flow*, arousal, and pleasure in an online retail environment.

In order to achieve the above objectives, this study has adopted progressive stages.

Firstly, a comprehensive critical narrative literature review was undertaken. Existing understanding of music as an in-store and web atmospheric, and *flow* in the online retail context was appraised. From this assessment a gap in knowledge was identified.

The second stage was to develop a conceptual framework based on the literature and the identified gap. Then based on the framework, a series of hypotheses were generated.

The third stage was to consider methodology and to design an appropriate data collection tool to test the proposed hypotheses. A positivist research approach was chosen, and a self-reported structured quantitative questionnaire was designed utilising Richard and Chebat's (2016) and Gao and Bai's (2014) measurement model of *flow*. The survey technique followed the style of Richard and Chebat (2016) and Gao and Bai (2014)'s. Participants were asked to visit a website, browse the site and then complete a self-administered questionnaire. In line with work by Morin *et al.* (2007) and Wang *et al.* (2017), a control and intervention research design was adopted. The benefit of adopting a control and intervention approach is that the two conditions can be compared, as the two groups are treated and observed in an identical manner, and the groups are analysed in terms of outcomes defined at the outset (Akobeng, 2005). Differences in outcomes are attributed to the presence or absence of the intervention process/treatment, in the case of this thesis, music. Although the researcher acknowledges that various characteristics of music (i.e. tempo, volume) may affect shoppers' *flow* and emotional responses in different ways, a mere presence of music has been evidenced to have a positive effect on shoppers (Garlin and Owen, 2006). Furthermore, this is the first study to test the relationship between music as a web atmospheric and *flow*, and therefore testing presence/absence of music is considered to be the starting point to examine the phenomenon. Therefore, this study will focus on examining the effect of the presence of music rather than investigating various characteristics of music such as tempo and timbre.

To collect comparative data, the design required two controlled environments; one set of participants who listened to music (intervention group) and the other set who did not (controlled group). Therefore, two sets of questionnaires were allocated to the two separate groups of participants; one set of participants were instructed to explore the retailer website without music, the other set of participants were instructed to listen to a YouTube playlist while browsing the retailer website. The music playlist was in line with the music genre played in the retailer's physical store. This study used the existing live website of the selected retailer and situated the survey completion within participant selected surroundings to simulate the precise nature of their online shopping experience. Furthermore, this study has utilised the telepresence design (Kim *et al.*,

2009). This refers to a methodological design, which merges music into one holistic virtual shopping environment by playing the music through the same device as the one used to browse. By embedding the YouTube playlist link into the questionnaire, the researcher ensured that the music was played on the same device as the one on which participants shopped. Nonetheless, as this study imitated the real-life data capture to create authentic shopping experience, it meant that volume could not be controlled. The methodological issues are discussed in the study limitations in Chapter Seven.

In the fourth stage, the collected data was analysed using an appropriate statistical analysis tool. In total 462 usable responses were collected and statistically analysed using the SPSS and AMOS 23.0 statistical software. This data were analysed firstly by descriptive analysis to examine the distribution and frequency of the data collected to ensure there was no abnormality in the data set. To test the hypotheses, independent samples t-test, Confirmation Factor Analysis (CFA) and Structural Equation Modelling (SEM), as well as multi-group analysis, were utilised.

In the final stage, a conclusion and implications of the study have been discussed. Research limitations are acknowledged, and further potential research opportunities are identified.

1.2 Summary of findings and contribution

The aim of the study was to evaluate whether music as a web atmospheric influences shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment. The study has increased understanding of the relationship between music as a web atmospheric and shoppers' state of *flow*.

Based on the results, which tested the proposed hypotheses, a conceptual framework was revised (Figure 1.1).

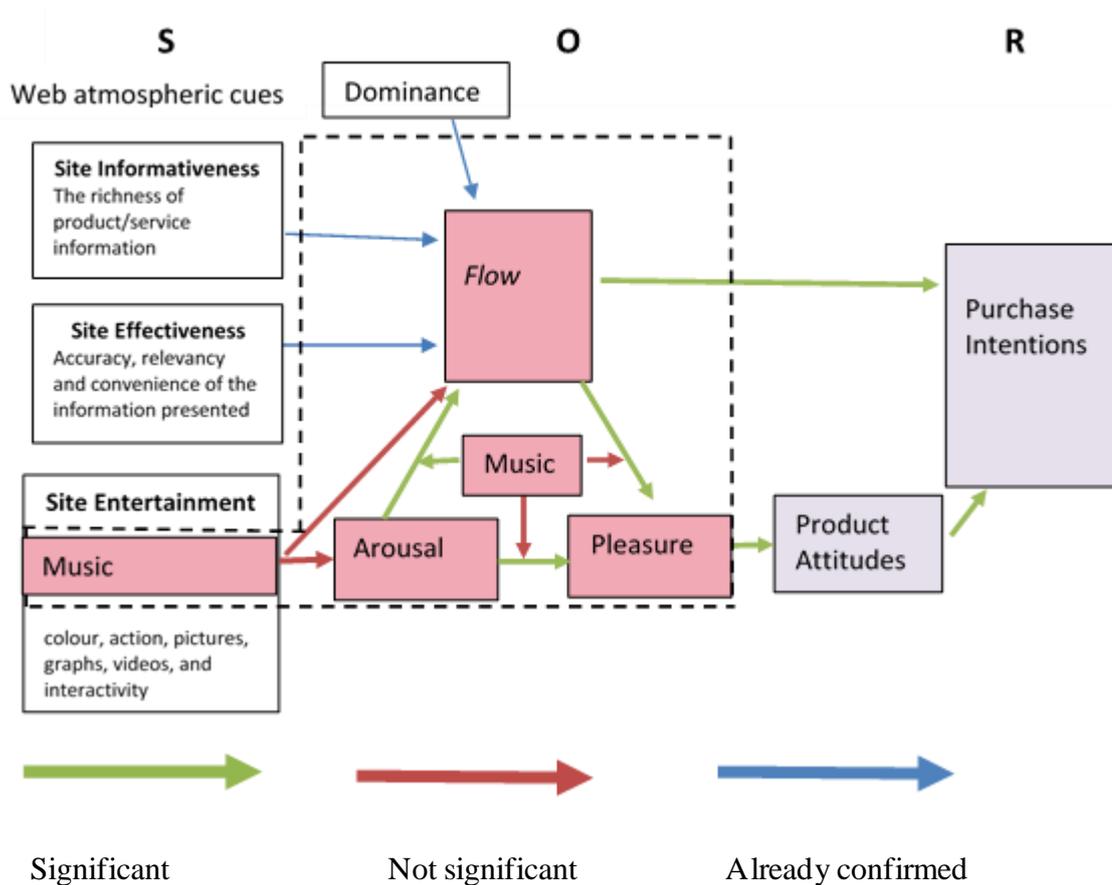


Figure 1.1 Revised conceptual framework

There were four key findings from this study:

- 1) **Music did not directly affect shoppers' state of *flow*.**
- 2) **Music did not directly affect shoppers' arousal.**
- 3) **Shoppers' arousal directly affected *flow*, arousal directly affected pleasure, *flow* directly affected pleasure for both who listened to music and those who did not.**
- 4) **Music moderated the relationship between shoppers' arousal and the state of *flow*.**

The above findings indicate that music did not have a direct effect on shoppers' state of *flow* nor arousal but was found to be a key moderating variable. In other words, music enhanced and strengthened the relationship between shoppers' arousal and the state of *flow* in an online shopping environment.

This thesis provides several contributions to the field of marketing and consumer behaviour research:

First and foremost, this research contributes to theory as it is the first study to investigate the impact of music as a web atmospheric on shoppers' state of *flow* (a measure of enjoyment) in an online retail environment. Measurement of an online shopping experience, to date, has mainly emphasised the utilitarian perspective, and therefore studies have predominantly focused on price, convenience and functionality (Cheung *et al.*, 2003; Park and Kim, 2003). The concept of shopping enjoyment measured by *flow* is widely examined in online retail studies, however, the characteristics of *flow* remain vague (Novak *et al.*, 2000; Koufaris, 2002; Hoffman and Novak, 2009). Little is known about what enhances *flow* (Gao and Bai, 2014). Furthermore, despite the increase in online shopping, there is only a limited number of studies exploring the influence of music as an atmospheric in an online retail environment (Kim *et al.*, 2009; Lai and Chiang, 2012; Wang *et al.*, 2017). This is regardless of previous web atmospheric studies that evidenced positive relationships between web atmospherics, shoppers' emotions and cognitive evaluations, which subsequently influenced shoppers' behavioural outcome (Eroglu *et al.*, 2001; Koo and Ju, 2010). By testing the relationship between music (as a web atmospheric), shoppers' state of *flow*, arousal and pleasure, the study has increased understanding of the specific role of music within an online retail environment. This is that music as a web atmospheric does not directly affect shoppers' state of *flow*, neither does it indirectly affect *flow* via arousal.

Secondly, a key finding of this study is the moderating effect of music on the relationship between shoppers' arousal and *flow*. Although music has no direct effect on shoppers' state of *flow* or arousal, it strengthens the effect of shoppers' arousal on the state of *flow* suggesting that the presence of music increases the degree of association between shoppers' arousal and state of *flow*. This finding confirms that there is a relationship between shoppers' arousal and the state of *flow*, and this relationship is made stronger in the presence of music. This moderation effect of music on emotion is not something that has been widely researched. The finding from this study provides new insight and awareness for the moderating role of music in an online retail environment. Music is commonly treated as a single environmental parameter, and its effects are regarded as a predictor of shopper responses (i.e. emotional and cognitive responses). Nevertheless, Morin *et al.* (2007) propose that music and its effect should be considered more integral to the environment than a solitary

atmospheric feature. The moderating role of music discovered in this study offers a new understanding of the potential of music as a web atmospheric. Music has the potential to enhance the effect of other web store environment features and website characteristics (i.e. Site Informativeness, Site Effectiveness and Site Entertainment) by changing the background or foreground interplay.

Thirdly, this study is one of few that caters for a hedonic perspective of the role of web atmospherics, shoppers' emotions and enjoyment (measured by *flow*) within an online shopping experience. This study has contributed to bridging this gap by providing a structured proposal for the relationship between the web atmospherics, shoppers' state of *flow*, arousal and pleasure. More specifically, this study contributes to the theoretical understandings of *flow* by presenting an empirically tested comprehensive framework based on the SOR framework. Dailey (2004) and Lee and Jeong (2012) both attempted to conceptualise the impact of web atmospherics on shoppers' state of *flow* in a SOR based model, however, neither models have been tested empirically. Both Gao and Bai's (2014) and Cuny *et al.*'s (2015) models propose *flow* or immersion as another dimension as an Organism element within the SOR framework, however, those models do not include shoppers' emotional and cognitive responses. Richard and Chebat (2016) have based their *flow* model on the SOR framework; however, there was no consideration of web atmospherics as a Stimulus element. By evaluating the direct and indirect path relationships, this study provides empirical evidence, which illustrates the clear positioning of *flow* within the organism element of the SOR based framework.

Fourth, this study contributes to the methodology in the field of music as a web atmospheric. By using a live website and participants taking the survey in their own home setting, the study replicates an authentic shopping environment to capture shoppers' real-time online shopping experience. Methodology from previous studies on web atmospherics have relied on either using artificial websites designed especially for the experiment (Kim *et al.*, 2009; Ding and Lin, 2012; Lai and Chiang, 2012; Kim and Lennon, 2012), or experiments have taken place in a laboratory setting (Cheng *et al.*, 2009).

Finally, this study has presented empirical data to explain why music may not be suitable to be integrated within website design. This provides the practical contribution. Finding indicates that music as a web atmospheric does not directly affect shoppers'

enjoyment (measured by *flow*). This indicates that implementing music standalone to a website design does not add a value to increase shoppers' enjoyment. Nonetheless, finding also suggests that music can enhance the relationship between arousal and *flow*. This means that retailers that are interested in increasing shoppers' state of *flow* should create arousing websites, and music can enhance the relationship between arousal and *flow*. However, implementation of music to a website must be treated with caution until further research can establish a better understanding of the key relationships.

1.3 An overview of the chapters

This thesis comprises seven chapters as shown in Figure 1.2.

Chapter one has presented an introduction to the study by providing the background of the research, the research aim and objectives. Then the research process undertaken to achieve the study objectives was provided. To present the overview of the conclusions from this study, the key findings of this study were briefly discussed, and the contributions of this study were summarised.

Chapter two provides a statistical insight into the size, value and growth of the online fashion retail market in the UK in order to signify the importance of the context in this study. The importance of fashion SMEs (small and medium enterprises) in the UK is also discussed in this chapter to justify the selected retailer for this study.

Chapter three presents current knowledge on relevant topics by conducting a critical narrative review of the literature. By visually mapping the key literature areas, the two main topics are identified to be significant for this study; the impact of music as an atmospheric stimulus in in-store and online retail settings, and the theory of *flow*. By critically reviewing extensive literature, this chapter aims to identify and define the gap in knowledge.

Chapter four synthesises the findings from the secondary data analysis and draws a conceptual framework. The conceptual framework captures the key relationships between music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure. Based on this framework, sixteen hypotheses are proposed which are to be tested by the primary data collection and analysis.

Chapter five details the research methodology and methods employed to answer the research questions and to achieve the research objectives. It presents the research

philosophy, approach, design, strategy and methods chosen for this study along with the justifications for selecting these approaches. The chapter also outlines the design of a quantitative data collection instrument in detail. Then it discusses the processes undertaken to collect the data, together with ethical and sampling issues. It then reports on the pilot study to test the survey instrument, and discusses the data analysis techniques, reliability and validity of the latent variables.

Chapter six presents the quantitative analysis and discusses the findings of the study results. It opens with descriptive statistical analysis of the data set. The results of Cronbach's alpha test is presented to demonstrate the reliability of the scale items. Once the reliability is ensured, the results from crosstabs and Pearson's correlation analysis are offered to describe the association between the variables. Then to test the hypotheses, the result from an independent samples t-test is presented to determine whether music increased the level of *flow* and arousal. The validity of the measurement scale items is tested and presented using confirmatory factor analysis. Then using structural equation modelling, the relationship between the constructs is tested. Finally, the result from multi-group analysis is presented. Multi-group analysis determines whether there is any difference in the relationship between the constructs for the participants who listened to music and those who did not. This chapter concludes with a summary of the data analysis to determine the effect of music on shoppers' state of *flow* arousal, and pleasure.

Chapter seven draws conclusions from the results, and considers these findings alongside existing literature. The key findings of the study are summarised, and theoretical, methodological and practical contributions are offered. Managerial implications of the study are presented, and the limitations are highlighted. Finally, suggestions for further research are discussed.

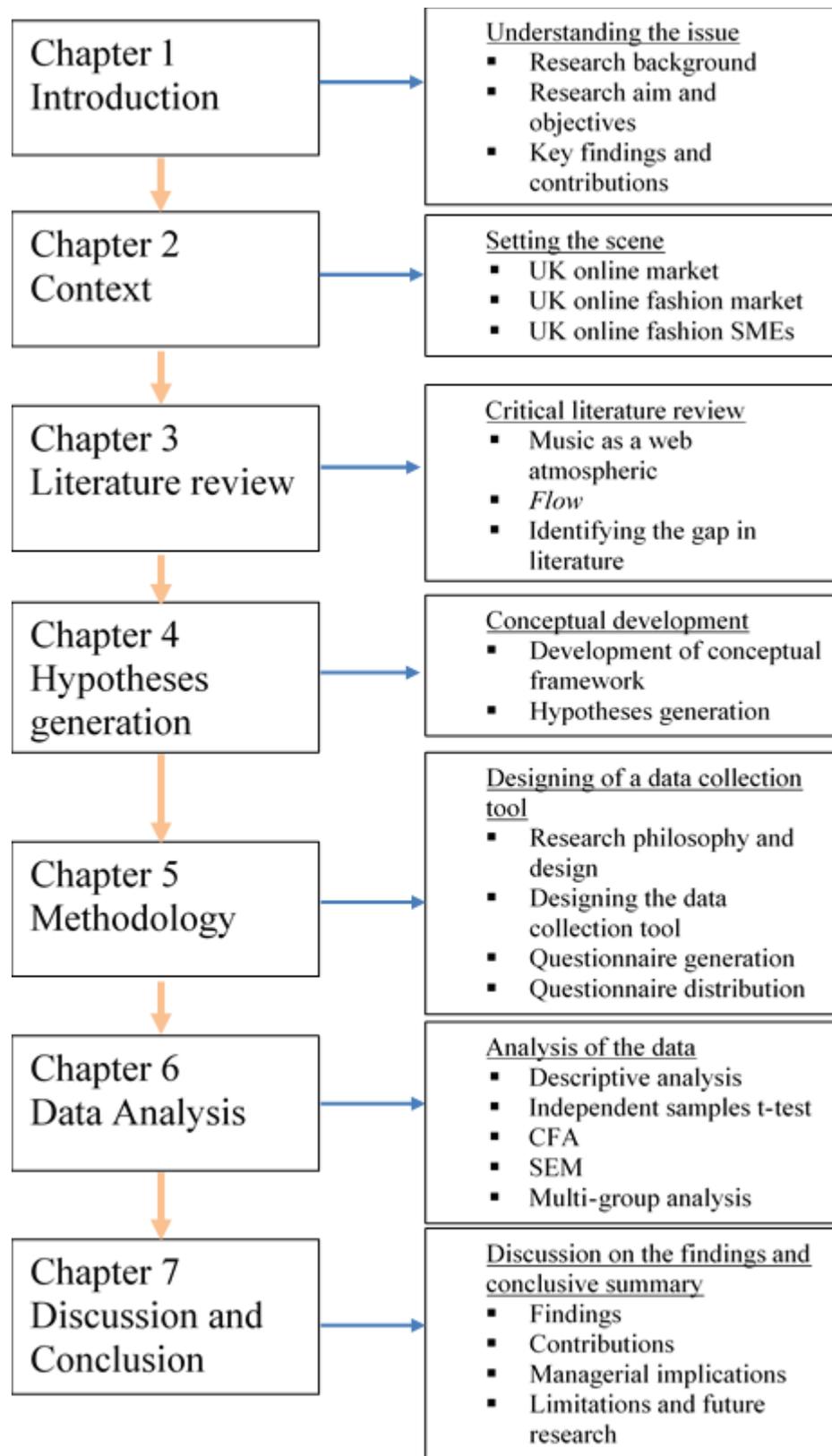


Figure 1. 2 Structure of the thesis

Chapter Two: Online fashion retailing in the UK

This chapter sets out to discuss the current online retail market worldwide and, in the UK, as well as providing an insight into the UK's online fashion market, using published statistics and market reports to provide a brief introduction and basic understanding of this very dynamic online marketplace.

2.0 Growth of online retail

The main driver of the growth in online retailing in the UK is the universal level of household internet access in the UK, with penetration rates reaching 93% in 2017 (Mintel, 2017b). The main attraction of shopping for goods and services online is the time efficiency, information, and price comparison. Online shopping can provide greater value and convenience as consumers have access to quick price comparisons, more choices for products, more stock availability and a greater range of delivery and return options (Eroglu *et al.*, 2001). Thus, it is not surprising to see an increase in retailers implementing multichannel retailing using a website as well as a presence of physical stores, which can be accessible by PCs, smartphones, tablets and other portable devices (Neslin and Shankar, 2009; Koo and Ju, 2010). Although it is argued that most successful product vendors and retailers will have a presence in both online and physical retail stores (Browne *et al.*, 2004), it is clear that web sales alone are gaining significant importance. By utilising web interface (i.e. graphics, sounds, videos), the retailer can maximise the promotion of the brand and products and can reach out to new potential global shoppers, increasing the total retail sales. Furthermore, Browne *et al.*'s (2004) study also shows that consumers base their purchase decisions on the information presented on the online retail store and that that information is also reserved to effect a purchase decision at a physical store. In essence, a retailer's successful website presentation that facilitates a positive web presence can influence the consumers' perceptions and intentions not only in the online shopping environment but also in the physical store.

2.1 UK online market

The UK has one of the highest broadband penetration rates in the developed world, and 93% of households are reported to have broadband Internet access, with 80% of British adults accessing the internet every day (Mintel, 2017b; ONS, 2017a). The UK has

achieved one of the highest percentages of consumers shopping online in the developed world (Centre for Retail Research, 2017). Thus, it is no surprise that within the developed world, the total UK online sales figure in 2017 is calculated to be the highest in Europe at £67.38 billion, which is estimated to grow at a rate of 64% to reach £96.8 billion by 2022 (Mintel, 2017b; ONS, 2017a) (See Figure 2.1).

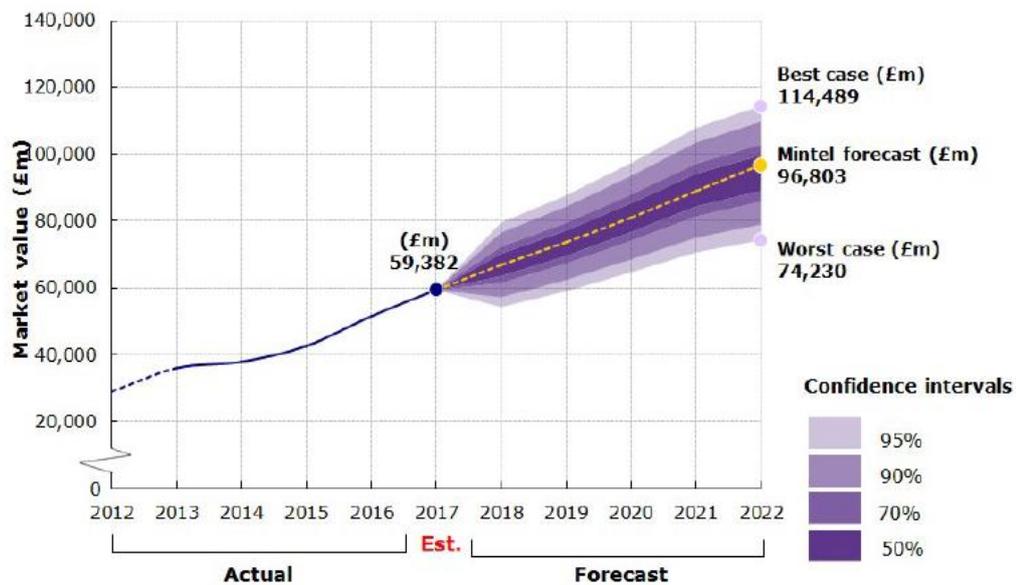


Figure 2. 1 All online sales and forecast 2012-2022 (Mintel, 2017b)

Although there is an upward trend in purchasing goods from tablets and smartphones, 84% of purchases of fashion items are made via a PC or a laptop computer (Mintel, 2017b). Desktops and laptops remain the more commonly used devices when shopping, as they have more powerful processing hardware allowing faster page load, larger screens for product viewing, and shoppers feel a greater trust in their security compared to using mobile devices (Mintel, 2017b). This indicates that shoppers still prefer to purchase goods and services on a PC, possibly in a home environment from a PC or a laptop (see Figure 2.2).

“Which of these devices have you used to shop online for products in the last 12 months?”

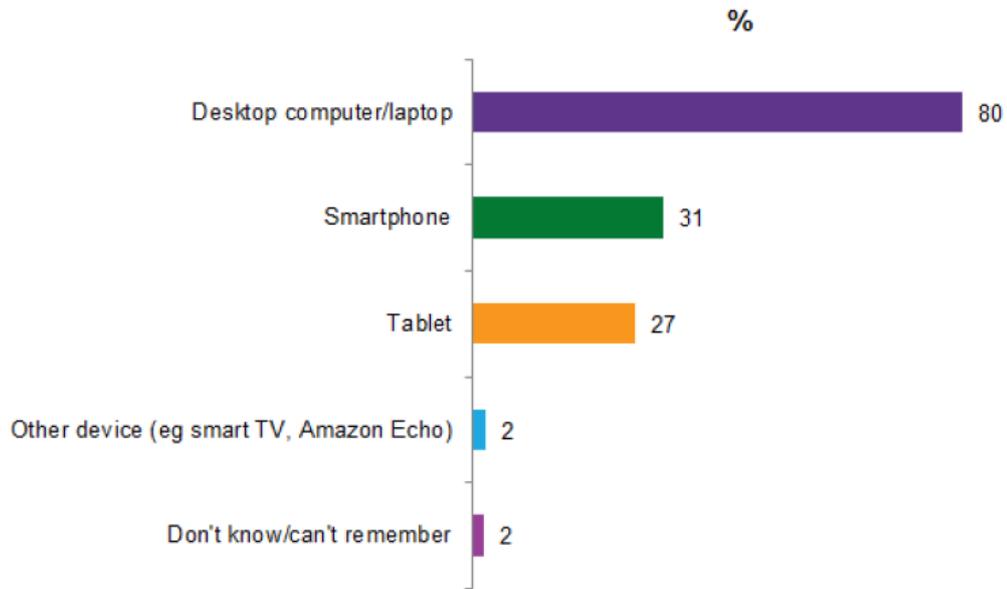


Figure 2. 2 Devices used to buy goods online in the past year, May 2017 (Intel, 2017b)

2.2 UK online fashion market

According to Intel (2017a), clothing and footwear is the most popular category bought online in the UK, with an increase of 17.2% in sales (see Figure 2.3). Furthermore, it is forecast that over the next five years, the online fashion market will continue to see strong growth, with sales predicted at just under £29 billion.

In 2017, clothing items were purchased online by 66% of internet users in the UK (Intel, 2017a), and 52% of internet users have purchased clothing items in the year 2016-2017 (see Figure 2.4). Age categories 16-24, were most likely to buy these items followed closely by ages 25-34 years, and 35-44 years. Although young women are still the dominant market segment for shopping for fashion online, there has been a significant increase in the proportion of men shopping for fashion online in recent years with 60% of men reported to have bought clothes online (Intel, 2017a).

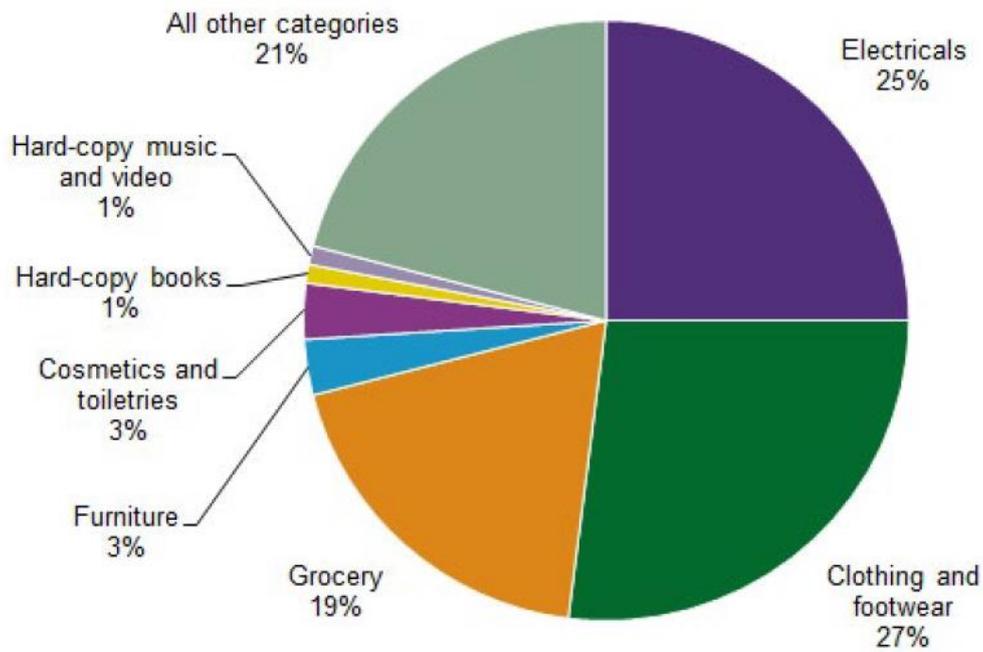


Figure 2. 3 Online sales, by product category, 2016 (Mintel, 2017a)

“Which of these products have you purchased online in the last 12 months?”

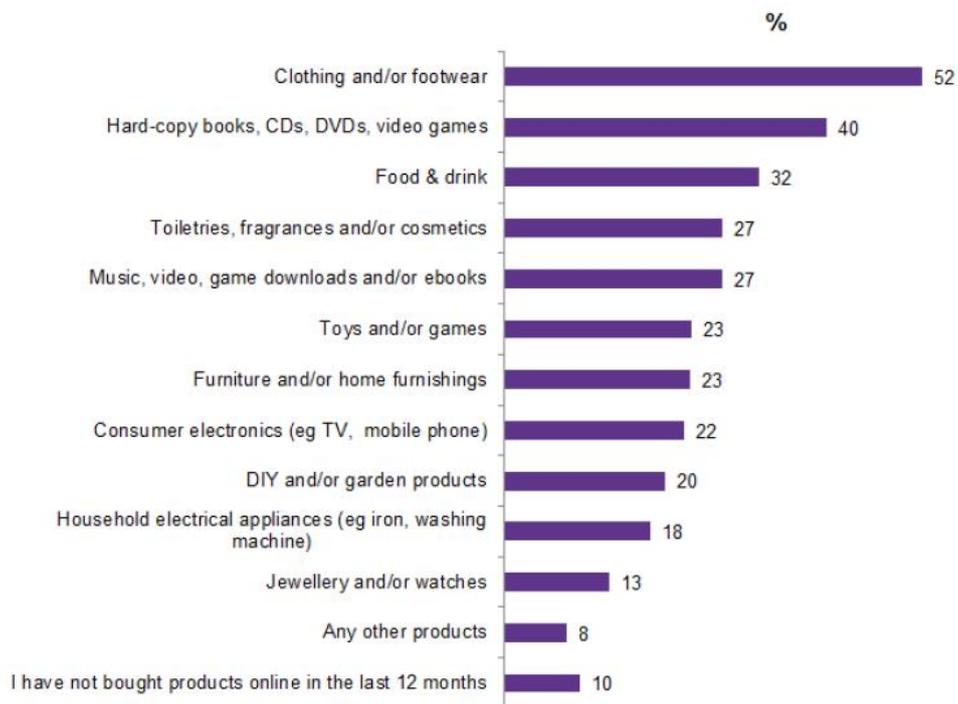


Figure 2. 4 Products purchased online in the past year, May 2017 (Mintel, 2017a)

Shopping for fashion items online has become even more popular recently as retailers concentrate on investing and improving the convenience and price advantage offered by online, such as "click-and-collect" services and exclusive online discount codes to attract more consumers to shop in the online store. Furthermore, with improved broadband access, online fashion retailers can maximise the customer's online shopping experience through safer and quicker money transaction and website interaction, such as partnering with PayPal and other secure online payment systems (Mintel, 2017a). In addition, an improved distribution system such as third-party partnerships for delivery systems has enabled UK fashion retailers to penetrate not only within the UK but the international market. Furthermore, web directory facilities such as language translation, acceptance of local currencies and quicker delivery options have opened up a broader territory in the international market for many retailers including small-and-medium enterprises (SMEs) as well as large retailers.

Due to recent technological advancement, most shoppers in the UK have access to high-speed broadband and bigger bandwidth, therefore, multimedia contents such as audio-visuals do not interfere with web browsing and shopping experience. Features such as better sizing details, customer review comments, zoom facilities and "catwalk" video clips enable shoppers to assess the products and select the correct size easily. Therefore, fashion retailers continue to invest in better digital product presentations such as 3D pictures as well as 3D virtual try-on technology, high-resolution photography and e-sizing technology to overcome disadvantages and barriers for the online fashion industry, and as a consequence are experiencing an increase in online sales (Mintel, 2017a).

The presence of music holds high importance in fashion retail because of music's powerful ability to connect emotions of self with public realms, and its ability to represent and make sense of individual and collective identity (Hesmondhalgh, 2008; Sinclair, 2017). Many fashion brands such as Levi works with music licensing companies to design a perfect in-store playlist to fit the retail environment as well as the brand. In addition, other fashion retailers, for example, Urban Outfitters and Abercrombie & Fitch have created in-store playlists available on their websites and other music streaming medias such as Spotify and SoundCloud in order to bind shoppers to the brand (Smith, 2013). Shoppers subsequently associate themselves not only with the brand but also with the music that represents the brand. Clothes shopping

can be categorised as a recreational shop, in which adding a hedonic element, such as music, can be essential to meet consumers' needs that include multi-sensory and emotional aspects and where the experience of the purchase is more highly valued than the acquisition of the product (Clarke *et al.*, 2012).

Nevertheless, finding a UK retailing website, whether for fashion or other product categories, that implements music as an innovative feature is extremely difficult, and the researcher could not locate any websites which use music or any audio features.

2.3 UK fashion SMEs (Small and medium enterprises)

The recent progress in technology, logistics and distribution systems, has enabled large corporations and SMEs to buy, sell and cooperate on a global scale. Consequently, even smaller businesses have to see themselves in a global market. SMEs must utilise their online platform to market and differentiate themselves from their competitors in order to survive in the very competitive market (Savrula *et al.*, 2014).

Within the fashion retailing sector, although larger retailers can achieve a price advantage or a bigger marketing reach, small independent fashion retailers may benefit from a competitive advantage by providing a unique shopping experience using a differentiated servicescape (Clarke *et al.*, 2012). Being able to personalise and have control over the store ambience can be a significant advantage for an independent fashion retailer. Store atmospherics such as music can be tailored to the brand image and products. Within small fashion business markets, there is increased popularity towards vintage clothing and vintage fashion has become a mainstream, rather than niche, subculture (Clarke *et al.*, 2012; Cassidy and Bennett, 2012; Kelly, 2016; Moss, 2016). Due to the low start-up-costs, vintage stores have relatively low barriers to enter into the fashion retail market sector, and may, therefore, represent a robust, 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.

2.4 Chapter summary

Online retail has evolved in the past several years from being a communications channel to a tool that integrates offline and online shopping experiences (Marciniak

and Bruce, 2004). Above statistics indicate the steady growth and the sales of the UK online market, and the popularity and significance of an online retail presence for the fashion industry. Evidence suggests that the fashion industry is one of the most dominant sectors in the UK online retail market, and the UK's online fashion market continues to grow with further opportunities for online retailing driven by factors such as technology, broadband, Wi-Fi accessibility, and changes in consumer attitudes towards online shopping (Mintel 2017b).

In addition, the presence of music holds high importance in fashion retail, especially instore, as it can represent the brand identity as well as creating a pleasurable hedonic experience while shopping.

A vintage fashion retailer in the UK, selling both male and female apparel, was chosen as the context for the study due to the increasing popularity of vintage fashion. Furthermore, it is considered an advantage of small, independent fashion retailers to be able to have more control over the store ambience, especially music (Clarke *et al.*, 2012).

The aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment

Chapter Three: Literature Review

In this chapter, the theoretical background and foundation of this study are discussed. Key research topics related to this study are identified, and relevant literature is critically reviewed and synthesised. Associated terminologies are defined and discussed in detail throughout the chapter. To address the gap in the literature, key research areas are discussed, which are; the theory of *flow* in an online retail environment and the role of music as an atmospheric stimulus. The gap in knowledge is then identified as the rationale for this study.

3.0 Narrative literature review

To perform a critical literature review, a narrative approach was taken in preference to other methods such as a systematic approach of a literature review. A narrative literature review is described as “the process of synthesising primary studies and exploring heterogeneity descriptively, rather than statistically” (Petticrew and Roberts, 2006:19). It offers a comprehensive synthesis of a wide range of previously published knowledge in the given topic and is beneficial when trying to identify the gap in knowledge (Collins and Fauser, 2005; Ferrari, 2015). A narrative review enables the presentation of a broad perspective on a topic. It often describes the historical background or the development of an issue by reporting the author’s findings in a summary format. A narrative literature review can be criticized for its subjectivity; however, the key aspect of this reviewing process is its ability to provoke thought and controversy to facilitate a balanced debate (Green *et al.*, 2006).

In contrast to a narrative review, the main objective of a systematic literature review is statistically assembling research findings from previous studies to formulate a well-defined question (Huff, 2008). A systematic review involves explicit, transparent methods which are clearly stated. Using objective criteria to select relevant individual publications and assess their validity, the review is reproducible by others to reduce reviewer bias (Collins and Fauser, 2005). Whilst a systematic review requires a rigorous comprehensive criterion-based search for evidence to provide an objective

quantitative summary, it concentrates on a narrow focus of the question (Collins and Fauser, 2005; Ferrari, 2015). Due to its rigorous yet confined focus, the methods of systematic review do not allow for comprehensive coverage of a wide range of areas. Furthermore, its selection process of literature can lead to possible biases of single studies, and even publication biases (Collins and Fauser, 2005; Ferrari, 2015). This means that while systematic literature reviews are more appropriate for a narrow-focused research topic, narrative reviews are better suited for a study that includes a wide scope of topics. This study coincides with the latter, and considers a wide range of topic areas, such as online consumer behaviour, web atmospherics and consumer behaviour, music as a web atmospheric stimulus, the theory of *flow* (see Figure 3.0 for mapping of the literature). Thus, this study requires a more comprehensive approach to the literature review, and therefore a narrative review is considered better suited.

To perform a narrative review of the literature, the following four steps were taken to ensure a comprehensive and unbiased synthesis of current knowledge (Fisher, 2004);

1. Literature search
2. Mapping of the literature
3. Building a table of key literature
4. Evaluation of literature by using forensic critique

3.0.0 Literature search

Once the aim and objectives of the study were established, a search for relevant literature was commenced. The literature search was predominantly performed through an electronic source, using University library electronic resources, online databases, and Google search engine. When searching for an electrical copy of the journals, using online resources and databases are proven to be the most effective. An online search can be performed for the relevant literature using keywords as well as using author names and publication year. Once key journals and books have been found, other relevant literature can be sourced from their reference lists. Furthermore, statistical publications, market reports and company reports have also been accessed via online databases such as Office for National Statistics (ONS) and Mintel.

In addition, the University library provided extensive physical resources such as books. The institutional library search engine enables a search for books and journal articles by authors, topics, titles and keywords.

3.0.1 Mapping of the literature

Once literature had been searched for and gathered, mapping out the key areas of the literature topics is an important step in order to identify the themes and topics that are relevant to this study (Fisher, 2004). The map of the literature is shown below (see Figure 3.1). Each oval represents the relevant topic categories; the red oval in the centre represents the key topic and themes for this study; the yellow ovals represent the topics and themes closely related to the current research aim, the white ovals represent topics and themes that may not directly relate to the research aim, but reviewing those topics will provide an additional relevant knowledge. This visual mapping process facilitates the researcher to categorise and organise the extensive range of literature and in effect, better organise the literature review process as a whole.

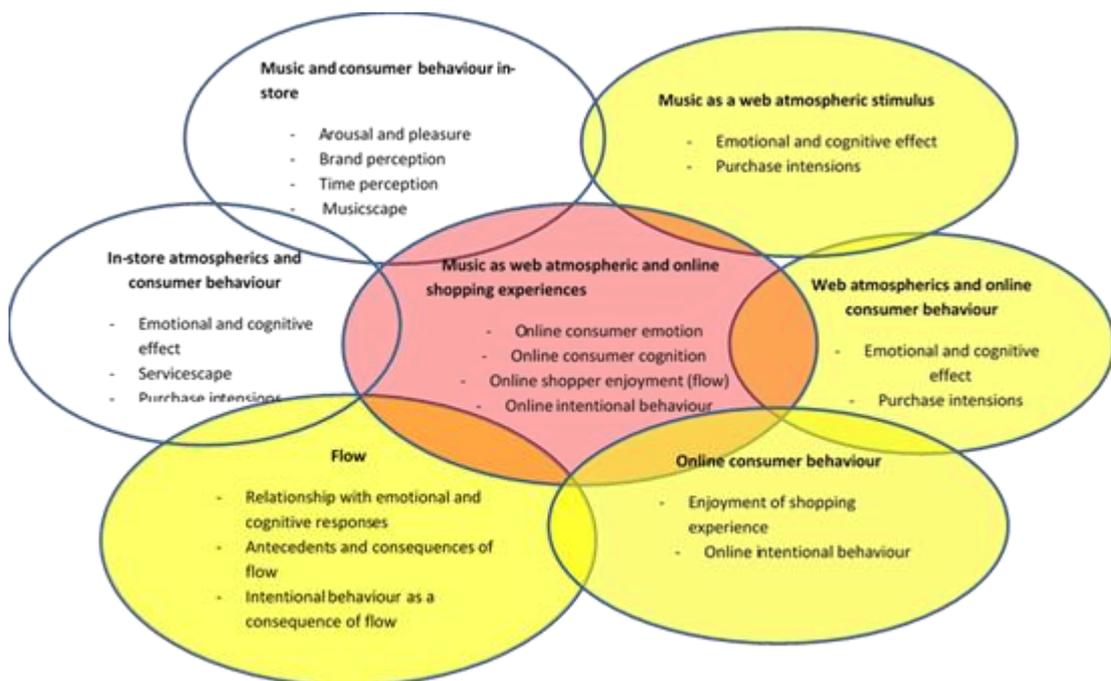


Figure 3. 1 Literature map of the key topics

3.0.2 Building a table of key literature

Having drawn the map of literature, the key topics were identified. Secondly, a table was created to present key literature, primarily journal articles, under each topic (see

Appendix 1). For each article/book, the author, year of publishing, title, the area of research, if it is empirical or conceptual, methodology, context, findings and conclusion, and the suggested further research were summarised. As a result, this table provides an outline of each article from various topical areas and concepts to be compared and evaluated critically. Furthermore, most importantly, it enables identifying the gap in knowledge which is the key purpose of a narrative literature review (Collins and Fauser, 2005; Ferrari, 2015). Table 3.1 shows a simpler version of the table of key literature (see Appendix 1 for the full table).

Table 3. 1 Simplified table of key literature

| Author/ Year | Methodology | Findings and Conclusions |
|---|---|--|
| In-store atmospherics and consumer behaviour | | |
| Russell and Mehrabian (1978) | Quantitative 2 studies using questionnaire Laboratory experiment | Pleasure is a key factor that leads to approach behaviour. Both studies supported pleasure-arousal interaction. Higher arousal is preferred in pleasant settings, but lower arousal was preferred in unpleasant settings. The two studies confirmed the foundation of the SOR model. |
| Bitner (1992) | Conceptual Review of literature and forming a theoretical grounding for the framework Service organisations | Servicescape framework was generated which explores physical environmental factors affecting both customers and employees cognitively, emotionally and physically and subsequently influence behaviour. |
| Mehrabian (1996) | Conceptual Review of conceptual system and scales for measuring basic dimensions of emotional trait and emotional states using PAD | PAD provides a convenient way of visualizing, comparing, and contrasting personality measures. This means that emotional personality traits can be described using PAD scales. |
| Tai and Fung (1997) | Quantitative questionnaire 2 types of physical CD shops in Hong Kong | In-store environment stimuli are positively related to the level of pleasure experienced in a store. Emotions induced by environmental stimuli are positively related to in-store shopping behaviour. |
| Turley and Milliman (2000) | Conceptual Review of literature regarding store atmospherics affecting shopper behaviour. | Music has a significant impact on shoppers' psychological and behavioural responses such as sales, arousal, perception and actual spending of time, in-store traffic and perception of virtual stimuli even when the shoppers are not consciously aware of it. |
| Mohan <i>et al.</i> (2013) | Quantitative Structured questionnaire on grocery shopping in India | Store atmospherics and personality variables influence impulse buy through positive effect and urge. However, store atmospherics have a higher impact on impulse buying than personality variables. |

| Music and consumer behaviour in-store | | |
|--|---|---|
| North <i>et al.</i> (2003) | Quantitative Calculation of mean spend per head for each table in a British restaurant over 18 evenings where classical, pop and no music were played. | Playing background classical music led to people reporting they were prepared to spend more. Customers who listened to classical music decided to treat themselves by spending more on starters and coffee. |
| Morrison and Beverland (2003) | Conceptual. Examplng and observing the practical use of background music in retail stores | Some retailers (A&F, Prada, Olive Garden, Red Lobster etc.) already implement background music as a tool to enhance their brand positioning, store and brand image, sales strategy and customer experience. |
| Garlin and Owen (2006) | Conceptual A review of papers | Familiarity and like of the music have a positive effect on customers. The mere presence of music in the background has a positive effect and feeling of pleasure. Slower tempo, lower volume and familiar music made customers stay longer than opposite. Higher volume, higher tempo and less liked music have longer time perception. Tempo has greater effect on arousal. |
| Beverland <i>et al.</i> (2006) | Qualitative Background interview -> observational research -> 20 in-depth interviews. In-store experience in retail stores in Australia and US | “Fit” in-store music enhances pre-perception of the brand, signals important cues such as brand positioning, target market and quality. “Misfit” instore music can potentially damage brand image. Too little or quiet music in store can result in uneasy and uncomfortable feelings whereas too loud music can distract and disturb a shopping experience. |
| Oaks (2000) | Conceptual Literature review on each individual musical variable | Musiccape model provides a visual interaction of different musical variables affecting customer responses and attraction. |

| | | |
|----------------------------------|---|--|
| Chebat <i>et al.</i> (2001) | Quantitative Three variables manipulated in a 4x2x2 factorial experimental design. Answers given in questionnaire. Laboratory experience in Canada. | Soothing music creates an optimal level of arousal and triggers cognitive activity. Cognitive effect of music is to attract attention, but too much will attract attention to the music itself rather than the product or salesperson. Fittingness of the background music can change the perception of the store image. |
| Oaks and North (2008) | Conceptual Review of literature | “Fittingness” between the music played and the product and the store atmosphere lead to a positive evaluation of the environment and increase customer spending. Arousal may be caused by a moderate level of incongruity. Music which is liked by consumers also tends to increase the purchase level. |
| Oakes <i>et al.</i> (2013) | Qualitative Auto ethnographic data from 232 students in the UK (age 18-20) UK department store | Underlines the significance of perceived congruity between music and other servicescape features. Personal relevance of the music can impact on approach/avoid behaviour by eliciting positive or negative memories. |
| Oakes and North (2013) | Quantitative Questionnaire after watching the television advertisement as stimulus – 1 with dance music, 1 with classical music, 1 without any music. | Different genres of music create different images of the university. Dance music enhanced the image of a university as being modern, exciting and trendy whereas classical music conveyed an incorrect message of it being sophistication and expensive. Therefore, music genres may influence perceived image and purchase behaviour. |
| Online consumer behaviour | | |
| Koufaris (2002) | Quantitative 2-part questionnaire Online book store | Enjoyment of the shopping experience and perceived usefulness of the website are important for a new shoppers’ return intentions. Online shoppers are not purely utilitarian and could be more similar to offline shoppers, therefore, retailers should offer hedonic value to their customers. |

| | | |
|--|--|---|
| Cheung <i>et al.</i> (2003) | Conceptual Analysis of literature | Intention (online purchase intention), Adoption (online purchase) and Continuance (online repurchase) model affected by 5 major domain variables (individual/consumer characteristics, environmental influences, product/service characteristics, medium characteristics, merchants and intermediaries' characteristics) |
| Constantinides (2004) | Conceptual Review of papers | Online marketers can influence decision making processes by a combination of online functionality, information, emotions, cues, stimuli and products/services. Persuasion elements are more important than the website solely being a catalogue. |
| Cheung <i>et al.</i> (2005) | Conceptual Review and analysis of literature | Intention, adoption and continuance are the key foundation of the online consumer behaviour framework. With the five domains (Individual characteristics, environmental influences, product/service characteristics, Medium characteristics, merchants and intermediary characteristics) influencing the key concepts. |
| Web atmospherics and consumer behaviour | | |
| Eroglu, Machleit and Davis (2001) | Conceptual Review of literature | High involvement online shoppers who are exposed to predominantly low task-relevant online information (music, animation, colours etc.) will experience negative effects and negative attitudes towards the online shopping process, leading to negative states of the shoppers and avoidance behaviours. |
| Eroglu, Machleit and Davis (2003) | Quantitative Questionnaire manipulating involvement levels 2 Fictional apparel websites <ul style="list-style-type: none"> • only high task relevant cues • both high and low task relevant cues | Web atmospherics affect pleasure which leads to satisfaction or approach/avoidance behaviour. The emotional and cognitive states mediate the relationship between the atmospherics and shopping outcomes. The effect of web atmospherics on pleasure is significant only for the low-involvement shoppers (browsing). The effect of web atmospherics on pleasure is significant for those high in atmospheric responsiveness. |
| Yoon (2010) | Quantitative Questionnaire | Product type was a significant moderator between experience shopping and sensory experience. Online stores should design their stores through pop-ups or advertisement to highlight the specific promotions as online shoppers preferred a rational shopping experience. |

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| | 3 (types of shopping environment) x 2 (product type) factorial design in Korea. | |
| Koo and Ju (2010) | Quantitative Questionnaire in Korea. | Web atmospherics have an impact on consumer emotions such as arousal and pleasure, which subsequently have an effect on shoppers' behavioural intentions. |
| Music as a web atmospheric stimulus | | |
| Fiore and Kelly (2007) | Quantitative Exploratory survey on 70 UK online retail stores regarding their use of sound. | Not many websites use sound but the ones which do are mostly large corporations to enhance the display of products. Audio features can be used to overcome the barriers between shoppers, products and retail environment and for optimising the shopping experiences. |
| Kim, Kim and Lennon (2009) | Quantitative Experimental using mock apparel website in a lab setting. 2 (flat vs model presentation) x 2 (music present vs absent) between-subject factorial design. Questionnaire using PAD emotional dimension measures | No significant effect of music on emotion. People who experienced more pleasure and higher arousal showed greater purchase intentions. Dominance dimension of emotion was not related to attitude toward the website or purchase intent. |
| Cheng, Wu and Yen (2009) | Quantitative Experimental. 2 (music tempo, fast/slow) x 2 (colour warm/cool) factorial design on gift shop online. Laboratory experiment with personal computers. | Both music and colour affect the subjects' perception and emotional responses. Participants felt more aroused and pleased with faster music and warmer colour. The congruency of the two atmospheric factors enhances the emotional responses. |
| Lai and Chiang (2012) | Quantitative | Participants had a higher level of pleasure, arousal and approach behaviour intention for the three placement points than for no music or full music. |

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|---------------------------|--|--|
| | Experimental using an online book store (designed for the experiment) | Playing background music after the start of browsing is beneficial for the online shopping atmosphere and it is inappropriate to place background music at the start of browsing a shopping website. |
| Kim and Lennon (2012) | Quantitative Experimental using an online apparel website (designed for the experiment.) 1 group with music, the other without music. Questionnaire. | Online shopping involvement did not moderate the effect of music on consumers' affective states. Music on apparel websites is a way to decrease risk, can enhance positive attitude towards the website, and consequently influence a positive shopping outcome. Music did not affect arousal because of the use of slow music. |
| Ding and Lin (2012) | Quantitative Participants were asked to shop in a fictitious website. 4 (music tempo, slow/fast) x 2(product category, hedonic/utilitarian) factorial design. 7-point semantic scale questionnaires | Fast tempo music can lead to higher arousal than slow tempo music. The music influences consumers' affective responses in the online environment. The product category influences the effect of arousal on pleasure. The effects are reported for only hedonic products. Music creates a high-arousal environment to first enhance pleasure and then influence purchase intention. Again, it is only true for hedonic products. |
| Cuny <i>et al.</i> (2015) | Quantitative 2 online art galleries. 5-point Likert scale questionnaire. | Immersion and aesthetic experience fully mediated the relationship between music and behavioural intentions. Music encouraged immersion. The more intense the aesthetic experience is, the stronger behavioural intentions are. |
| Krauce and North (2014) | Quantitative Playlist creation for given situations | Arousal and aesthetic appreciation appear to represent the dimensions along which music can be characterised as "appropriate". Music chosen for a situation is subject the perception of what music ought to be present in a certain situation and the function it should fulfil. |
| Wang <i>et al.</i> (2017) | Quantitative Using service and goods websites that were currently playing music on their homepages. | Online consumers will react with positive effect to congruent background music used on a website. Compared to identical websites without music, website with music produced more significant affective responses, which was responsible for increasing consumers' enjoyment level. It also led to favorable website behavior, such as returning to the website or recommending it to others. Enjoyment did not |

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| | Questionnaire | directly influence behavioral intentions, although there is a positive relationship between enjoyment and behavioral intentions. Background music also led to positive website use compared to no music. |
| Flow | | |
| Csikszentmihalyi (1990) | Conceptual | The definition of flow is “Optimal experience” A person’s attention is completely absorbed by the activity, and as a result, optimal experience takes place. People become involved in what they are doing, the activity becomes spontaneous and almost automatic |
| Nel <i>et al.</i> (1999) | Quantitative Questionnaires after evaluating a website. Each was given 20 sites to evaluate. Controlled experiment in a lab | There is a significant correlation between flow and site return intentions. Lower flow on transaction websites might be because these sites have the express intention of getting the shoppers to purchase. Where shoppers have low purchase intention, they lose flow, and may move on. |
| Hoffman <i>et al.</i> (2003) | Empirical Online questionnaire with open ended questions, 9-point scales | There is more evidence of flow occurring during task-oriented activity than experimental activity although flow occurs for both types of activities. |
| Pace (2004) | Qualitative Semi-structured interview | Many of the concepts and relationships are identical to the dimensions of flow proposed by Csikszentmihalyi. |
| Skadberg and Kimmel (2004) | Quantitative Questionnaire with 5-point Likert scale Fictional website | This study presents the distortion of time, telepresence and enjoyment as three indicators of flow in a hypermedia experience. Speed has a strong impact on the website’s attractiveness. An evaluation of the website as being attractive has a strong impact on flow. The attractiveness of the website and interactivity contribute to flow experience. Challenge and skill had no impact on flow, whereas flow had a positive impact on learning. |
| Siepeke (2005) | Quantitative Online questionnaire Participants were asked to visit a web site of their choice and simulate a purchase for a laptop. | Challenge, control curiosity and concentration are better formulated as reflective dimensions of the flow rather than antecedent of flow. Reflective conceptualisation of flow with respect to the dimensions of challenge, concentration, control and curiosity outperform the formative model in data fit and explanation of behavioural intentions. |

| | | |
|----------------------------|---|---|
| Hoffman and Novak (2009) | Conceptual Review of literature | Multidimensional measures of flow provide a rational basis for selecting items for a derived unidimensional summed scale measure of flow. Both hedonic and utilitarian components of website performance are impacted by flow. Flow has been evidenced to influence the hedonic value of online shopping experiences. Flow has also been found to influence behavioural intentions. |
| Nusair and Parsa (2011) | Conceptual providing suggestion for methodology Questionnaire using flow theory constructs on an online travel website Lab experiment. | As a customer shops online with a clear goal, they are utilising internet skills to complete a task at hand, either for entertainment or product search and purchase. Most e-buyers begin as e-browsers, but the conversion rate from e-browsers to e-buyers depends on the attractiveness of the site. Control, attention focus, and cognitive enjoyment create a flow state (outcome of flow). |
| Hsu <i>et al.</i> (2012) | Quantitative Questionnaire to convenience sample. Five-point scales | Flow is positively related to the purchase intention as well as the intention to continue shopping and impulse buy. |
| Noort <i>at al.</i> (2012) | Quantitative Study 1 self-report multicomponent scale Study 2 Online questionnaire Using different websites with high and low interactive features | A higher level of interactivity led to intense flow which increased extent of cognitive responses related to products. This led to favourable emotional responses and attitude towards the site and brand, and subsequently led to favourable behavioural outcomes. |
| Gao and Bai (2014) | Quantitative Questionnaire Real travel website conducted in a lab | Site Effectiveness, Informativeness and Entertainment influence flow experience. Flow is an important antecedent of purchase intention. Flow functions as a mediator between site atmospherics and behavioural outcomes. |
| Richard and Chebat (2016) | Quantitative A questionnaire using scales for emotion (PAD), flow, atmospheric characteristics entertainment, website | Higher level of arousal leads to better judgements of informativeness. There is a direct positive relationship between arousal and pleasure. Higher level of arousal and higher level of dominance directly influence the flow, which in turn leads to higher pleasure. Shoppers' positive emotions positively influenced the attitude towards the website, website attitudes positively influence product attitudes, and |

| | | |
|--|---|--|
| | attitudes, and purchase intentions. 5-point Likert scale. Goods and service websites conducted in a lab | this leads to greater purchase intentions. Flow has a direct effect on purchase intentions. Emotions precede cognitions. |
|--|---|--|

3.0.3 Evaluation of literature by using forensic critique

To provide a comprehensive critical narrative literature review, forensic critique is utilised to evaluate the relevant literature. According to Fisher (2004:74), forensic critique of literature can be defined as a “process of testing academic ideas to assess their usefulness” (Fisher, 2004:74). When evaluating books and articles, a judgement must be made as to whether the arguments are strong and sound. Fisher (2004) suggests that to make such judgement, the author needs to assess the validity of the premises by evaluating the research methods as well as the logic and strength of the conclusions. To evaluate arguments, the author also needs to inspect many aspects of the arguments made; for example, if the arguments have been made without any subjective bias, if the argument is used in a generalised manner when only some is true, and if the evidence was collected from selected instances (Fisher, 2004). This forensic critique process will be followed throughout this chapter.

The preparation for the narrative literature review made clear that the relevant literature can be characterised into two distinct categories by which identifies the current knowledge; the theory of *flow* and the role of music as an atmospheric stimulus within in-store and online retail settings.

From reviewing the literature identified under the two categories above, it can be summarised that the concept of *flow* in an online retail context is increasingly considered as one of the influential aspects to affect positive marketing outcome (Hoffman and Novak, 2009; Rose *et al.*, 2012; Wang *et al.*, 2017). There is evidence that the holistic perception of online atmospheric cues, including music, can directly influence the state of *flow* (Gao and Bai, 2014). Nonetheless, there is a lack of empirical studies that explore the impact of music on shoppers’ *flow* (a measure of enjoyment) in an online retail setting. What is known is that music as a web atmospheric influences shoppers’ arousal and pleasure, the key emotions identified within consumer behaviour studies. Shoppers’ arousal and pleasure subsequently leads to a positive behavioural outcome, such as purchase and return intentions in an online retail environment (Ding and Lin, 2011; Lai and Chiang, 2012). To provide a detailed review of the literature, the key topics and themes identified in the literature map and literature table are extensively discussed under these two main categories in the subsequent sections.

3.1 The theory of *flow*

In a human-computer interaction, *flow* characterises the user's (surfer/interactor) perception of the medium (i.e. website) providing playful and exploratory experience (Webster *et al.*, 1993; Nel *et al.*, 1999). Involvement in such playful and exploratory experience is self-motivating because it is pleasurable and encourages positive and repetitive behaviour (Nel *et al.*, 1999). Thus, *flow* has been considered to be an essential concept to understanding consumer behaviour in an online environment (Novak *et al.*, 1998).

Whilst the state of *flow* has gained increased awareness, especially in the field of human-computer interaction, it is still an under-researched discipline, and there is still limited knowledge available, especially regarding the impact of web stimulus and atmospherics on the shoppers' state of *flow* (Gao and Bai, 2014). Thus, the following sections under 3.2 will attempt to extensively discuss the theory and application of *flow* in online retail settings. This is achieved by defining the term *flow*, summarising its characteristics and critically synthesising the *flow* theory and applying as relevant to an online shopping environment. The theory of *flow* will be extensively discussed under the following context; the definition of *flow*, the concept of *flow* applied to the human-computer interaction namely online shopping, the link between emotions and *flow*, the consequence of *flow* within online consumer behaviour theories and antecedents of *flow*.

3.1.0 The definition of *flow*

The concept of "*flow*" was introduced by Csikszentmihalyi (1990) and can be described as an "optimal experience" (Csikszentmihalyi, 1990:39) that happens when a person's attention is completely absorbed by the activity s/he is involved in, and the activity becomes spontaneous and almost automatic. *Flow* is considered as a multidimensional construct consisting; Control, Attention/Focus, Curiosity and Intrinsic interest, and it has been considered as the measurement of enjoyment of online shopping experience (Hoffman and Novak, 1996, Skadberg and Kimmel, 2004). Csikszentmihalyi (1990) claims that some activities, such as sports, arts, and games are designed to induce the *flow* state. Commonly, these activities have rules that require the learning of skills, they set up goals, they provide feedback, and they make control possible.

Although the concept of *flow* is widely appreciated, the characteristics of *flow* are still vague and there is a lack of consistency in operational definitions of *flow* used by different researchers (Novak *et al.*, 1997; Koufaris, 2002; Hoffman and Novak, 2009). Some scholars define *flow* in terms of *experience* (Csikszentmihalyi and Csikszentmihalyi, 1988; Clarke and Haworth, 1994; Ellis *et al.*, 1994), some define 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 criticisms that the term *flow* is ill-defined and is used too broadly (Koufaris, 2002).

For example, when *flow* was first introduced by Csikszentmihalyi (1975), its intention was an attempt to describe the holistic sensation when individuals are involved and immersed in the activity in which they are engaged. It was then described as a cognitive state when an individual feels in control, and a sense of excitement and enjoyment (Csikszentmihalyi, 1990). However, the definition of *flow* has extended not only to the cognitive state but to the whole psychological state in which an individual is totally involved and immersed into the environmental stimulus field (Celsi *et al.*, 1993). A recent study by Richard and Chebat (2016) used Hoffman and Novak's (2003:4) definition of *flow*, which is "the state occurring during network navigation which is: (a) characterized by a seamless sequence of responses facilitated by machine interactivity, (b) intrinsically enjoyable, (c) accompanied by a loss of self-consciousness, and (d) self-reinforcing".

For the purpose of this current study, *flow* will be referred to as a *psychological state* that is characterised by Hoffman and Novak (1996). This is because *flow* will be treated as an aspect of the Organism *state* in the SOR framework that is *experienced* by individuals. *Flow* within the SOR framework will be explained further in the later section (see section 3.1.3.2). This is in line with Hsu *et al.*'s (2012) definition that suggests *flow* is "a state of optimal psychological experience" (2011:327) which stems from Novak *et al.*'s (2000) study.

3.1.1 Flow within the human-computer interaction

The consequence of shoppers' state of *flow* in an online retail environment has been evidenced as 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, 2016). Hence the concept of *flow* has been considered as one of the most important factors that influence consumer behaviour and therefore an important consideration for online retailers (Gao and Bai, 2014; Richard and Chebat, 2016).

Nel *et al.* (1999:111) define the characteristics of *flow* in a website environment as a “multidimensional construct that represents the user’s (surfer/interactor) perception of the medium as playful and exploratory”. Webster *et al.*’s (1993) empirical findings claim that within the human-computer interaction experience, there are three dimensions of *flow* instead of the typical four dimensions of *flow* construct that consists of; control, attention, curiosity and intrinsic interest (Trevino and Webster, 1992). To elaborate, Webster *et al.*’s (1993) three dimensions are; Control which the user perceives a sense of control over the interaction, Attention/Focus whereby the user perceives that his or her attention is focused on the interaction, and lastly Cognitive enjoyment whereby the user’s curiosity is aroused during the interaction and the user finds the interaction intrinsically interesting. In line with Webster *et al.*’s (1993) definition, Siepke (2005) believes that the state of *flow* in a computer-mediated environment is a multi-dimensional construct although the suggested dimensions are challenge, control curiosity and concentration. Siepke (2005) also believes that these dimensions are better formulated as reflective dimensions of the *flow* construct rather than antecedent dimensions, as the reflective conceptualisation of *flow* with respect to these dimensions outperform the formative model in data fit and explanation of behavioural intentions.

The characteristics of the state of *flow* in a human-computer interaction, and in particular, in a web site environment is empirically evidenced to be enjoyment, time distortion and telepresence (Skadberg and Kimmel, 2004). Thus, shoppers’ state of *flow* is considered as a measurement of enjoyment in an online shopping experience (Hoffman and Novak, 1996; Koufaris, 2002; Skadberg and Kimmel, 2004).

Although there are various definitions and characteristics of the state of *flow*, a grounded theory of *flow* by Pace (2004) suggests that many of concepts and relationships of the *flow* state on the web are identical to the dimensions of *flow* proposed by Csikszentmihalyi (1990), and it is believed that *flow* is more likely to be associated with leisure activities than work-oriented activities online. Nevertheless, it

has been found that the state of *flow* occurs for both task-orientated (i.e. utilitarian, planned purchases, extrinsic motivation, work) as well as recreational (i.e. hedonic, compulsive shopping, intrinsic motivation, leisure) web activities (Novak *et al.*, 2003). This implies that shoppers are expected to experience the state of *flow* during online shopping experience when they are immersed in the shopping activity as online shopping can be described as a leisure and recreational activity.

To fully understand how the concept of *flow* can fill the gap and provide alternative ideas within the discipline of online consumer behaviour models, it is vital to understand other existing theories of online consumer behaviour.

3.1.2 Online consumer behaviour models and how the theory of *flow* can fill the knowledge gap

Traditionally, many in-store consumer behaviour theories have been reapplied to the study of online consumer behaviour (Cheung *et al.*, 2005). Despite the credibility for applying a more traditional in-store consumer behaviour model to the online retail settings for its established validity, researchers have started to distinguish the differences between the online and in-store consumer behaviour conceptualisation (Cheung *et al.*, 2003). This has led to a development of web-specific consumer behaviour models based on Theory of Reasoned Action (TRA) and its extension, the Theory of Planned Behaviour (TPB) (Ajzen and Fishbein, 1980; Ajzen, 1991). Some believe that it is crucial to understand how consumers make purchase decisions on cyberspace that is akin to understanding more traditional consumer behaviour research in the physical in-store environment (Butler and Peppard, 1998). Undeniably, as mentioned earlier, most of the traditional consumer behaviour theories and their components have been applied to understanding the online consumer behaviour (Cheung *et al.*, 2005). Nevertheless, Cheung *et al.* (2003) believe that the understanding of online behaviour was still fragmented at the time their article was written, and suggested that simply applying an existing consumer behaviour model for in-store, such as the SOR framework, is not sufficient to fully understand the complex process of online purchase behaviour.

Cheung *et al.* (2005) suggest that the behavioural psychology theories, Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980) and its extension, the Theory of Planned Behaviour (TPB) (Ajzen, 1991), are the foremost models that have been

applied to capture online consumer behaviour. For example, derived from TRA, the Technology Acceptance Model (TAM) focuses on two specific beliefs, which are ease of use and usefulness. The model has been applied in the study of user adoption of different technologies and has emerged as a viable and robust model. However, there are also technological progress and changes in the area of web atmospherics and interface design (Vijayarathy, 2004), yet there has been less focus on hedonic aspects and effect on online shopping behaviour.

Cheung *et al.* (2003) generated a model based on intention, adoption and continuance. The model is designed to show the relationships between intention to purchase, actual purchase, and repurchase. Although online purchase process is not the focus of this study, the model offers a range of detailed variables that affect the stages of online buying behaviour. Nevertheless, it needs to be highlighted that most of the variables are still somewhat functional (Individual/Consumer Characteristics, Environmental Influences, Product/Service Characteristics, Medium Characteristics and Online Merchants and Intermediaries Characteristics), and it still lacks in aspects that explores hedonic or aesthetic characteristics.

The lack in hedonic aspects for online specific models may result from the fact that online shoppers were traditionally thought to be more utilitarian. Although convenience and price may be the main drivers for consumers to shop online, Koufaris (2002) argues that online shoppers are not purely utilitarian and are similar to in-store shoppers who value the hedonic experience of shopping. Constantinides (2004) agrees by saying that online marketers can influence consumers' decision-making process by a combination of online functionality and information presentation as well as stimuli cues provoking an emotional reaction of the shoppers.

In conclusion, Cheung *et al.* (2003; 2005) repeatedly encourage other researchers to branch out from TRA and TPA theories and explore various other models and theories such as *flow*, as traditional TRA and TPA based models lack consideration for the hedonic aspects of an online shopping experience. This is the reason why TRA or TPA based models are not used in this study even though these models are well established in the field of online consumer behaviour studies. On the other hand, the theory of *flow* looks at online shopping as a holistic experience, and measures “intrinsic enjoyment of

an activity” (Koufaris, 2002:208), which explores hedonic and aesthetic aspects of online shopping experience.

3.1.3 Flow within an online shopping context

Recently, many researchers recommended using the theory of *flow* as an indication of online shopper enjoyment, which subsequently influences intentional behaviours (Novak and Hoffman, 1996; Novak *et al.*, 1998; Koufaris, 2002; Hoffman and Novak, 2009; Hsu *et al.*, 2012). Empirical studies show that there is a significant correlation between shoppers’ state of *flow* and intentional behaviours such as purchase and return intentions in an online shopping context (Hoffman and Novak, 2009; Hsu *et al.*, 2012).

3.1.3.0 Purchase intention as an outcome of flow in an online shopping context

According to Zeithaml *et al.* (1996), purchase intention is one dimension of behavioural intention, and online purchase intention refers to the likelihood and desire of consumers to making a purchase from a website (Poddar *et al.*, 2009; Chen *et al.*, 2009). In addition, Chen *et al.* (2009:1008) refer to purchase intention as “an outcome of criteria assessment of consumers regarding website quality, information search, and product evaluation”. Purchase intention can be considered as an important predictor of actual buying behaviour patterns as purchase intent relates closely to actual behaviour (Ajzen and Fishbein, 1980; Bai *et al.*, 2008; Poddar *et al.*, 2009; Chen *et al.*, 2009). Theory of Reasoned Action also proposes that, the stronger the intention to engage in a behaviour, the more likely the performance is going to happen. Intentions can act as an indication to measure how much people are willing to try, or how much of an effort they are planning to exert, in order to act upon (Ajzen, 1991). If this is the case, the stronger the purchase intentions, the more likely it is that the purchase will happen. Therefore, measuring the intentional behaviour can be more effective than examining the actual behavioural measure as the actual behavioural outcome can be restricted due to constraints (i.e. price, choice of sizes) rather than the consumer preferences (Day, 1969).

It can be argued that function and design features, shopping conditions and security are all equally important factors that influence online purchase intentions (Ha and Stoel, 2009), and research has evidenced that web atmospherics, including music, may significantly affect purchase intentions. Web atmospheric cues can affect shopper emotions such as arousal and pleasure (Eroglu *et al.*, 2003; Koo and Ju, 2010), and the result from Kim *et al.*’s (2009) study shows that people who experienced higher

arousal and pleasure showed greater purchase intentions. Furthermore, shoppers' arousal and pleasure directly affect shoppers' state of *flow* (Hausman and Siepke, 2009; Koo and Ju, 2010; Richard and Chebat, 2016).

Purchase intention is considered as one of the most important outcomes of the shoppers' state of *flow* in an online shopping context as shoppers' state of *flow* has shown a direct effect on the purchase intentions (Koufaris, 2002; Dailey 2004; Siekpe; 2005; Hsu *et al.*, 2012; Wichard and Chebat, 2016).

Despite the outcome of shoppers' state of *flow*, which is understood to be highly positive, Gao and Bai (2014) emphasise the fact that little is known about the antecedents that optimise the *flow* state, and the relationship between web atmospherics, in particular music, and the shoppers' state of *flow* as yet understudied. In the subsequent sections, the current knowledge on the mechanism and relationships between shoppers' emotions and *flow* will be discussed.

3.1.3.1 Shoppers' emotions and the state of flow in an online retail environment

Traditionally, Novak *et al.* (2000; 2003) claimed the various antecedents of shoppers' state of *flow* to be a wide range of aspects such as skill, challenge, control, arousal involvement, focused attention. Nonetheless, Richard and Chebat's (2016) study has evidenced that there is a much stronger relationship between the shopper emotions (arousal, pleasure and dominance), the state of *flow*, and online purchase intentions. Within consumer studies, the term "enjoyment" is described as a shopper's affective response to the environment, which requires less intensive arousal, but higher level of pleasure (Hart *et al.*, 2007; Leischnig, *et al.*, 2011), and some studies describes shoppers' emotional pleasure as the shoppers' level of joy and pleasure (Raynolds and Betty, 1999), or perceived enjoyment (Yalch and Spangenberg, 2000). Since the state of *flow* is considered a measure of shopper enjoyment, it is inseparable and impossible to capture without the consideration of shopper emotions.

When discussing the emotions that affect the intended consumer behaviour in the retail environment, the Pleasure, Arousal and Dominance (hereafter PAD) model (see Figure 3.2) by Mehrabian and Russell (1974) has been considered as one of the most popular models of emotional dimensions, widely used across marketing studies for the evaluation of the emotions and responses of shoppers (Mehrabian and Russell, 1974; Donovan and Rossiter, 1982; Machleit and Eroglu, 2000). The PAD model uses

opposing adjective pairs to investigate emotion, and the three basic dimensions of emotions are: Pleasure - positive and negative affective states; Arousal - energy and stimulation level; Dominance - a sense of control or freedom (MacDorman *et al.*, 2007).

A Representation of the Pleasure-Arousal-Dominance Emotional State Model

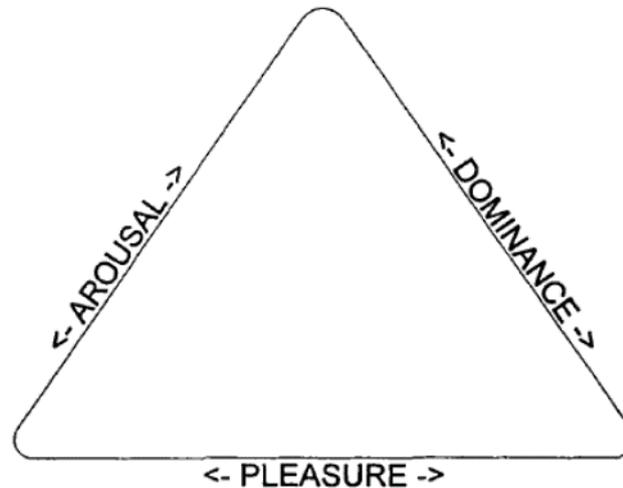


Figure 3. 2 A representation of the Pleasure-Arousal-Dominance emotion model (Mehrabian, 1996)

The first dimension of the PAD model is pleasure. Mehrabian and Russell (1974) refer to pleasure as the extent to which a consumer feels pleasant, happy, good or satisfied in the retail environment, and the pleasure dimension (pleasure-displeasure) ranges from happiness to unhappiness. On the other hand, Csikszentmihalyi (1990) distinguish pleasure and happiness by suggesting that pleasure is an outcome of *homeostatic* experience (the body trying to balance to maintain the equilibrium of internal condition even when external environment has changed) whereas happiness is also related to growth or accomplishment of the conscious self. Therefore, Csikszentmihalyi (1990) defines pleasure as “a feeling of contentment that one achieves whenever information in consciousness says that expectations set by biological programs or by social conditioning have met” (1990:45) although pleasure itself does not always bring or lead to happiness. This indicates that although the measurement of happiness/unhappiness can be one of the measurements of pleasure, it does not mean happiness can be represented solely on pleasantness. Csikszentmihalyi (1990) believes that “enjoyment” characterises the other happiness that is achieved by the more cognitive accomplishment of self-growth. This distinction of pleasure and enjoyment that is important to the state of *flow* being considered as a measurement of

enjoyment in an online environment as it adds another dimension to shoppers' emotional response in a retail space (Hoffman and Novak, 1996, Skadberg and Kimmel, 2004).

In contrast, arousal dimension (arousal-non-arousal) is a state of feeling that is a combination of physical activity and mental alertness ranging from sleepy to frantic (Mirella Yani-de-Soriano and Foxall, 2006). It relates to the extent to which a consumer feels stimulated, alert or active in an environment. There are two distinctive types of arousal construct within the psychological discipline. The first is *objective arousal* which is a variable representing the level of physiological responses such as higher heart rate or sweating (Cacioppo *et al.*, 1996). On the other hand, *subjective arousal* can be defined as “the extent to which an individual incorporates subjective experiences of arousal into a conscious affective experience” (Feldman-Barrett, 1998:580). Although objective and subjective arousal is moderately correlated (Thayer 1970), the measurement of one may not represent the other. The arousal Mehrabian and Russell (1974) refers to in their framework is subjective arousal using a self-reported measurement rather than measuring physical responses. For the purpose of methodological concerns, the arousal referred to in this study is subjective arousal, and measured by a self-reported verbal scale, which will be explained in detail in Chapter Five.

Lastly, dominance dimension (dominance-submissiveness) ranges from extreme feelings of lack of control to being in control. It is understood that there is a counter relationship between an individual's feeling of dominance and the perceived power of the environment (Mirella Yani-de-Soriano and Foxall, 2006). In other words, if the perceived power of the environment is high, the feeling of dominance would be low within that environment, and vice versa. The dominance dimension, however, is frequently removed from the measurements in an in-store context in many atmospheric and behavioural studies because of the lack of empirical support and unreliable nature of the adjective which are used to describe dominance (i.e. control/freedom, dominance/submissiveness) (Tai and Fung, 1997; MacDorman *et al.*, 2007). Nevertheless, when discussing *flow* and shoppers' emotions, dominance could be an important emotional dimension as many studies have suggested that dominance or perceived control is a highly important emotional aspect that is related to *flow* (Ajzen 1991, Koufairs, 2002; Richard and Chebat, 2016).

Aside from the PAD model, there are other emotion measurement models such as Izard's (1977) and Plutchik's (1980), and some would argue that these models may provide more detailed emotional information than the PAD model (Tai and Fung, 1997). For instance, Machleit and Eroglu (2000) demonstrated that emotion measurement models by Izard (1977) and Plutchik (1980) perform considerably better than the PAD model when measuring shoppers' emotions during shopping experiences. However, different emotion measurement models have particular characteristics strengths and weaknesses. Therefore, they should be regarded with caution depending on the nature of the study. For example, Izard's (1977) model contains many negative emotions, and more suited to a study that aims to measure displeasure of the experience rather than pleasure. Plutchik's (1980) model is useful for measuring emotions during interactions between salespeople and shoppers as it measures expectancy and acceptance. The PAD model, however, is the only measurement model out of the above three measurement models that consider arousal as well as dominance in the emotional dimensions. Arousal is considered one of the essential elements when discussing the relationships between music and emotions as numerous studies have indicated a significant effect of music on arousal (see section 3.2.1.1 for a detailed discussion). Thus, the PAD is the most appropriate emotion measurement model to use for this study as all three dimensions are relevant. Arousal and pleasure are the key emotions that have been evidenced to be related to *flow* and also listening to music, and the online retail environment provides shoppers with some degree of control, thus dominance is also a relevant aspect of the emotion in an online shopping context.

Measuring the level of shopper emotions is important as it leads to a subsequent behavioural outcome in both in-store and online retail environment. In particular, a higher state of arousal and dominance is known to precede and directly influence the shoppers' state of *flow* (Novak *et al.*, 2000; Richard and Chebat, 2016). Furthermore, intrinsic enjoyment and perceived control are components of the state of *flow*, in which shoppers begin to experience being totally involved and feel in control of the holistic shopping experience (Novak *et al.*, 2000). According to Koufaris (2002), intrinsic enjoyment and perceived control are akin to the pleasure and dominance dimension of the PAD, and compatible with the SOR framework.

3.1.3.2 The SOR framework

The models of *flow* in an online shopping context are often based on other online consumer behaviour models. For example, some studies base their models on the Technology Acceptance Model (Koufaris, 2002; Hausman and Siepke, 2009), others on the Stimulus-Organism-Response (SOR) framework (Ong *et al.*, 2012; Gao and Bai, 2014; Richard and Chebat, 2016), whereas others developed new *flow* specific models such as the Interactivity model (Nusair and Parsa, 2011; Noort *et al.*, 2012). The Technology Acceptance Model offers an essential utilitarian point of view, such as ease of use and usefulness of the website in relation to the *flow* state. However, the lack of hedonic and emotional aspects within the model leads to the elimination of this model as a suitable basis for the conceptual framework for this study. The Interactivity model has a very specific focus on the impact of website interactivity on *flow*, and therefore it does not explore the atmospheric aspects of website design. Therefore, the Interactivity model is not suitable for this study either. More recent models used to inform the current understanding of *flow* in the literature are based on the SOR framework (Gao and Bai, 2014; Richard and Chebat, 2016).

Stimulus-Organism-Response (SOR thereafter) framework introduced by Mehrabian and Russell (1974) as shown in Figure 3.2. The SOR framework is one of the principal environmental psychology frameworks that have been widely tested in both in-store and online consumer behaviour and retail atmospherics studies (Tai and Fung, 1997, Eroglu *et al.*, 2003). The SOR framework employs the PAD emotional model (as can be seen on Figure 3.3) although it can be criticised for focusing mainly on arousal and pleasure states of the shoppers and neglecting the dominance dimension. Nonetheless, the SOR framework explores the emotion of shoppers: pleasure and arousal, and how atmospheric cues (Stimuli) can induce the state affecting consumer evaluation (Organism) subsequently leading to their approach/avoidance behaviour (Response). The approach behaviour refers to all positive behaviours such as a desire to stay, explore, purchase and return. On the contrary, avoidance behaviour refers to the total opposite such as a desire *not* to stay, explore or purchase (Mehrabian and Russell, 1974).

The Mehrabian-Russell Model

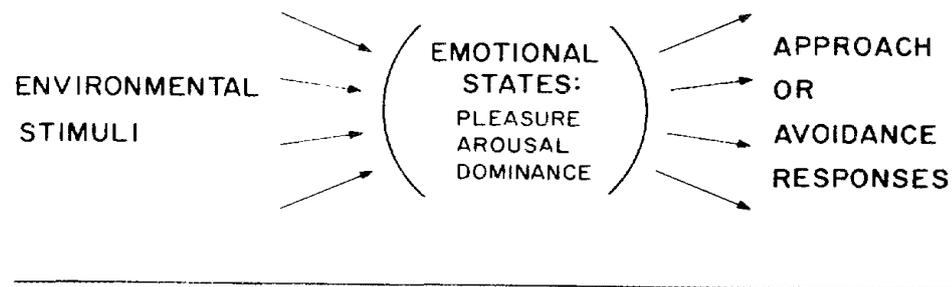


Figure 3. 3 The M-R model based on the SOR framework (Donovan and Rossiter, 1982)

The SOR framework suggests that pleasure is a significant mediator which relates to overall behavioural measures. In other words, pleasurable stimuli lead to an approach behaviour, and unpleasant stimuli lead to avoidance behaviour. Arousal also has a significant influence, although it is known to have more of an interactive relationship with pleasantness. For example, higher arousal level is positively correlated to approach behaviours in pleasant environments, but conversely, in an unpleasant environment, arousal is negatively related with displeasure which leads to avoidance behaviour (Donovan and Rossiter, 1982). Furthermore, in an online environment, it has been found that arousal and pleasure have a direct positive relationship, and arousal can enhance pleasure if correctly stimulated (Ding and Lin, 2012; Richard and Chebat, 2016).

The findings from environmental psychology research by Tai and Fung (1997) coincides with the evidence that favourable stimuli are positively related to the level of pleasure experienced in a store, and consequently, environment-induced positive emotions in the store are positively associated with shopping behaviour. Although Tai and Fung's (1997) study can be criticised for their limited sample collection in a very specific country and industry, their findings support the idea that the emotions of consumers are induced by the store environment and atmospherics, and they can subsequently impact on the behavioural outcome of shoppers.

Nevertheless, findings by Tai and Fung (1997) suggests that shoppers' emotional and behavioural responses in an in-store environment is more dynamic in nature than the simple one-way direction illustrated in the SOR (Tai and Fung, 1997). The findings by

Tai and Fung (1997) suggest a further study that explores the complex interlink between the in-store environmental stimuli, the shoppers emotional and affective states, and their approach/avoidance behaviour (See Figure 3.4). This finding implies that although the SOR framework illustrates a very basic structure between environmental stimuli, shoppers' inner responses and the behavioural outcome, the framework should be explored and reconsidered further to fit complex emotional and cognitive processing of shoppers in a retail environment.

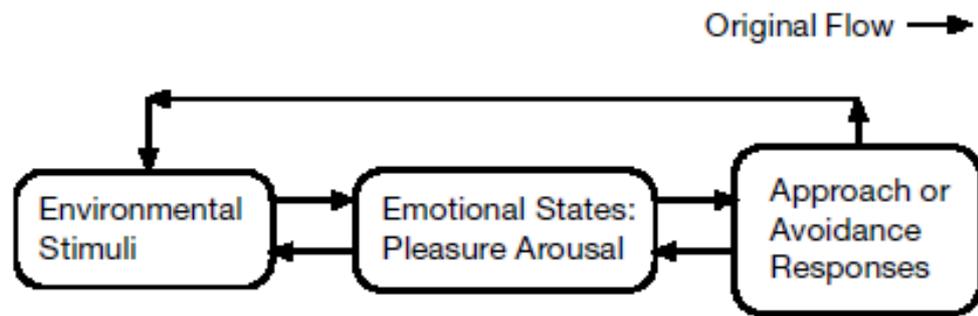


Figure 3. 4 Complex interlink between the S-O-R elements (Tai and Fung, 1997)

Although Eroglu *et al.* (2001) does not directly relate the SOR framework to the state of *flow*, their adopted Mehrabian-Russel model for online context has shown a positive relationship between atmospheric cue, emotional responses and cognitive evaluations, that subsequently affects consumer behaviour and money spent in an online shopping context (Eroglu *et al.*, 2001; 2003). In addition, Hsieh *et al.* (2014) believe that in an online retail setting, perceived control over the shopping situation is significantly more important than physical in-store context, so much so that one of the main reasons some shoppers shop online instead of in-store is the sense of control they gain over the online environment. Nevertheless, most online atmospheric studies have eliminated the dominant dimension from the measurements due to the lack of empirical support (Tai and Fung, 1997). Kim *et al.* (2009) have evidenced that dominance was not related to attitude towards the website nor purchase intention, and there is no empirical evidence to show that music has any impact on dominance in an online retail environment.

3.1.3.3 Shoppers' emotional responses and cognitive evaluation in an online retail environment

Novak *et al.*'s (2000) findings revealed that there is a hierarchical order that shoppers' emotional responses precede cognitive evaluation while navigating through a website.

Furthermore, the affective conditioning theory predicts that shoppers' pleasure leads to positive attitudes (Madden *et al.*, 1988; Richard and Chebat, 2016). Attitudes refer to an individual's internal cognitive evaluations and tendency toward people, objects or surrounding conditions (i.e. towards website or products offered in a store). Attitudes can be either favourable or unfavourable, which can predict individuals' explicit behaviour (Mitchell and Olson, 1981; Wu and Lee, 2012). Ajzen and Fishbein (1980) further categorised attitudes into two different concepts: "attitude toward the behaviour" and "attitude toward the object". The former refers to an individual's attitude toward behaviour; for example, fundraising for a charity. Whereas the latter refers to an individual's attitude towards people, matters or issues; for example, an opinion that goods from a particular retailer are higher quality. In particular, product attitudes refer to the shoppers' cognitive evaluation towards the product offered by a store. According to Attitude Theory, shoppers' behaviour towards products is determined largely by their attitude toward them (Brijs *et al.*, 2006). Fishbein and Ajzen (1980) suggest that shoppers combine or integrate product knowledge to form an overall evaluation of products. The literature on advertising has proposed that advertisements can generate several affective responses which can also assist shaping the formation of consumers' attitudes toward products (Brijs *et al.*, 2006). Despite the differences between website presentation and advertising, Richard and Chebat (2016) applied the traditional communication models to evaluating websites because of its similarity in their functions to advertisements since the website contents are planned by the firm. From this assumption, Richard and Chebat's (2016) finding demonstrated that product attitude directly affects purchase intention in an online retail environment.

To summarise, shoppers' arousal and pleasure are the key emotional dimensions that are interlinked with the state of *flow* in an online retail environment. In addition, shoppers' pleasure has been evidenced to lead to positive product attitudes, which in turn, directly affect purchase intentions. The next section explores which potential antecedents can induce shopper emotions and the state *flow*, which subsequently lead to purchase intentions in an online retail environment.

3.1.3.4 Antecedents of flow in an online shopping context

Previously, Hoffman and Novak (1996) distinguished potential antecedents and consequences of the state of *flow* in a computer-mediated context. They suggested perceived congruence of skills and challenges, focused attention curiosity, interactivity

and telepresence to be the antecedents of *flow*, whereas the consequences of *flow* are; increased learning, perceived behavioural control and exploratory and positive subjective experience. Furthermore, it was argued that an online shopping environment can facilitate the state of *flow* (Hoffman and Novak, 1996). However, a later study by Siepke (2005) suggested challenge, control curiosity and concentration are better formulated as reflective dimensions of the *flow* construct rather than antecedent dimensions in an online shopping context. In addition, Skadberg and Kimmel's (2004) findings also proved that challenge and skill did not facilitate shoppers' *flow* state in a web environment. Instead, their findings suggest that attractiveness of the website and interactivity directly contribute to inducing the *flow* state. This result is also supported by Noort *et al.* (2012) which increased the cognitive responses of shoppers that led to favourable behavioural responses.

Recently, Gao and Bai's (2014) research evidenced that the key web atmospheric cues such as Site Informativeness, Site Effectiveness and Site Entertainment influence shoppers' state of *flow*. The next section explains the key web atmospheric cues, and why music stimulus can be considered as an antecedent of *flow*.

3.1.3.5 Music as a web atmospheric as a potential antecedent of shoppers' emotions and the state of flow in an online retail environment

According to Gao and Bai (2014), there are three categories of website atmospheric cues; Site Informativeness, Site Effectiveness and Site Entertainment.

Gao and Bai (2014) based their conceptual framework on the SOR framework and evidenced in their study that those website atmospheric characteristics directly impact the state of *flow* (see Figure 3.5).

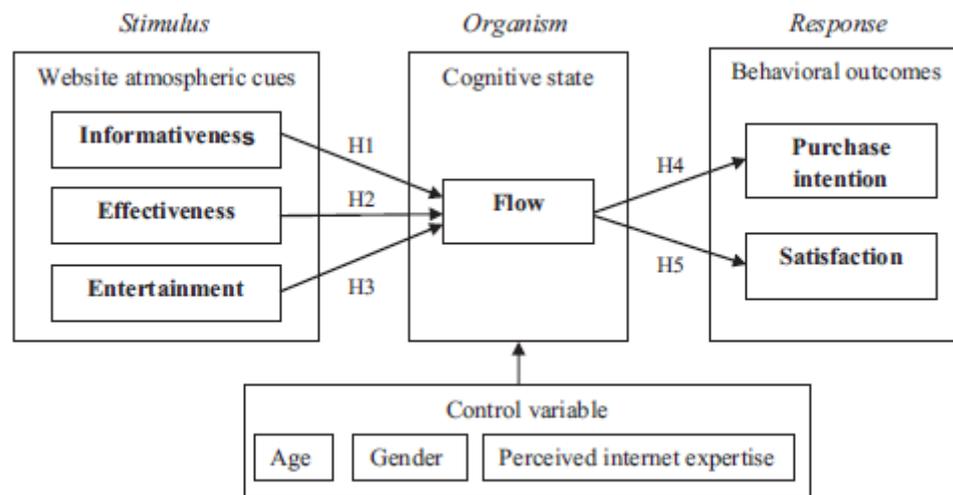


Figure 3. 5 A model of flow based on the SOR framework (Gao and Bai, 2014)

Site Informativeness concerns the amount and richness of the information available, whereas Site Effectiveness concerns how accurate and conveniently information is presented (Gao and Bai, 2014). These two categories are considered to be both high-task relevant cues that provide utilitarian information about the products or service (Eroglu *et al.*, 2003). On the other hand, Site Entertainment takes other forms of sensory and hedonic elements such as music, pictures, videos and interactivity, reflecting the fun and excitement (Gao and Bai, 2014). Aspects under the Site Entertainment category provide low-task relevant cues that do not directly provide descriptive information to attain the shopping goal, but which can create a highly entertaining website that increases shoppers' attention and perceived control when visiting the site, consequently making the shopping experience more enjoyable. As detailed on Gao and Bai's (2014) framework, Site Entertainment directly affects *flow*. This means that successful manipulation of Site Entertainment, such as music, is potentially the key to facilitate *flow*.

Although Gao and Bai's (2014) study has provided the starting point and initial evidence for potential antecedents of shoppers' state of *flow*, they emphasise the fact that little is known about those web atmospheric characteristics and their impact as antecedents that optimise the *flow* state. Furthermore, although their study proves that the state of *flow* mediates between the web characteristics and behavioural outcome, it does not demonstrate any relationships between web characteristics, shoppers' emotions and the state of *flow* even though emotions of shoppers are highly related to

the state of *flow* as well as an outcome of web atmospherics from previous studies (Eroglu *et al.*, 2003; Gao and Bai, 2014).

The above sections highlight the close relationships between web atmospherics, shoppers' state of *flow*, arousal and pleasure, cognitive evaluations such as product attitudes, and purchase intentions. This suggests that music as a web atmospheric may have a direct effect on shoppers' state of *flow*. Therefore, music can be assumed that music as a web atmospheric has a potential to act as an antecedent for shoppers' state of *flow*. In the upcoming sections, what is already known about music as a web atmospheric stimulus in online retail environment is discussed extensively.

3.2 The role of music as an atmospheric stimulus within physical and online retail settings

In recent years, digitalization and de-materialisation of music have changed the way we experience and consume music as a soundtrack in our everyday lives (Sinclair, 2017; Sinclair and Tinson, 2017). This means that most music became conveniently accessible and easy to distribute, resulting in the rise of “background music businesses” as they can organise, edit and deliver music to clients with greater speed and flexibility (The Guardian, 2018). These businesses, such as Jamendo Licensing or Soundtrack, can provide customised music playlists for retailers so that retailers can access music that fits the specific descriptions of their target customers (Smith, 2013). With recent technological advancement and music streaming services, using specific filters on online databases, a playlist can be easily organised and tailored to suit individual retailer needs (The Guardian, 2018). The reason for the popularity for these businesses is that the digitalization of music and recent technological advancement also means that customized music can be seamlessly integrated as a part of an online retail environment, offering a holistic online shopping experience at a low cost. The online as well as in-store shopping environment is increasingly seen as a place that offers “experiences” rather than just a place to buy products or services which differentiate a retailer from competitors.

Saren (2015) suggests that the debate on music consumption has been too focused on association with material consumption and less focused on music in terms of experience, service or value, and it could be argued that an online retail environment could position music as an experiential, as well as a consumptive atmospheric attribute.

An audio stimulus, namely music, can be considered as a part of store atmospherics. Sinclair (2017) suggests that the most obvious functionality of music is the enjoyment it brings to the listeners, as it has the ability to move and to transform our mood. Furthermore, music offers more complex emotional and cognitive effect in situations such as in a retail environment (Sinclair, 2017). From previous atmospheric studies, music as a store atmospheric has been found to affect consumers' psychological states (emotional and cognitive), which subsequently influence their buying behaviour in physical retail settings (North and Hargreaves, 1998; Turley and Milliman, 2000; Oakes, 2000; Morrison and Beverland, 2003; North *et al.*, 2003; Beverland, *et al.*, 2006; Knoferle *et al.*, 2012; Oakes, *et al.*, 2013, Petruzellis *et al.*, 2014; Roschk *et al.*, 2017).

In the following sections, the role of store atmospherics, and in particular, the role of music as an atmospheric is discussed. Firstly, shopper emotions in a physical retail environment is discussed using the Pleasure-Arousal-Dominance dimensions of emotions, together with the Stimulus-Organism-Response framework to explain the effect of atmospherics on shopper emotions and cognitive evaluation. Eroglu *et al.* (2003) state that hedonic and experiential qualities of the online retail environment are counterparts to atmospherics in a physical in-store retail environment. It is, therefore, important to understand the role and influence of atmospheric stimulus in a physical retail environment as well as in the online context. Then the current knowledge of music as a web atmospheric and its impact in an online retail environment is discussed.

3.2.0 Atmospherics and its impact on shopper emotions in an in-store retail environment

Kotler (1973) introduced the concept of atmospherics in the 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” (1973:50). 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.*, 2013) and lighting (Park and Farr, 2007; Quartier *et al.*, 2008), which are “the physical properties of the retail environment designed to create an effect on consumer purchases”

(Blackwell *et al.*, 2006:743). From these definitions, they indicate that retailers can benefit from an effective use of atmospherics, which directly influences the shoppers' positive behaviour and therefore profitability.

So how can atmospheric stimuli induce such behavioural outcome? Although Blackwell *et al.*'s (2006) above definition does not include any mention of the influence of store atmospherics on the mediating emotion, it can be argued that the behavioural outcome is a result of the emotional, as well as cognitive, state of the shoppers that was induced by store atmospherics (Tai and Fung, 1997; Turley and Milliman, 2000), and this is reflected and explicitly stated in Kotler's (1973) definition of atmospherics above. Scherer (2005) argues that the emotions of a human become a motivational foundation for the consequential behavioural tendencies, and they have a strong effect on consequent behaviour, often interrupting on-going behaviour sequences and generating new goals and plans. Nevertheless, some academics highlight the lack of attention on emotional and cognitive responses being the mediating variables between atmospheric stimuli and shopper behaviour (Garlin and Owen, 2006; Demoulin, 2011). Indeed, there are studies, which suggests in-store atmospheric stimuli have a significant impact on shoppers' emotions and cognitive evaluations, and subsequently behavioural outcome (Tai and Fung, 1997; Turley and Milliman, 2000). For example, Tai and Fung's (1997) empirical research shows that in-store environment stimuli are positively related to the level of pleasure experienced in the store. Sherman *et al.*'s (1997) research have shown that ambient cues, including music, have an impact on arousal that leads to the money spent and numbers of items purchased. Furthermore, it is found that environment-induced emotions in the store are positively related to in-store shopping behaviour (Tai and Fung, 1997). Therefore, above atmospheric studies commonly suggest that a skilful manipulation of an atmospheric stimulus can lead to a favourable shopper behaviour (i.e. longer duration of the stay in the store, increase in the money spent in the store) by influencing a variety of psychological (emotional and cognitive) state of shoppers.

3.2.1 Music and its impact in in-store retail settings

From the above section, it is fair to state that atmospheric stimuli are a vital store element that a marketer should consider as it influences shoppers' emotions and cognitive evaluations, and subsequently the behavioural outcome in an in-store retail

environment. Music has been considered as one of the most influential store atmospheric cues that impact consumer emotions, cognitive evaluations and behavioural outcome in an in-store retail environment, and there have been numerous studies carried out to understand its impact (Milliman, 1986; Bruner II, 1990; North and Hargreaves, 1998; North *et al.*, 1999; Oakes, 2000; Oakes *et al.*, 2013).

Before discussing the role and impact of music, there is a need to discuss the definition of “music” used in this study, as different cultures have different ideas and classifications about what music is (Godt, 2005).

3.2.1.0 Definition of music

There are many versions of definitions of music. Levinson defined music as an art process by saying that music is "sounds temporally organized by a person for the purpose of enriching or intensifying experience through active engagement (e.g., listening, dancing, performing) with the sounds regarded primarily, or in significant measure, as sounds" (1990:273). Nevertheless, some argue that music is not always intended to intensify experience (Kania, 2011; Davis, 2012). Kania defines music as “(1) any event intentionally produced or organized (2) to be heard, and (3) either (a) to have some basic musical features, such as pitch or rhythm or (b) to be listened to for such features” (2011:12). Nonetheless, this lacks any aesthetic definition of music. Godt (2005), on the other hand, offers a very basic but comprehensive and practical definition of music from an ethnomusicological point of view, which can be applied to music in any culture;

“Definition (1) Unwanted sound is noise. (2) Music is humanly organised sound, (3) organised with intent (4) into a recognisable aesthetic entity (5) as a musical communication (6) directed from a maker (7) to a known or unforeseen listener, (8) publicly through the medium of a performer, (9) or privately by a performer as listener. (10) As far as I know, ethnologists have never found a human society that does not make music.” (2005:84)

This definition includes the potential of music being a noise as an “unwanted sound” as well as an aesthetically appreciated entity. This notion is important as Godt (2005) acknowledges music contextually as an aspect of social entity, and one piece of music may be perceived as pleasant in one context, but the same music may be considered as

unwanted sound and therefore noise in another context. The contextual element is significant in this study in terms of evaluating the impact of music, and therefore, Godt's (2005) definition of music is most suitable to use in this study. Structurally, music is known to possess three characteristic elements; time, pitch and texture. They are defined by Bruner II (1990) as follows;

Time related characteristics

Tempo (or *tempi* for plural) is the speed or the pace at which a rhythmic pattern progresses. It is suggested that music over 94 beats-per-minute (BPM) is considered fast, and less than 72BPM slow (Milliman, 1982; Wu *et al.*, 2008; Ding and Lin, 2012). *Rhythm* is the pattern, or the accents given to beats or notes within a piece of music.

Pitch related characteristics

Melody is the arrangement of single notes to form a sequence within a piece of music. Movements in melody can be either ascending in pitch or descending in pitch. Repetitions of notes and leaps in pitch is also possible within a melody. *Mode* refers to the series of notes, arranged in a scale of ascending pitch, which provides the tonal substance of a song (Apel, 1969). The two best known modes in contemporary Western music are the major and the minor modes. *Harmony* occurs when notes are played simultaneously. Harmonies can be consonant or dissonant. Consonant refers to notes or chords producing a pleasant and agreeable subjective reaction whereas the dissonant refers to sounds evoking an unpleasant subjective reaction.

Texture related characteristics

Timbre refers to the use and distinctiveness in tone within different instruments (i.e. sound of violin compared to the sound of a piano). *Orchestration* (or *instrumentation*) is the combining of multiple instruments to produce the complex texture within a piece of music. *Volume* also contributes to the texture of music and refers to the loudness or softness in which the musical passage is played.

In addition to evidence for music being able to facilitate pleasantness by providing an aesthetic feature in a store environment, it has been evidenced that a combination of the above characteristics of music can influence and manipulate a variety of consumer emotions and cognitive evaluation such as perception of time, persuasion in choice, and activity speed even when shoppers are unaware of the music (Turley and Milliman,

2000). According to Bruner II (1990), music “acts on the nervous system like a key on a lock, activating brain processes with corresponding emotional reactions” (1990:94). Music conditioning may control customer behaviour beyond the individual’s musical preferences, and it is capable of evoking “non-random affective and behavioural responses in consumers” (Bruner II, 1990:99). Furthermore, it is also evidenced that having a mere presence of music is vital in a retail environment is important, as retail environment without any music can result in an uneasy and uncomfortable feeling for shoppers (Beverland *et al.*, 2006). In other words, music is an essential store element, without which, shoppers may avoid staying in a store environment.

In the next upcoming sections, detailed effects of music on emotional, cognitive and behavioural outcomes of shoppers will be discussed to outline the summative effect of music as a stimulus on shoppers, both physical and in online retail and service settings. Firstly, however, the significance of shoppers’ emotional and cognitive responses in a retail environment needs to be explicitly defined and deliberated. In the next section, the Pleasure-Arousal-Dominance (PAD) measurement of emotional dimensions is introduced, and the Stimulus-Organism-Response (SOR) framework is presented to assess the impact of atmospherics on emotions and cognitions as well as a behavioural outcome.

Unsurprisingly, the SOR framework has been modified and elaborated further in the field of environmental psychology. One of the most established examples is the Servicescape framework introduced by Bitner (1992). Bitner refers to deliberate environmental cues such as décor, lighting and music, as opposed to natural environmental cues such as natural noise, other shoppers, and weather (Bitner, 1992; Lin, 2004). The Servicescape framework conceptualises how these cues can influence both shoppers’ and workers’ impression formation and behavioural outcome. Servicescape is also in line with other marketing models such as Blackwell *et al.*’s (2006) framework that shows marketer mediated stimuli impacts on the consumer emotions, and subsequent behaviour in a retail environment.

Although many prior studies focus on the effects of environmental stimuli directly on individuals’ emotions and behaviours, it has been claimed that cognitive processing within the Servicescape usually gets disregarded (Lin, 2004). Following Gestalt’s psychological point of view that suggests humans capture a holistic mental image of

the environment, Lin (2004) believes that the cognitive grouping of the stimulus happen even before the stimuli influence the emotion of the shoppers. Furthermore, the shoppers' emotion is followed by the cognitive evaluation before it reaches the approach/avoidance behavioural outcome (Lin, 2004). This indicates that atmospheric stimuli may have a significant impact on shoppers' cognitive state as well as emotional and behavioural outcome. This is supported by evidences showing the impact of music on shoppers' cognitive evaluation as well as shoppers' emotions (see sections 3.2.1.1 and 3.2.1.2 for detailed discussion).

Furthermore, Oakes' (2000) Musicscape model expands on Bitner's (1992) Servicescape framework that "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. Musicscape focuses particularly on music, which is one of the Servicescape ambient factors, and it only looks at the influence of music on shoppers. The Musicscape model is based on empirical evidence from previous studies on music and consumer behaviour. It aims to demonstrate the interaction between different musical variables and valence moderators affecting shopper emotional and cognitive responses subsequently leading to a particular consumer behaviour (Oakes 2000). In comparison to the SOR framework and Servicescape model, the Musicscape model explores in detail each variable; independent musical variables, valence moderators, internal response moderators, and behavioural outcomes (see Figure 3.6).

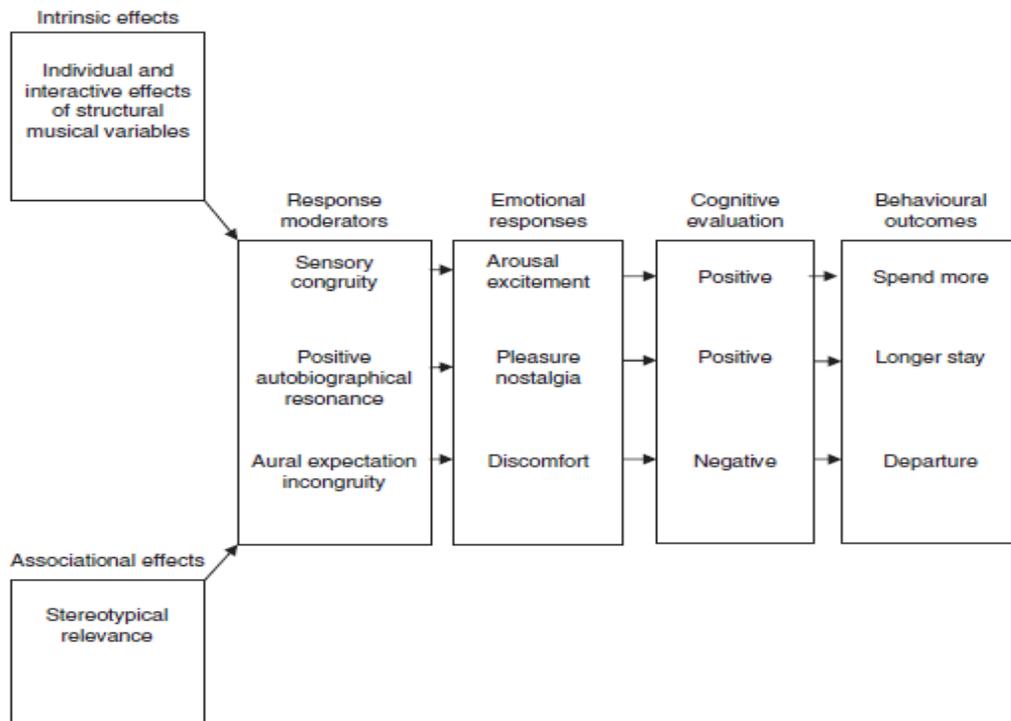


Figure 3. 6 The MusicScape model (Oakes et al., 2013)

Nonetheless, the model itself was developed as a conceptual model, and to the author’s knowledge, no empirical studies have studied its applications on online retail environment. Furthermore, while the MusicScape model explores independent musical variables in detail, the model is criticised for being extremely narrow in focus and lacking in illustrating extensive stages of consumer purchasing process such as search and evaluation of product information and intentional behaviours. This model, however, emphasises and reiterates the fact that music has an impact on the emotional and cognitive states of shoppers, which subsequently influences behavioural outcome, and it shows the effect in progressive stages. To date, the MusicScape model has not been applied to online retail settings, and it could be argued that the model has the potential to become the basis of an online model, which measures the effect of music as a web atmospheric.

There are a number of studies that have shown how different elements and characteristics of music can impact emotions, cognitive evaluations and behavioural outcomes in both retail and service settings. These studies and findings are discussed extensively in subsequent sections.

3.2.1.1 The impact of music on the shoppers' emotions in an in-store retail environment

The Musiccape model conceptually indicates that music as a store atmospheric can influence shoppers' emotions and cognitive evaluation, and subsequently a desirable shopper behaviour. Morrison and Beverland (2003) go further to say that creating an emotional link between the music and the brand image enables the retailer to approach the right target market and provide the shoppers with an inclusive shopping experience. Synthesis of previous literature by Garlin and Owen (2005) claims that the mere presence of music in the background has a positive effect on patronage and feelings of pleasure. Additionally, familiarity and how much shoppers like the music has a positive effect on the shoppers. Nevertheless, music can be characterised by the objective structural properties of time, pitch, and texture (Bruner II, 1990), as well as instrumentation, volume, and dynamics (Knoferle *et al.*, 2012) and variations in each individual musical property are known to induce different shopper emotions and cognitive evaluations, and therefore various behavioural outcome.

Firstly, many studies have supported the theory that the speed of the shopper activity is influenced by the tempo of background music, which is briefly outlined in the section 3.1.1.0. Musical tempo refers to the speed of a musical piece measured in beats per minute (BPM), and it has been evidenced to have a great correlation with arousal, which leads to behaviour changes such as activity speed (Garlin and Owen, 2005; Kampfe *et al.*, 2010; Knoferle *et al.*, 2012). Fast music has been found to increase listeners' self-reported arousal levels whereas slow music has been found to decrease listeners' self-reported arousal levels (Chebat *et al.* 2001; Husain *et al.* 2002). In a retail environment, a variation of tempi can be used to provoke different shopper behavioural outcome. For example, Milliman's (1986) study showed that slower music slowed the pace of in-store traffic flow in a supermarket, whereas fast music accelerated the pace of in-store traffic flow. This implies that, if a faster turnover in the retail or service space is required, then faster music is more beneficial. Whereas if a retailer would like to encourage the shoppers to stay longer to extend the time and potential money spend, then a slower tempo may be more beneficial. Furthermore, the tempo of music has also been evidenced to affect time perception (Cladwel and Hibbert; 1999; Oakes 2003). Cladwel and Hibbert (1999) found that slower music could also encourage the

underestimation of time spent, and subsequently a longer stay in the retail and service environment.

Interestingly, in Kellaris and Kent's study (1993), the finding shows that the combination of speed and genre produce different effects on arousal and pleasantness between the speed and genre. Faster speed and consonant keys increased the pleasantness of classical, but not pop, music. Faster speed was associated more with arousal with pop, but not classical, music. The interesting suggestion from this study is that if inducing pleasantness is needed without increasing arousal, manipulation in tonality may be more beneficial than changing tempo as pleasantness is, in fact, independent of arousal. Although this study was based on a laboratory experiment and real-life implication may be difficult, it underlies the relationship between pleasantness, arousal induced by tempo and variation in the genre.

Volume is also related to arousal. It has been found that customers spend less time when the music is louder (North and Hargreaves, 1997). In a different situation such as at a restaurant, high volume has an effect on the consumers' time spent, as a restaurant regularly acts as a social environment, and therefore loud music may not be favoured. Nevertheless, it is also found that louder music evoked arousal effect and creates faster alcohol assumption (Guéguen *et al.*, 2008). Although this research can be criticised due to its methodology (sample size was small, there is gender bias and the range of drink tested is limited), it is a valuable contribution of suggesting the linkage of sales with the volume of music.

The above studies suggest that structural properties such as speed and volume of music have been found to affect shoppers' emotions, and specifically, it is noticeable that music influences the shoppers' arousal state, in retail and service environments. Furthermore, emotions (pleasure and arousal) evoked by music in a retail and service environment are very closely related to, and can mediate, the cognitive evaluation of the environment (Demoulin, 2011). Nonetheless, some believe that pleasure and arousal which affect cognitive evaluation of shoppers is highly associated with the congruity (fittingness) of music rather than the structural variables (Spangenberg *et al.*, 2005; Demoulin, 2011). The impact of music on cognitive evaluation is discussed in the following section.

3.2.1.2 The impact of music on holistic cognitive evaluation in an in-store retail environment

The positive emotions induced by music are evidenced to lead to a positive and better evaluation of the store environment (North and Hargreaves, 1997; North and Hargreaves, 2003; Oakes and North, 2008; Demoulin, 2011). In other words, music has a positive impact on cognitive states as a consequence of the positive emotions it can evoke, which in turn, leads to positive and favourable marketing outcomes such as an increase in customer spending as well as purchase level.

It has been evidenced that favourable store and product evaluation is not the consequence of shoppers listening to their preferred music. Instead, the ‘fittingness’ of the music strongly influences the customer behaviour and choice in products (North and Hargreaves, 1997) and this appropriateness is called *congruity* of music within the environment. In line with the Musiccape model illustrated in figure 3.5 (Oakes *et al.*, 2013), studies by Spangenberg *et al.* (2005) and Demoulin, (2011) both claim that congruity between the music played in the background, general store environment and product range leads to a higher level of pleasure and arousal. Environmental psychologists argue that congruency affects pleasure and arousal because shoppers respond to the retail environment holistically, and an ambient cue is processed as a part of the whole store environment (Bitner, 1992; Lin, 2004). As discussed earlier, pleasure is experienced when the retail environment and goods or services offered meet the expectations set by biological programs or by social conditioning of an individual (Csikszentmihalyi, 1990). Michon *et al.*’s (2005) empirical evidence supports the view that consumers process atmospheric characteristics more holistically than separate entities. And when congruity between the music played, the product and the other store atmospheric is achieved, it triggers correct product association and positive cognitive evaluation of the store environment. As a result, music congruency provides a pleasurable shopping experience, and in turn, increases customer purchase and spending levels (Oaks and North, 2008). Furthermore, congruity of music with products offered and the store environment can facilitate music association.

3.2.1.2.0 Music congruity and its impact on product association and brand perception

Music association can also be explained in the holistic approach which stems from Gestalt psychology (Schiffman, 2001). As briefly explained earlier, the Gestalt approach believes that the individuals’ behaviours are a result of their interaction with

their environment, and individuals try to make sense of the overall structure and the relationship between components within the environment (Schiffman, 2001; Lin, 2004). If congruity between the music and the products offered is achieved, music can attract attention to particular products by evoking memories related to the specific music (Chebat *et al.*, 2001). The result of the study by North *et al.* (2016) indicates that music indeed influences product choice by its capability to prime related concepts in a shopper's memory and once primed, music can activate the semantic network and influence the product choice to be congruent with the music. For instance, North *et al.*'s (1999) result shows that customer's "primed" knowledge of musical origin leading to 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. This indicates that if there are any specific products that are considered to increase profit, playing music associated with the origin of the product may be beneficial. Similarly, the use of authentic music to fit the retail and service environment and products offered, can induce a better shopping and service experience for consumers. For example, Indian music is commonly used at a curry restaurant, which creates the right atmosphere for the dining, and subsequently pleasurable experience. Having more authentic music playing could also influence customers' perception and response to the authenticity of the product.

As well as the origin of the music and product congruity, a specific genre of music is associated with a particular retail and service atmosphere, and it can change the perception of the store of the brand. For example, the study by North *et al.* (2003) showed that playing classical music at a restaurant can lead to higher customer spending. The sophisticated atmosphere created by music encourages patrons buying extra and indulgent products, such as dessert, coffee or expensive wine (North *et al.*, 2003). Similarly, North *et al.* (2016) suggest 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 and Hargreaves, 1998; North *et al.*, 2016). This indicates that playing classical music can achieve the potential to promote luxury products in a retail store as well as portraying the store image as high-end. Jacob *et al.*'s (2009) study also demonstrated that playing love songs and romantic music at a florist increases the mean money spend when compared to playing pop music or no music. This indicates that it is important to select a suitable genre or type of music

played in a retail store, as shoppers can interpret (or misinterpret) the store image and identity which the marketer wants to portray by the music selection. Chebat *et al.* (2001) go even further to say that manipulation of music played in-store can change the perception of the store image, and a mismatch of the in-store music can potentially damage not only the store image, but also the brand image.

As well as store image and identity, some advertising literature argues that music can stylistically capture and represent brand image, identity, attitude and essence better than another form of communication (Eckhardt and Bradshaw, 2014). Equally, marketing studies such as Morrison and Beverland's (2003) demonstrates examples of some retailers (Abercrombie and Fitch, Prada, Olive Garden, Red Lobster) have already been implementing background music as a tool to enhance their brand positioning, store and brand image, sales strategy and customer experience by observing the practical use of background music in retail stores. Beverland *et al.* (2006) argue that, as a result of playing the style of in-store music that "fits" the brand or store image, this reinforces pre-perception of the brand. This signals important cues such as brand positioning, target market and even the quality of the goods as well as triggering emotional response resulting in a positive cognitive appraisal.

3.2.1.3 Summary of the impact of music in an in-store retail environment

The literature discussed in the above sections highlights the role and importance of music as a store atmospheric on consumer behaviour in a physical in-store retail environment. Music as an in-store atmospheric can enhance desired consumer behaviour by triggering shoppers' emotions and cognitive evaluation. Nowadays, big brand names such as Macy's in the USA and Thomas Pink in London, alongside many others, use specialist music programmers such as Mood Media and PlayNetwork to design in-store music playlists that match and reflect the brand image, brand positioning, and the lifestyle of the shoppers. Retailers might offer specific descriptions of their target customers and suggest specific artists and songs if they feel necessary (The Wall Street Journal, 2013). Due to the contemporary music consumption style, music can be accessed anytime and anywhere the consumers want through a variety of legal digital platforms (i.e. YouTube, Spotify) (Sinclair and Green, 2016). Taking this transformation of the music consumption as an advantage, some retailers such as Abercrombie & Fitch and Victoria's Secret now develop its in-house playlists and make them available to shoppers on their website or on an app for the shoppers from

outside the physical store. This way, the retailers can offer the shoppers an extended shopping experience that enables them to be mobile, be accessible and be associated with the favourite brand wherever the shoppers are, and in effect, it enables the retailers to tie the shoppers to the brand. Linking the brand and music, the retailers enable shopping experience that goes beyond purely buying products in a store.

It is obvious that practitioners started recognising the importance and the choice of music played in their retail stores. In the UK, Hammerson, a large retail management company, carried out an experiment as a practitioner in their shopping centres to see whether the music played in the background influenced the behaviour of the shoppers (BBC, 2015). Their brief result and conclusion are that soothing and relaxing music could be more beneficial in a shopping centre instead of generic pop music. Although the result published from this experiment was very limited and somewhat subjective, it emphasised the effect of music evoking a positive or negative change in shoppers' behaviour and perception in a real-life shopping environment. Nevertheless, music has not always been seen as a positive stimulus (Milliman, 1986). Sinclair (2017) acknowledges that misleading or misunderstood academic information could be partly responsible for music placement in a retail environment without any thought (so-called Piped-music or Muzak), which is often criticised by both individuals and organisations. Piped music, often forced upon shoppers in a retail space, has been accused of being not only irritating but could affect human health (Pipedown, 2017) and this finding has stimulated a number of retailers, such as Marks and Spencer, to turn off music in their stores completely. Music can create misleading personal judgements about the brand or product positioning, particularly if there is an incongruity between the selection of music and the retail offer, which can result in shoppers' negative evaluation of the retail experience (North *et al.*, 2016). There is a clear message for retailers about the need to consider the type and the relevance of music being played within a retail store setting, and the marketing studies need to offer a practical contribution, which fills the knowledge gap between the academia and practitioners.

The retail landscape and format are changing from physical in-store retail to multichannel retailing as discussed in Chapter Two, and most significantly the use of the Internet in shopping. Online retail has begun to transform not only the buying method but the analysis of the whole retail setting and of consumer purchase behavior. Furthermore, Sinclair (2017) believes that the recent advances in music technologies

enable retailers to segment individual demographics, behavioural habits, interests, as well as influencing a person's current emotional state and when and where they experience that state. Thus, the next chapter begins with exclusively defining online consumer behaviour, web atmospherics, and the impact of music as a web atmospheric.

3.2.2 The impact of music in an online retail environment

From the previous sections, it is apparent that music as an atmospheric stimulus influences shoppers' emotions and cognitive evaluation, and subsequently their behavioural outcome in a physical in-store retail environment. Some studies agree that music has a similar impact on shoppers in an online retail environment in the same way as physical in-store retail environments, such as its impact on shoppers' arousal and pleasure (Cheng *et al.*, 2009; Lai and Chiang 2012; Ding and Lin, 2012), and cognitive evaluation such as decreasing the perceived risk while shopping online (Kim and Lennon, 2012). Nevertheless, research on the influence of music on shoppers' emotions and cognitive evaluations, and behavioural outcome in an online retail setting, is at an early stage. The limited evidence of the impact of music in an online retail setting is somewhat unbalanced and ambiguous with some studies not observing any significant impact of music on emotional, cognitive and behavioural outcome in an online setting (Kim *et al.*, 2009; Wang *et al.*, 2017).

This is surprising as it is considered that an enjoyable online interface, including using audio and visual interfaces to improve the shopping experience, would play an important role in improving the online shopping environment (Fiore and Kelly, 2007). Some online retail studies have empirically evidenced that music as a web atmospheric indeed has an influence on online consumer behaviour (Eroglu *et al.*, 2003; Koo and Ju, 2010). Despite this, Fiore and Kelly (2007) concluded that there is only a limited number of websites using sound. There is an uncertainty and potential risk that consumers may perceive background sound as annoying (Fiore and Kelly, 2007) and this is posited as the main reason holding retailers back from utilising audio tools to enhance their website (Fiona and Kelly, 2007). Nevertheless, Fiore and Kelly (2007) also suggest that an appropriate use of music can achieve better communication of product information and enhance online shopping experiences.

In the next sections, web atmospherics, in general, is defined, and in particular, current knowledge on the impact of music as a web atmospheric.

3.2.2.0 The role of atmospheric stimulus in an online retail setting

The online shopping environment has traditionally been associated with primarily consumptive shopping behaviour with an emphasis on price, convenience and functionality (Park and Kim, 2003). More recently, however, an online retailing environment is being considered as a platform, which has the potential to offer enjoyable experiences, and studies have evidenced that online shoppers place as much importance on experiencing hedonic enjoyment as when shopping in-store. (Childers *et al.*, 2001; Koufaris, 2002; Eroglu *et al.*, 2003). With recent technological improvements, shoppers are attracted to the time efficiency and amount of information available through online shopping as it provides greater value and convenience (Eroglu *et al.*, 2001; Browne *et al.*, 2004). Due to technological advancement and logistical improvements, large international corporations, as well as local small-medium-enterprises (SMEs), have opportunities to penetrate the Global retail market (Savrula *et al.*, 2014). Nonetheless, the ease of entry to Global market via e-commerce means an increase in competition and focusing on traditional retail attributes such as a lower pricing advantage in a very price competitive online market, is proven to be less effective as customers have the chance to access global markets to find the best offer. Hence marketing innovation in website design and content is beginning to gather more importance for retailers as a way to differentiate themselves from competitors along with technical functionality such as search and navigation capacity (Ding and Lin, 2012; Gai and Bao, 2014). Furthermore, one of the main disadvantages to online shopping is that shoppers cannot experience the real products before they buy. This means that shoppers are likely to rely on both low task-relevant online information (i.e. audio features, animation, colours) as well as high task-relevant information (i.e. price, size, quantity) to comprehend and appreciate the online store environment and product offered (Eroglu *et al.*, 2001). Thus, there is a potential in which web atmospherics can be utilised to communicate non-tangible information (i.e. brand image) to improve shopping experiences by minimising the barriers of online shopping (Fiore and Kelly, 2007). In this regard, it can be argued that the role and impact of web atmospherics could be more influential than physical in-store atmospherics (Kim and Lennon, 2012). Nevertheless, research on the role and impact of different web atmospherics is still understudied. Dailey (2004:796) defines web atmospherics 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”. Manganari *et al.* (2009) and Penz and Hogg (2011) concluded that there are no clear distinctions between online and physical in-store retail in terms of the mediating effects of consumers’ emotions on purchase intentions. This indicates that manipulating web atmospheric characteristics can impact shoppers’ psychological, (both emotional and cognitive), and behavioural outcomes, and create an effective and attractive online retail environment akin to the traditional in-store atmospherics.

In many previous online atmospheric studies, the SOR framework has been applied to web atmospheric models akin to in-store atmospheric studies (Eroglu *et al.*, 2001; Eroglu *et al.*, 2003; Koo and Joo, 2010; Kim and Lennon, 2012; Ding and Lin, 2012). As expected, there are some online specific variables which were added to those models, such as the task-relevant level of the content, which indicates how relevant the information that atmospheric stimuli provide are in regard to completing the shopper's goal, or personal character moderators such as involvement and atmospheric responsiveness of the shoppers (see Figure 3.7).

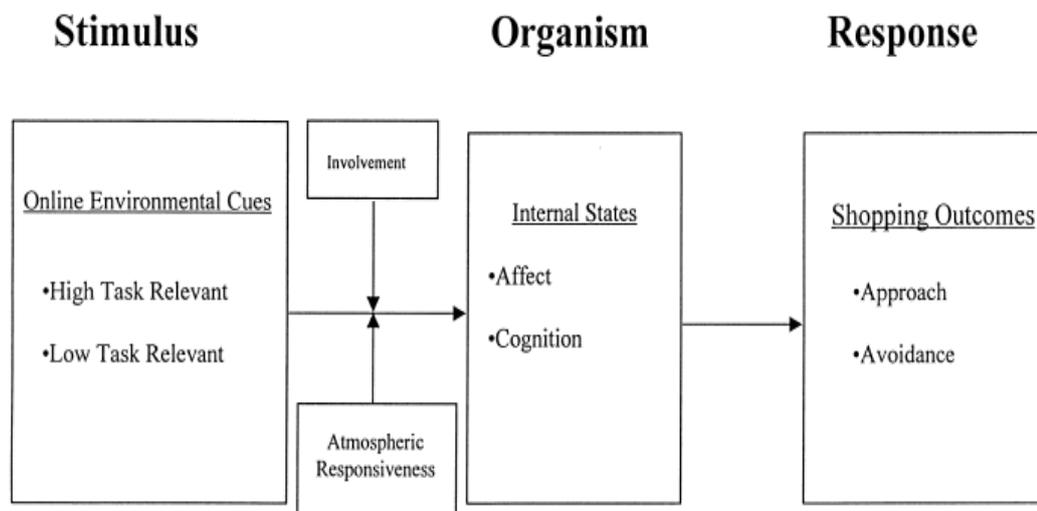


Figure 3. 7 The SOR framework adapted to online shopping (Eroglu *et al.*, 2001)

Furthermore, evidence from other previous online consumer behaviour studies support the theory that web atmospheric stimuli affects consumer behaviour and choices by eliciting shoppers’ emotions and cognitive evaluation when shopping online (Koufaris, 2002; Eroglu *et al.*, 2003; Constantinides, 2004; Cheng *et al.*, 2009).

By empirically testing the online model based on the SOR framework, Koo and Ju (2010) have demonstrated and confirmed the impact of web atmospherics on consumer

emotions such as arousal and pleasure, which subsequently influence purchase intentions. Nevertheless, this model fails to explain how individual web atmospheric stimuli impact on online consumer emotions, cognition and buying behaviour. In addition, although some studies have attempted to uncover the impact of various web atmospherics on shoppers' emotional, cognitive and behavioural outcomes, the mechanism of how a web stimulus, such as music, can affect those responses are still understudied compared to in-store atmospheric studies.

3.2.2.1 The impact of music as a web atmospheric stimulus on online consumer behaviour

Although there are only a few studies that look at 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. There is previous research evidence that music has an impact on consumer emotions and behavioural outcomes in an online retail setting (Cheng *et al.*, 2009; Lai and Chiang, 2012), and some have examined the impact of music on emotions in an online fashion retail context (Kim *et al.*, 2009; Kim and Lennon, 2012).

Kim *et al.* (2009) used a mock apparel website to examine the impact of music when played in the background, together with some limited product representation on online consumer emotional and cognitive responses, using the SOR framework and the PAD emotional measurement model. Although Kim *et al.* (2009) claim that there was no significant effect for music on shoppers' emotion, the validity of this result is questionable. To elaborate, there were only five product items chosen for the mock apparel website whereas real apparel websites would typically have much more choice. Furthermore, pop music was the only genre they considered, and musical genre congruity with the other components of the website was not reflected. As discussed earlier, musical congruity with other store aspects has been proven to have a significant impact on arousal and pleasure, and not considering musical congruity can impact the result. It can also be criticised that the music was played in the background by another audio player device rather than played from the device which participants were shopping on, and music played in the background in the room may not be perceived as an integrated website attribute. Kim *et al.* (2009) recognise this last point as their major research limitation and suggested that future research should use telepresence design in which music is played on the same device, as the one used to shop with, enabling music to merge into one virtual shopping experience.

On the other hand, an empirical study by Cheng *et al.* (2009) shows that, in fact, both music and colour influence the consumers' perception and their emotions online. Their participants experienced higher arousal and pleasure with faster music and warmer colour, whereas cool colour is associated more with a lower level of arousal but a higher level of pleasure. Furthermore, the congruency of the two atmospheric factors is evidenced to enhance consumers' emotions. Yet again, this study suffers from a methodological limitation as Cheng *et al.*'s (2009) conducted their experiment in a laboratory setting and does not reflect the real-life shopping experience. Nevertheless, the result provides a significant implication of the impact of two major web atmospherics stimuli (i.e. music and colour) on consumer emotions. Those emotions can influence shoppers' attitudes, satisfaction and buying behaviour, however, Cheng *et al.*'s (2009) research does not explore further impacts in regard to the relationship between those atmospheric stimuli, emotions and shopping enjoyment in an online retail environment. In other words, it does not explain how those consumers' emotions evoked by music affects shopping enjoyment.

In contrast to Cheng *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 shoppers' emotions as well as subsequent consumer behaviour. Lai and Chiang's (2012) findings show that participants had a higher level of pleasure, arousal and approach behaviour intention when background music was played, compared to having no music while shopping online. 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 retail website (Lai and Chiang, 2012). Likewise, Ding and Lin (2012) came to a similar conclusion that music influences consumers' affective responses in the online environment; namely, that 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, which enhances 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, and slower tempo is associated with a lower level of 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 for arousal if the music itself had an opposite effect to evoking arousal. Nevertheless, Kim and Lennon (2012) have indicated that using music on apparel websites is one way to improve shoppers' risk perception by increasing and 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.

Ding and Lin (2012) continue further to say that the product category (utilitarian/hedonic) mediates the effect of arousal on pleasure, and higher arousal leads to pleasure only for hedonic but not utilitarian products. As clothing is considered a hedonic product category, this mediation effect of product category between arousal and pleasure can be expected to occur. Nevertheless, it must be acknowledged that the two product categories in Ding and Lin's (2012) research are somewhat ill-defined and ambiguous. In their study, video games and household appliances are categorised as hedonic and beer and health drinks categorised as utilitarian products, however, they provide no explanation for the basis of this categorisation.

In contrast to music influencing emotions, the impact on cognitive evaluation such as captivating shoppers' attention may be one of the immediate effects of which music is capable of evoking in an online shopping environment. According to an online shopping survey, after four seconds of entering the website, people's attention span become dispersed, and shoppers stop paying attention to the detail of the website (InformationWeek, 2006). Although too much music will attract attention to the music itself rather than the product (Chebat *et al.*, 2001), music can captivate shoppers' attention encouraging shoppers' judgement to favour the website and retaining shoppers' interest will lead to a longer time duration spent visiting the website (Jones *et al.*, 2014).

3.2.2.2 Summary of the impact of music in an online retail environment

Having reviewed studies, music as a web atmospheric stimulus has a potential to trigger shopper emotions and cognitive evaluations in an online retail setting. Nevertheless, there is an apparent need for further research exploring the relationship music as a web stimulus and shopper emotions and cognition as it is likely to affect behavioural intentions. Considering the methodological limitations reviewed above, developing a

methodological design which enables the replication of an authentic shopping experience seems to be one of the key issues to improve the understanding of real-time shopper responses.

Furthermore, an interesting research 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 the research was carried out in a virtual art gallery and was not tested on common online retail goods, the result indicated that music encouraged the state of immersion in shoppers enabling them to have a more enjoyable and stimulating shopping experience. The result also shows that the more intense the aesthetic experience is, the stronger online behavioural intentions are. Immersion, in Cuny *et al.*'s (2015) study 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 particular 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”. 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 (Gao and Bai, 2014, Richard and Chebat, 2016). Although immersion or *flow* has been evidenced to mediate music as a web atmospheric and behavioural intentions, there is no study to date that has explored the relationship between music as a web atmospheric and shoppers’ state of *flow* in an online retail setting. This indicates that there is a need of a better understanding of the concept of *flow*, and to develop a framework between music as a web atmospheric and *flow* with related variables such as shoppers’ emotions and cognitive evaluations.

To understand the concept of *flow* and its role in an online shopping experience, the definition and current understanding of *flow* are discussed in the next section.

3.3 Chapter summary and identifying the gap in literature

By performing a critical narrative review, the theory of *flow* has been defined and deliberated to justify why it would offer an alternative viewpoint to more traditional online consumer behaviour models by including aspects of hedonic enjoyment to the existing online consumer behaviour theory. The experience of online shopping has a significant impact on shoppers' online intentional behaviour (Hoffman and Novak, 2009; Rose *et al.*, 2012), and it is important for online retailers to understand the effect of web atmospherics on shopper enjoyment, emotions (arousal and pleasure) and cognitive evaluations (attitudes), which can impact on their online shopping experience and subsequent shopper behaviour.

From Gao and Bai's (2014) findings, music as a Site Entertainment web atmospheric cue has a potential to directly influence shoppers' state of *flow*.

Then the impact of music as an atmospheric both physical in-store and online has been extensively discussed. By utilising the PAD emotional dimension model and the SOR framework, many studies evidenced that the key role of music as an atmospheric is the ability to affect shoppers' emotions (namely arousal and pleasure) as well as affecting cognitive evaluations of the store environment, products offered, and the brand in a physical in-store retail settings (North and Hargreaves, 1998; Turley and Milliman, 2000; Oakes, 2000; Morrison and Beverland, 2003; Beverland, *et al.*, 2006; Morin *et al.*, 2007; Knoferle *et al.*, 2012; Oakes, *et al.*, 2013, Petruzellis *et al.*, 2014; Roschk *et al.*, 2017). Limited numbers of online atmospheric studies have also explored the role of music as a web atmospheric, and their findings also suggest that music has an impact on shopper emotions (arousal and pleasure) in an online retail environment (Sherman *et al.*, 1997; Garlin and Owen, 2005; Kampfe *et al.*, 2010). From the in-store and online literature on music and its effect on shoppers, variety in different musical variables (i.e. faster tempo, higher volume) are found to affect shoppers in various ways. Nevertheless, it was evident that there is a lack of understanding in how music affects shopper enjoyment in an online retail environment.

Above findings suggest that there is a clear gap in knowledge between music as a web atmospheric, shoppers' state of *flow*, and shoppers' emotions (arousal/pleasure). For example, shoppers' state of *flow* is determined by shoppers' arousal (Richard and Chebat, 2016), and music has been evidenced as a highly influential stimulus on

shoppers' arousal and pleasure in an online retail environment (Sherman *et al.*, 1997; Garlin and Owen, 2005; Kampfe *et al.*, 2010). These findings indicate that music has a potential to directly affect shoppers' state of *flow*, as well as to indirectly affect *flow* through arousal. Nevertheless, to date, the theory of *flow* has never been applied to evaluate music as a web atmospheric and shopper enjoyment in an online retail environment.

Although the researcher has identified that different musical variables (i.e. tempo, volume) may affect shoppers in a different way, evaluating the presence/absence of music on *flow* (a measure of shopper enjoyment) is considered more appropriate for this study as a starting point to uncover this phenomenon. Furthermore, it is considered that focusing on evaluating the presence/absence of music benefits from providing more straightforward implementations for retailers than to test various musical variables (Wang, *et al.*, 2017).

The aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment

Chapter Four: Generation of the conceptual framework and hypotheses development

4.0 Introduction

The review of the literature revealed a lack of empirical studies that explore the impact of music on shoppers' *flow* (a measure of enjoyment) in an online retail setting. Gao and Bai (2014) identified music as a hedonic low-task relevant web atmospheric cue, which they classify as an attribute of Site Entertainment. Their research found that perceived Site Entertainment directly affects shoppers' state of *flow*. From this, if music can be classified as a part of Site Entertainment, it could be deduced that music directly affects shoppers' state of *flow*. Nonetheless, there is no empirical study, to date, investigating the extent to which music directly affects shoppers' state of *flow* in an online retail environment. What is known is that music as a web atmospheric influences shoppers' arousal and pleasure, the key emotions identified within consumer behaviour studies. Shoppers' arousal and pleasure subsequently leads to a positive behavioural outcome, such as purchase and return intentions in an online retail environment (Ding and Lin, 2011; Lai and Chiang, 2012). In addition, previous research has also shown that shoppers' arousal leads to shoppers' state of *flow* in an online retail environment (Richard and Chebat, 2016). Nevertheless, no research to date has considered the mediating effect of arousal between music as a web atmospheric and shoppers' state of *flow*. The above evidence highlights the gaps in knowledge, which provides the rationale for this study. In this chapter, the researcher presents a conceptual framework based on current knowledge from previous literature. The researcher also proposes several hypotheses to evaluate the relationship between the constructs within the framework.

4.1 Generation of the conceptual framework

A conceptual framework for this study was developed to capture the key relationships between music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure as

well as other notable constructs within an online retail environment. As discussed in the literature review, the models of *flow* in an online shopping context are often based on other online consumer behaviour models. For example, some studies base their models on the Technology Acceptance Model (Koufaris, 2002; Hausman and Siepke, 2009), others on the Stimulus-Organism-Response (SOR) framework (Ong *et al.*, 2012; Gao and Bai, 2014; Richard and Chebat, 2016), whereas others developed new *flow* specific models such as the Interactivity model (Nusair and Parsa, 2011; Noort *et al.*, 2012). The Technology Acceptance Model offers an essential utilitarian point of view, such as ease of use and usefulness of the website in relation to the *flow* state. However, the lack of hedonic and emotional aspects within the model leads to the elimination of this model as a suitable basis for the conceptual framework for this study. The Interactivity model has a very specific focus on the impact of website interactivity on *flow*, and therefore it does not explore the atmospheric aspects of website design. Therefore, the Interactivity model is not suitable for this study either. As discussed in Chapter Three, the model most frequently used when considering atmospheric stimuli and subsequent emotional and cognitive responses of shoppers is the SOR framework (see Figure 4.1). In particular, the Musiccape model (Oakes *et al.*, 2013) was developed from the SOR framework to conceptually illustrate the impact of music in a physical retail environment (see Figure 4.3) and has the potential to be empirically tested and applied to an online retail environment. Furthermore, previous models used to inform the current understanding of *flow* in the literature were also based on the SOR framework (Gao and Bai, 2014; Richard and Chebat, 2016). The conceptual framework for this study, therefore, is based upon the characteristics of the adapted SOR based online models as shown below in Figure 4.1, and Figure 4.2, and the Musiccape model Figure 4.3.

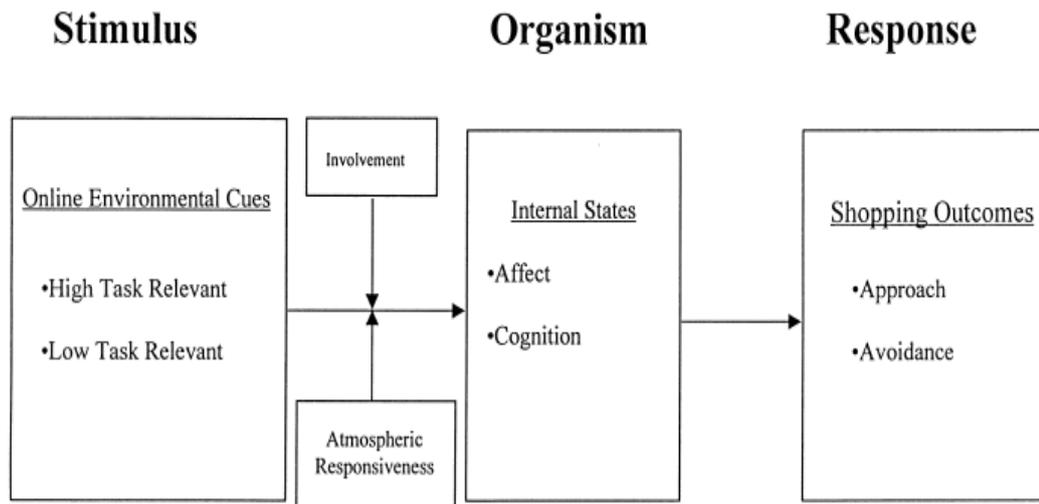


Figure 4. 1 The SOR framework adapted to online shopping (Eroglu et al., 2001)

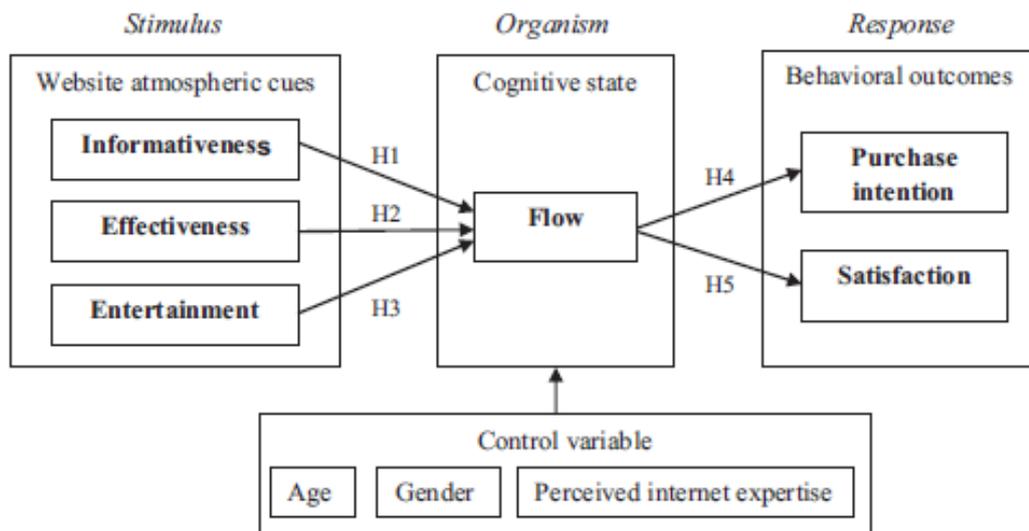


Figure 4. 2 A model of flow based on the SOR framework (Gao and Bai, 2014)

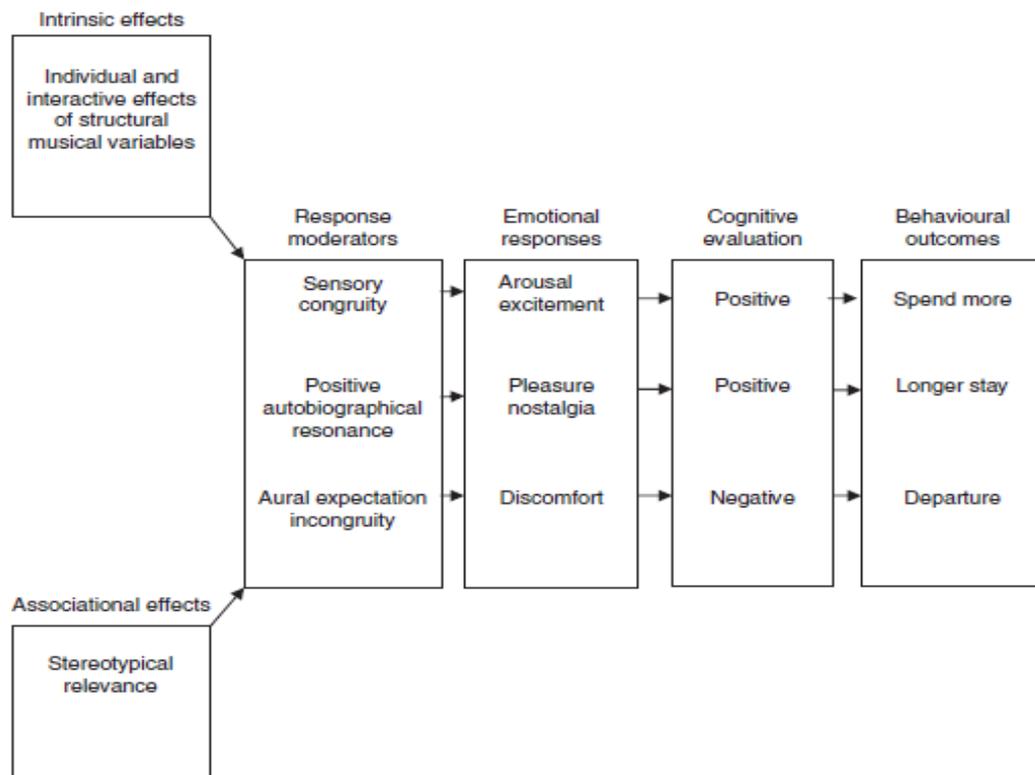


Figure 4. 3 The MusicScape model (Oakes et al., 2013)

After establishing the conceptual foundation for the proposed framework, the full conceptual framework was developed in progressive stages. In the full framework, other web atmospheric characteristics, such as Site effectiveness and Site informativeness, and constructs such as dominance, product attitudes and purchase intentions are included to complete the full picture of the SOR based framework. Nonetheless, the scope of this study is to focus on the investigation of the relationships between four key elements; music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure.

The first stage of the framework development is the relationship between music as a web atmospheric and shoppers' state of *flow* (see Figure 4.4). Gao and Bai (2014) identified music as a hedonic low-task relevant web atmospheric cue that is classified under the Site Entertainment category in their SOR based *flow* model (see Figure 4.1). Site Entertainment reflects the aspects of website design that provide sensory and hedonic elements such as colour, music, action, pictures, graphs, videos, graphs, and interactivity (Cheng and Well, 1999; Eroglu et al., 2003; Gao and Bai, 2014). The role of Site Entertainment elements is to captivate the consumer into the website. Once shoppers perceive the website to be entertaining and creative during the series of

seamless interactions with the website, the shoppers experience loss of self-awareness, leading to more focused attention. In other words, the higher the level of entertainment, the more likely *flow* experience is to ensue (Hausman and Siepke, 2009; Carlson and O’Cass, 2011). Gao and Bai’s (2014) study evidenced that perceived Site Entertainment directly affects shoppers’ state of *flow*. As Gao and Bai (2014) suggests that music is an aspect of Site Entertainment, it can be inferred that music has a potential to directly affect *flow*. Thus, the first step of the conceptual framework shows that music as a web atmospheric directly affects shoppers’ state of *flow* (see Figure 4.4). It must be noted that Site Informativeness and Site Effectiveness are both considered as website atmospheric cues, which directly affects shoppers’ state of *flow* and therefore are included in the framework (see Chapter Three for detailed definitions). Nonetheless, they are not related to music, and therefore are not considered as the key constructs in this study.

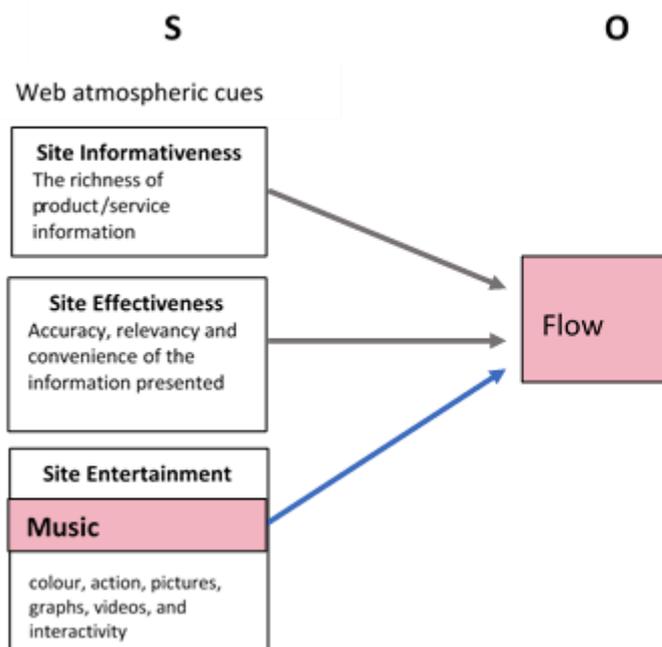


Figure 4. 4 First stage of the conceptual framework

Secondly, music has been found to increase shoppers’ arousal (Sherman *et al.*, 1997; Garlin and Owen, 2005; Kampfe *et al.*, 2010), and shoppers’ arousal is empirical proven to directly affect shoppers’ state of *flow* (Novak *et al.*, 2000; Richard and Chebat, 2016). As discussed in Chapter Three, arousal is one of the emotional dimensions within the PAD (Pleasure-Arousal-Dominant) emotional model. Arousal is

a state of feeling that relates to mental alertness, and it describes the extent to which a shopper feels stimulated, alert or active in an environment (Mehrabian and Russell, 1974). Furthermore, shoppers' dominance is also evidenced to influence *flow* (Richard and Chebat, 2016). Dominance is another emotional dimension within the PAD, which describes feelings of being in (or conversely, feeling the lack of) control. To summarise, the second stage of the conceptual framework shows that shoppers' arousal directly affects *flow* and mediates the effect of music on shoppers' state of *flow*. Furthermore, shoppers' dominance directly affects *flow* (see Figure 4.5). Nonetheless, it should be noted that, although dominance is evidenced to directly affect *flow* (Novak *et al.*, 2000; Richard and Chebat, 2016), there is no empirical evidence to suggest that music has an impact on shoppers' dominance. Furthermore, Richard and Chebat (2016) have demonstrated that shoppers' dominance was not related to other emotional dimensions, namely arousal and pleasure in their *flow* model. In addition, Kim *et al.* (2009) have shown that dominance was not related to attitude nor purchase intentions in their study. Thus, dominance is included yet not considered as a key construct in this framework.

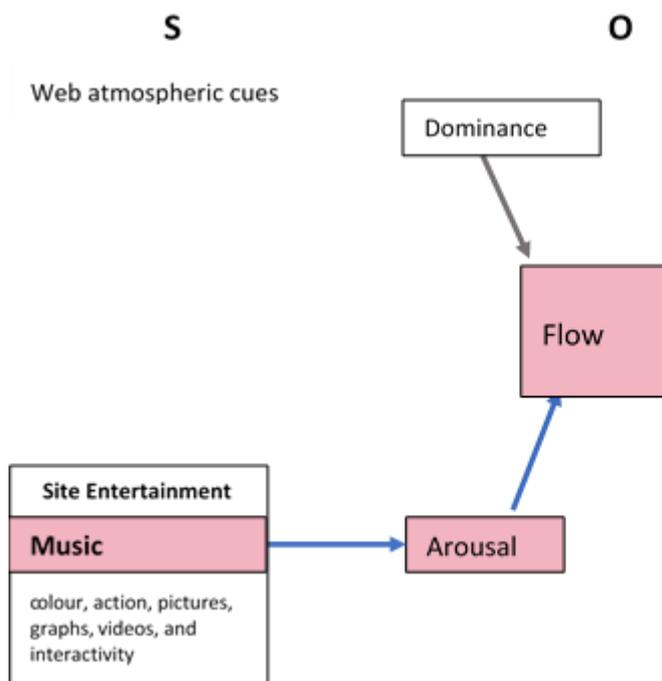


Figure 4. 5 Second stage of the conceptual framework

The next phase of the conceptual framework development shows the effect of shoppers' arousal and the state of *flow* affecting pleasure. It has been evidenced that both shoppers' state of *flow* and arousal affect shoppers' pleasure (Richard and Chebat, 2016). In

contrast to arousal, pleasure is the extent to which a shopper feels pleasant, happy, good or satisfied in the retail environment (Mehrabian and Russell, 1974). The third stage of the conceptual framework, therefore, shows shoppers' arousal directly affecting shoppers' pleasure, as well as the mediating role of *flow* between arousal and pleasure (see Figure 4.6).

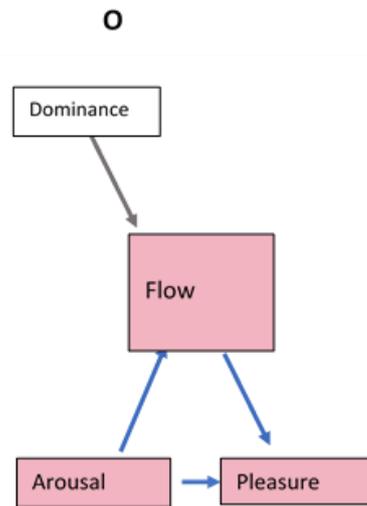


Figure 4. 6 Third stage of the conceptual framework

The final stage of the conceptual framework shows that shoppers' state of *flow* directly affects purchase intentions. In addition, shoppers' pleasure affects product attitudes, which in turn affect purchase intentions (see Figure 4.7). Shoppers' state of *flow* has been found to directly affect purchase intentions (Richard and Chebat, 2016). In addition, pleasure has been shown to lead to further cognitive evaluation such as product attitudes, website attitudes and risk perception (Kim and Lennon, 2012; Oakes *et al.*, 2013; Richard and Chebat, 2016). In particular, positive product attitudes has been found to directly affect shoppers' purchase intentions (Richard and Chebat, 2016). As discussed in the literature review, purchase intentions have been evidenced as one of the most significant behavioural outcomes of shoppers' state of *flow*. Therefore, the full conceptual framework includes product attitudes and purchase intentions as a part of shoppers' cognitive response (O) and behavioural outcome (R). Nevertheless, the key focus of this remains on establishing the relationship between music, shoppers' state of *flow*, arousal and pleasure. Therefore, product attitudes and purchase intentions are considered as the constructs of secondary interest.

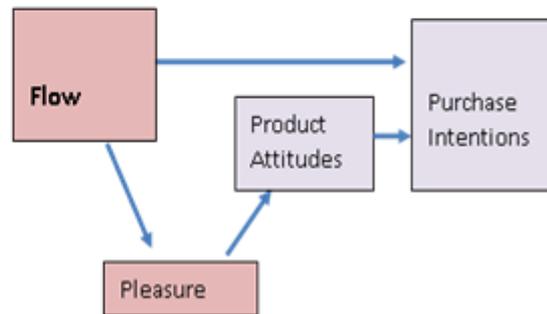


Figure 4. 7 Final stage of the conceptual framework

Summarising the above stages, the full conceptual framework is presented in Figure 4.8. The conceptual framework has adopted the SOR framework. In particular, the framework incorporated Gao and Bai's (2014) SOR based model, the Musicscape model and findings from Richard and Chebat (2016). The full framework includes elements, which are associated with webs atmospheric cues, shoppers' emotions, the state of *flow* and subsequent outcomes. From the objectives outlined in Chapter One, the focus of this study has been narrowed down to an evaluation of the relationships between music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure.

The constructs of primary interest are coloured in pink, and the key relationships of interest are bounded by the dotted line. The originality of this study is to analyse and evaluate the direct relationships between music as a web atmospheric on shoppers' state of *flow* and arousal, and evaluating the variance in paths relationships between shoppers' state of *flow*, arousal and pleasure in two separate conditions (those who listened to music and those who did not). Product attitudes and purchase intentions are presented as constructs of secondary interest and coloured in pale purple. Product attitudes and purchase intentions have already been verified by previous literature (Gao and Bai, 2014; Richard and Chebat, 2016). Nonetheless, some analysis will be undertaken to confirm whether these pathways are consistent with previous research.

Site Informativeness, Site Effectiveness and dominance are found not to be related to music, arousal or pleasure. As can be seen from the framework where there are no paths from music to these constructs. Therefore, the researcher considers them as constructs of less importance to the study, and they will not be included in the analyses.

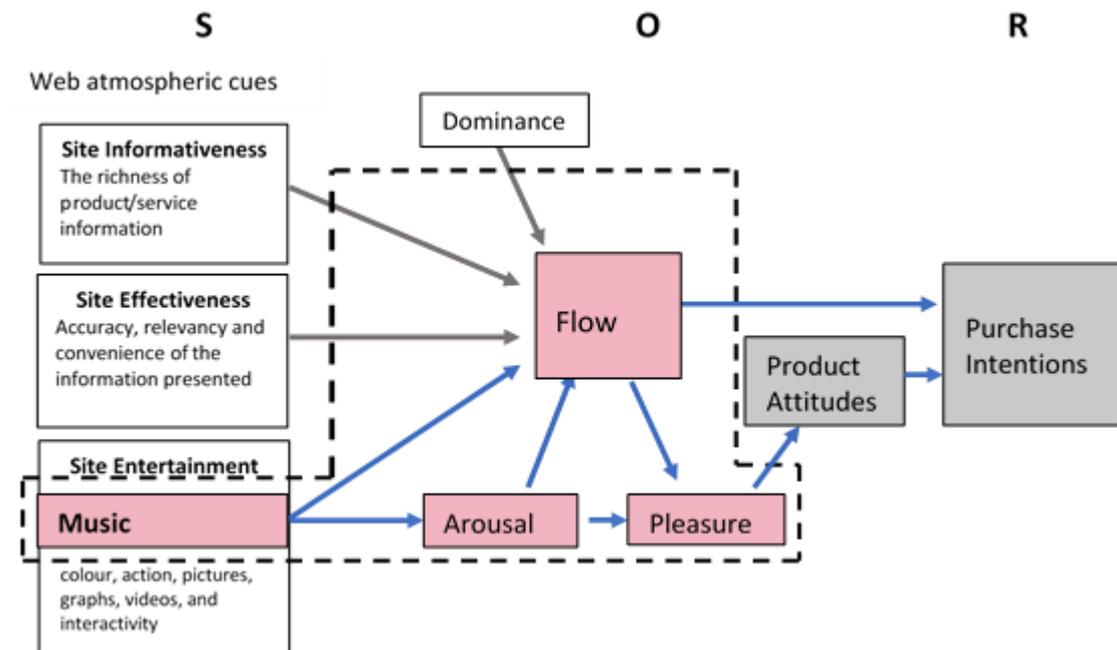


Figure 4. 8 Full conceptual framework

4.2 Hypothesis development

To investigate the key relationships within the conceptual framework (see Figure 4.8), sixteen hypotheses are proposed. Hypotheses one to eleven are proposed to examine the structural relationship between music, shoppers' state of *flow*, arousal and pleasure. Drawing from the full conceptual framework (Figure 4.8), the researcher hypothesises that music has a direct effect on shoppers' state of *flow* and arousal. In addition, the researcher proposes that shoppers' arousal directly affects the state of *flow* as well as pleasure. Furthermore, shoppers' state of *flow* directly affects pleasure. These relationships are hypothesised to be true for the full framework comprising shoppers who listened to music and those who did not, as well as each of the two conditions (those who listened to music and those who did not). As discussed in Chapter One and Three, using the control and intervention approach enables the comparison of the difference in responses between the intervention group (who listened to music) and the control group (who did not listen to music). Therefore, by dividing the dataset into two

groups with music as a grouping variable, it examines the difference in responses which are a result of the presence of music.

Hypotheses twelve to fourteen are proposed to investigate the moderation effect of music between shoppers' state of *flow*, arousal, and pleasure. As shown in the full conceptual framework (Figure 4.8), the researcher proposes that music directly affects shoppers' state of *flow* and arousal, and arousal directly affects *flow*. As the key constructs (*flow*, arousal and pleasure) are proposed to be interrelated, the researcher also proposes that music may also amplify the degree of strength of the relationships between these constructs. In other words, the researcher considers music as a moderator within the *flow*, arousal, and pleasure relationship structure.

Finally, hypotheses fifteen and sixteen are proposed to examine and confirm the relationship between *flow*, pleasure, product attitudes and purchase intentions within the full framework. As mentioned earlier, product attitudes and purchase intentions are constructs of secondary interests. These hypotheses are proposed to provide a comprehensive presentation of the framework and to test whether these pathways are consistent with existing literature.

The breakdown of the hypotheses are as follows:

The first hypothesis investigates the extent to which music directly affects the level of shoppers' state of *flow*. Gao and Bai (2014) categorise music as an attribute of Site Entertainment amongst other atmospheric elements such as colour, action, pictures, graphs, videos, and interactivity. According to Gao and Bai (2014), perceived Site Entertainment directly affects shoppers' state of *flow*. Therefore, it can be inferred that music has the potential to directly affect *flow*. Thus, the first hypothesis is;

H1. Music as a web atmospheric directly affects shoppers' state of flow in an online retail environment

The second hypothesis examines how music as a web atmospheric directly affects the level of shoppers' arousal. Findings from the limited studies on music as a web atmospheric suggest that music creates a high-arousal environment especially when the products on offer are more hedonic in nature (i.e. clothes) (Ding and Lin, 2011; Lai and Chiang, 2012). Thus, the researcher hypothesises that;

H2. Music as a web atmospheric directly affects shoppers' arousal in an online retail environment

Richard and Chebat (2016) demonstrated that shoppers' arousal directly affects the state of *flow* in an online retail environment, and the researcher assumes that this relationship is true for all the shoppers (i.e. full framework comprising all the shoppers). In addition, the researcher assumes that the effect remains the same for both the shoppers who listen to music and those who do not (i.e. control/intervention groups) (see Figure 4.9). Thus, the next three hypotheses are;

H3. Shoppers' arousal directly affects the state of flow for all shoppers in an online retail environment

H4. Shoppers' arousal directly affects the state of flow for shoppers who do not listen to music in an online retail environment

H5. Shoppers' arousal directly affects the state of flow for shoppers who listen to music in an online retail environment

In addition, from Demolin's (2011) findings, shoppers' pleasure follows arousal, but arousal does not proceed from pleasure. It has also been found that there is a positive relationship between shoppers' arousal and pleasure (Richard and Chebat, 2016). The researcher assumes that this hierarchical relationship is true for all the shoppers (i.e. full framework comprising all of the shoppers). In addition, the researcher assumes that the effect remains the same for those who listen to music and who those do not (i.e. control/intervention groups) (see Figure 4.9). Thus, the next three hypotheses are;

H6. Shoppers' arousal directly affect pleasure for all shoppers in an online retail environment

H7. Shoppers' arousal directly affects pleasure for shoppers who do not listen to music in an online retail environment

H8. Shoppers' arousal directly affects pleasure for shoppers who listen to music in an online retail environment

Richard and Chebat (2016) evidenced that shoppers' state of *flow* also mediates the effect of shoppers' arousal on pleasure, and the researcher assumes that this relationship is true for all the shoppers (i.e. full framework comprising all of the shoppers). In addition, the researcher assumes that the effect remains the same for both shoppers who listen to music and those who do not (i.e. control/intervention groups) (see Figure 4.9). Therefore, the next three hypotheses are;

H9. Shoppers' state of flow directly affects pleasure for all shoppers in an online retail environment

H10. Shoppers' state of flow directly affects pleasure for shoppers who do not listen to music in an online retail environment

H11. Shoppers' state of flow directly affects pleasure for shoppers who listen to music in an online retail environment

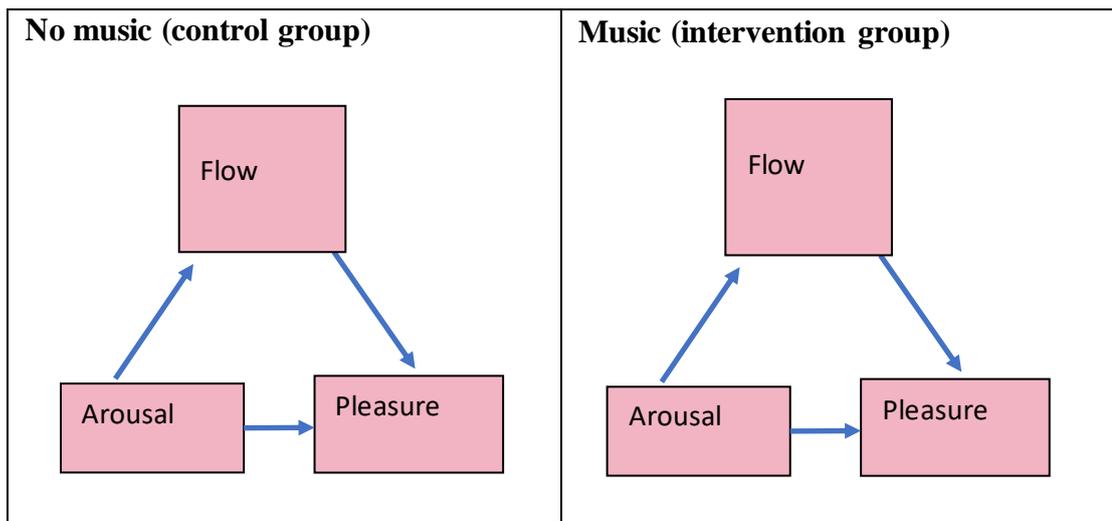


Figure 4. 9 Hypothesised pathways between flow, arousal and pleasure for control and intervention group

Furthermore, from the *H1, H2 and H3*, it is hypothesised that music directly affects shoppers' state of *flow* and arousal, and arousal directly affects *flow*. Thus, the researcher also deduces that music may interact and moderate the relationship between arousal and *flow*. In addition, Morin *et al.* (2007) demonstrated that the presence of music influences shopping outcomes because it reinforces the holistic quality of the servicescape and moderates the contribution of provider-mediated servicescape effects. Although, Morin *et al.* (2007) did not observe the moderating effect of music within

shoppers' psychological responses (i.e. between shoppers' state of *flow*, arousal and pleasure), the researcher infers that music may amplify the degree of strength of the relationships between shoppers' state of *flow*, arousal and pleasure (see Figure 4.10). In other words, the researcher infers music as a moderator within the key constructs (*flow*, arousal and pleasure) in the framework. Thus, the next three hypotheses are;

H12. Music moderates the relationship between shoppers' arousal and flow in an online retail environment

H13. Music moderates the relationship between shoppers' arousal and pleasure in an online retail environment

H14. Music moderates the relationship between shoppers' flow and pleasure in an online retail environment

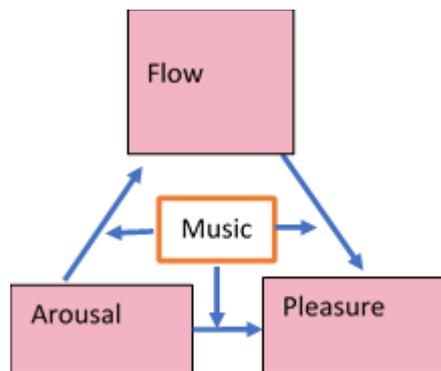


Figure 4. 10 Hypothesised moderation effect of music

Finally, the last two hypotheses are to examine the relationship between *flow*, pleasure, product attitudes and purchase intentions within the full framework. As mentioned earlier, product attitudes and purchase intentions are constructs of secondary interests, and these hypotheses are to and confirm the previous literature and to provide the full picture of the framework. Shoppers' state of *flow* has been evidenced directly affect purchase intentions (Siekpe, 2005; Gao and Bai, 2014; Richard and Chebat, 2016). Therefore;

H15 Shoppers' state of flow directly affects purchase intentions in an online retail environment

Furthermore, shoppers' pleasure directly affects shoppers' cognitive evaluation such as product attitudes (Madden *et al.*,1988). Consequently, product attitudes have been found to directly affect purchase intentions (Richard and Chebat, 2016). Thus the last hypothesis is;

H16 Shoppers' pleasure indirectly affects purchase intentions through product attitudes in an online retail environment

4.3 Chapter summary

Based on the literature that was reviewed in Chapter Three, a conceptual framework was developed capturing the relationship between music as a web atmospheric, shoppers' state of *flow* arousal and pleasure. The model includes other antecedents of *flow* such as Site Informativeness, Site Effectiveness and dominance, and the outcomes such as product attitudes and purchase intentions. Nevertheless, as emphasised throughout in this chapter, the scope of the study is to focus on the relationship of the four constructs which are; music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure. To test these relationships, sixteen hypotheses were proposed. Although the conceptual framework suggests music as a predictor of shoppers' state of *flow* and arousal, the researcher also proposes the possibility of music as a moderator between the constructs. This proposition is reflected in hypotheses eleven to fourteen. The sixteen hypotheses are mapped on the full conceptual framework, control and intervention models, and moderation effect model (See Figures 4.11, 4.12 and 4.13).

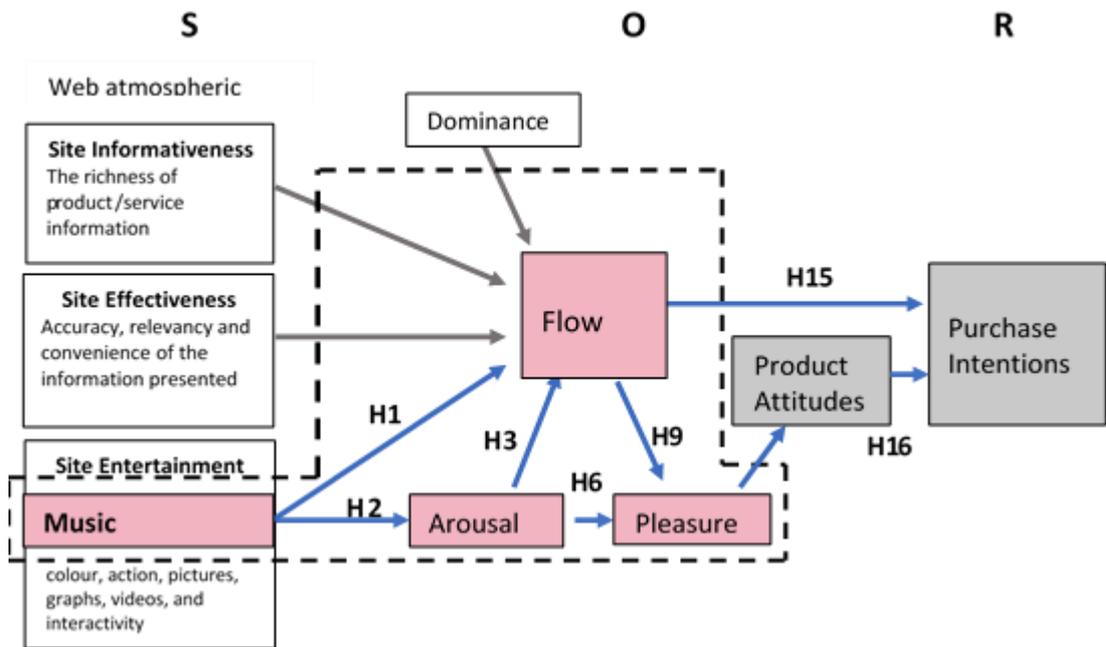


Figure 4. 11 Full conceptual framework with the hypotheses label

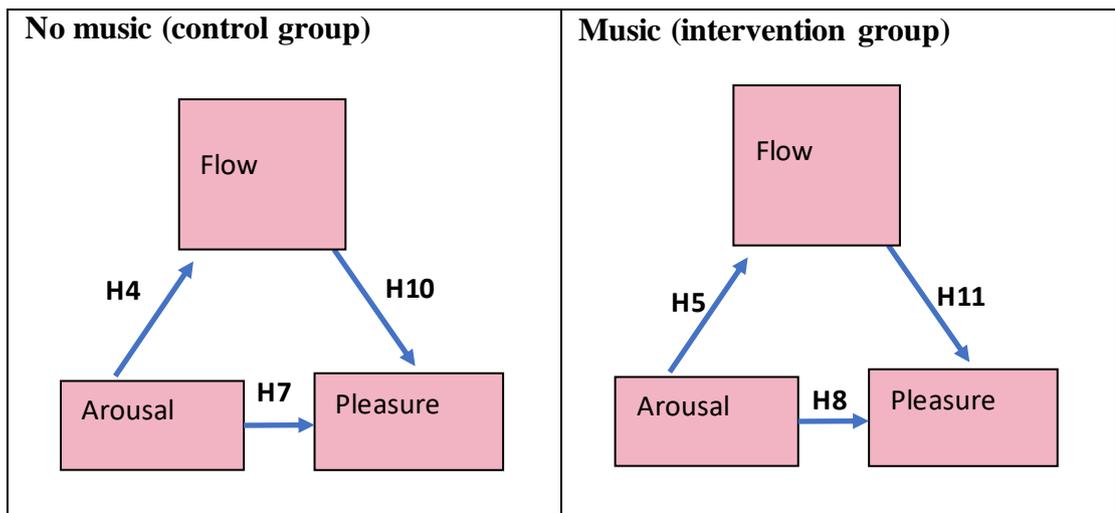


Figure 4. 12 Control and intervention models with the hypotheses label

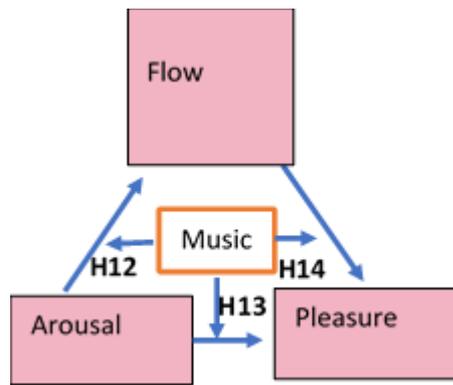


Figure 4. 13 Moderation effect model with the hypotheses label

To test these hypotheses, an appropriate methodology and data collection tools are discussed in the next chapter.

The aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment

Chapter Five: Methodology and methods

5.0 Introduction

To reiterate, the aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment. Theoretical arguments and empirical evidence outlining the current knowledge on music as an atmospheric, its impact, *flow* and its importance were discussed in the Chapter Three. Based on the literature reviewed and the gap in the knowledge identified, the conceptual framework was presented highlighting the relationships between music as a web atmospheric and shoppers' state of *flow*, arousal and pleasure. From the conceptual framework, sixteen hypotheses were proposed in Chapter Four, and labelled onto the Figures 5.1, 5.2 and 5.3.

H1. Music as a web atmospheric directly affects shoppers' state of flow in an online retail environment

H2. Music as a web atmospheric directly affects shoppers' arousal in an online retail environment

H3. Shoppers' arousal directly affects the state of flow for all shoppers in an online retail environment

H4. Shoppers' arousal directly affects the state of flow for shoppers who do not listen to music in an online retail environment

H5. Shoppers' arousal directly affects the state of flow for shoppers who listen to music in an online retail environment

H6. Shoppers' arousal directly affects pleasure for all shoppers in an online retail environment

H7. Shoppers' arousal directly affects pleasure for shoppers who do not listen to music in an online retail environment

H8. Shoppers' arousal directly affects pleasure for shoppers who listen to music in an online retail environment

H9. Shoppers' state of flow directly affects pleasure for all shoppers in an online retail environment

H10. Shoppers' state of flow affects pleasure for shoppers who do not listen to music in an online retail environment

H11. Shoppers' state of flow affects pleasure for shoppers who listen to music in an online retail environment

H12. Music moderates the relationship between shoppers' arousal and flow in an online retail environment

H13. Music moderates the relationship between shoppers' arousal and pleasure in an online retail environment

H14. Music moderates the relationship between shoppers' flow and pleasure in an online retail environment

H15 Shoppers' state of flow directly affects purchase intentions in an online retail environment

H16 Shoppers' pleasure indirectly affects purchase intentions through product attitudes in an online retail environment

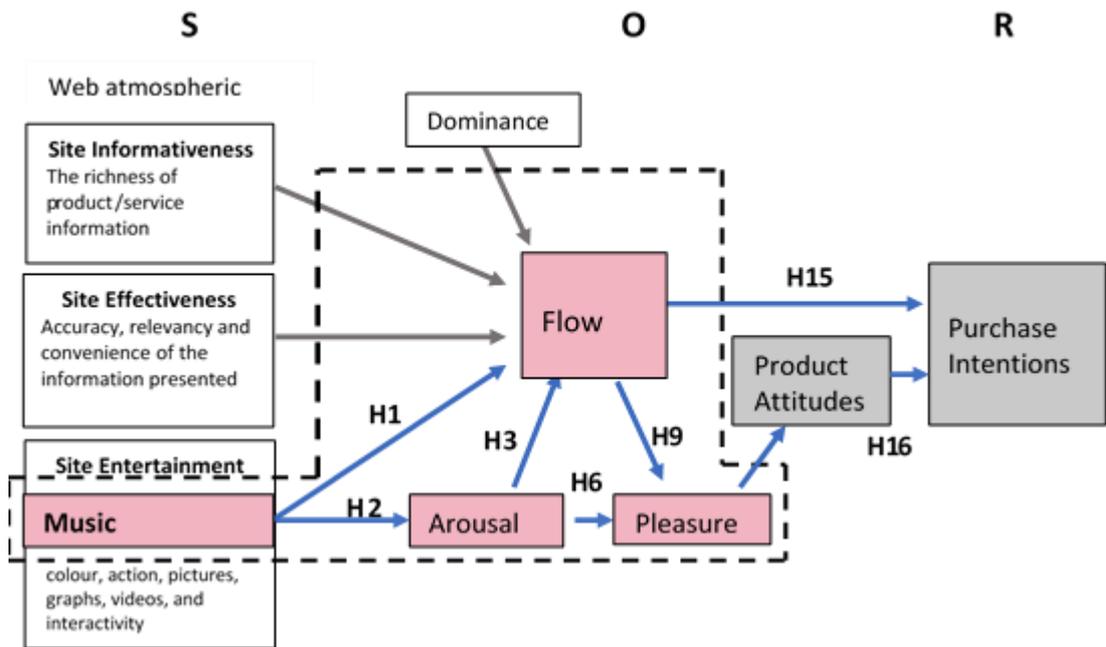


Figure 5. 1 Full conceptual framework with the hypotheses label

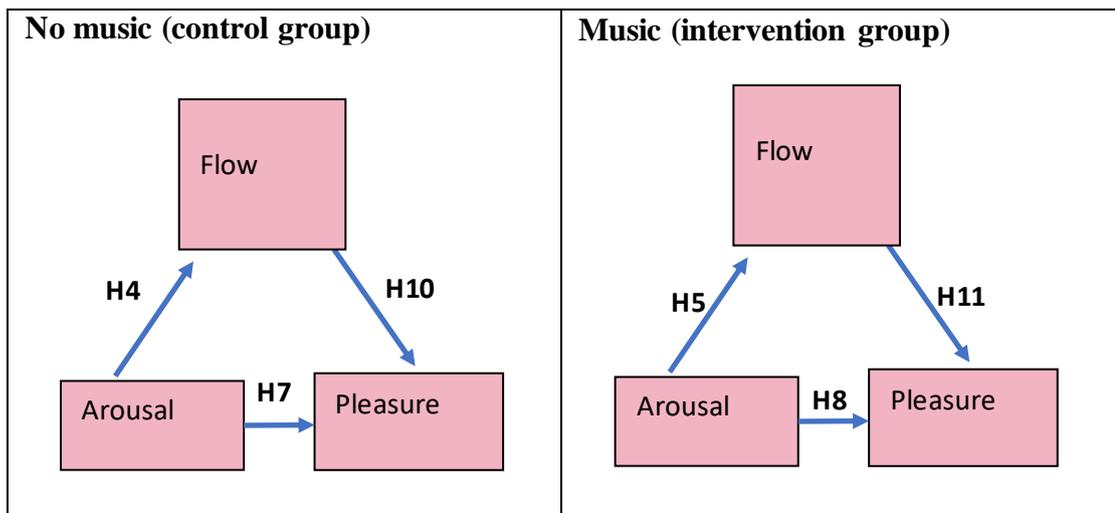


Figure 5. 2 Control and intervention models with hypotheses label

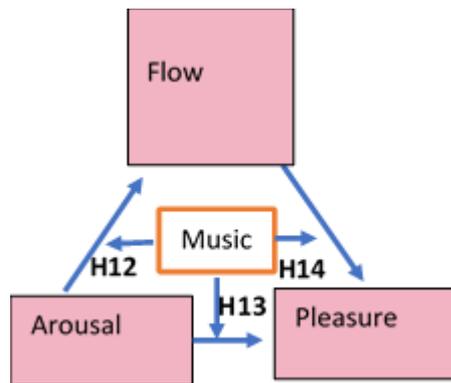


Figure 5.3 Moderation effect model with hypotheses label

This chapter justifies and outlines the methodology for developing a valid and robust instrument to measure shoppers' state of *flow*, which empirically validates the hypotheses and proposed conceptual framework. This chapter is divided into four sections. The first section reviews and discusses the underlying research philosophy used in this study in relation to other comparative philosophical assumptions. A philosophical debate on the nature of reality and the acquirement of knowledge is crucial to achieve the research aim, as it is the fundamental part of selecting the most suited method (Krauss, 2005). This is followed by the discussion of the research strategy and the research design, which were developed from the research methodology and the rationale for the underlying research philosophy. The third section discusses the research instrument and the scale used in detail. A quantitative self-administrative questionnaire was developed, and an appropriate data collection procedure has been designed. The questionnaire instrument was tested and validated with a pilot study conducted prior to the main data collection and analysis. The sampling method is also discussed in this section, as well as the discussion of appropriate ethical procedures that have been considered. Ethical considerations are important when conducting an online based research regarding issues such as anonymity and confidentiality risks. Finally, the chapter concludes with summary remarks and a discussion of the analysis methods for the primary data analysis.

5.0.1 Research process

Research process encompasses the necessary steps to answer the research question and fulfil the research objectives. For the purpose of this study, a research process design

was developed as shown in Table 5.1. During each stage of the research process, an objective and critical approach was taken to ensure that errors and bias are minimized.

Table 5. 1 Research process

| | Stages | Activities |
|---|-------------------------------------|---|
| 1 | Secondary data collection | A critical narrative literature review was undertaken to identify the main theories and associated studies. |
| 2 | Identification of gaps in knowledge | The contribution to knowledge was identified and research objectives were developed. |
| 3 | Conceptual framework development | A framework that captures music as a web atmospheric, shoppers' state of <i>flow</i> , arousal and pleasure was developed based on a set of hypothetical relationships. |
| 4 | Designing of research instrument | A suitable research instrument was developed based on philosophical underpinnings and a pilot study was performed to test the research instrument. |
| 5 | Primary data collection | Quantitative data was collected and analysed. |
| 6 | Discussion and conclusions | The findings were evaluated and discussed critically. Literature was revisited to highlight the contribution of this study to fulfill the gap in knowledge. |

5.1 Research Philosophy

Research philosophy can be described as a method, in which data about a phenomenon should be gathered, analysed and used (Malhotra *et al.*, 2012; Saunders *et al.*, 2015). Research philosophy is also necessary for indicating assumptions made about the nature of reality (ontology) and what can be known (epistemology) and how the researcher can go about finding the said knowledge (methodology) in research (Bryman, 2012). The philosophical assumptions made by researchers are vital for selecting an appropriate research strategy and design of the research (Maxcy, 2003). Therefore, it is important for researchers to reflect upon philosophical choices for a study and defend them with respect to other alternative assumptions that could have been adopted (Saunders *et al.*, 2015).

The researcher's philosophical assumptions of reality, and what constitutes objective knowledge and how to gain it, affects the way one collects and interprets the empirical evidence. There are four types of research philosophies in marketing research;

positivism, interpretivism, post-positivism and critical realism (Saunders *et al.*, 2015). Easterby-Smith *et al.* (2012:60) suggest that these research philosophies consist of three elements that the researcher must consider, which are;

- Ontology: assumptions made about the nature of reality
- Epistemology: set of assumptions about the most appropriate methods of inquiring into the nature of the world
- Methodology: techniques used to collect data on specific situations

Ontology and epistemology are concerned about the viewpoint of the world. In other words, the perception of reality and knowledge regarding the world. These viewpoints have a significant influence on how one's knowledge can be gained and shapes the fundamental nature of the research. According to Burrell and Morgan (1979:2), both the ontological and epistemological assumptions "have direct implications of a methodological nature". This study takes a positivist stance that aligns with ontologically objectivism and epistemologically realism point of the reality and knowledge. To justify this selection, the ontological and epistemological positioning are defined and discussed, in terms of the current study and with a comparison to previous studies, in the subsequent paragraphs.

5.1.0 Ontology

The term ontology is concerned with the nature of reality and what reality is (Easterby-Smith *et al.*, 2012; Bryman, 2012). Ontology is a system of belief that reflects on an individual's understanding of what constitutes a fact. In other words, ontology is associated with the question "Is reality objective or subjective?"

To adopt the stance to fit this research, it is important to evaluate marketing research as a discipline. Studies in marketing are considered as part of social science, which studies the nature of social realities and the behaviour of people. In social science research, there are two ontological stances which are the extreme spectrum; objectivism and constructivism (Easterby-Smith *et al.*, 2012). Objectivism approach believes that social reality is not under the influence of social factors, and the reality is unchangeable. Reality is perceived as an objective truth which is external or independent to the

researcher. In social sciences, objectivism implies that the social realities exist through external facts, and therefore the knowledge of reality can be inquired as absolute truth that is determined by the laws of science (Easterby-Smith *et al.*, 2012). Thus, reality cannot be influenced by the researchers' presence or activities (Bryman, 2012). On the other hand, constructivism believe that social reality is built within social interactions, therefore the truth of the world is not reached by observations or measurements. Instead, during the development of theory, it is always exposed to researchers' and other's subjective thoughts, opinions and reasoning, and these theories are accepted through continuous debates (Easterby-Smith *et al.*, 2012).

Objectivism and constructivism are placed at the polar opposite of the spectrum; however, the ontological positioning can be presented along with a continuum, and within the continuum, Easterby Smith *et al.* (2012) offer an insight to key ontological positions debated in natural and social sciences. At one end of the continuum is objectivism, and moving along are internal realism, the other end stands constructivism. Within this continuum, internal realism which sits in between the two extremes, has been adopted for social research (Easterby Smith *et al.*, 2012). In social sciences, objectivism and constructivism are considered to be the two crucial philosophical positions (Bryman, 2012). Nonetheless, social science is founded upon beliefs about the processes, structures, persons, and causes, and these beliefs are not all empirically verifiable or quantifiable. Internal realism offers a mid way position to propose that the reality exists as a concrete fact and objectively to the researcher. This is akin to the objectivism belief. Nevertheless, internal realism also suggests that reality can be ambiguous, and it cannot always be accessed directly by empirical evidence, which is more consistent to the constructivism belief than objectivism.

The ontological position which underpins the design of this study is objectivism. Nonetheless, within objectivism, the researcher's belief is positioned closer towards internal realism on the continuum. The key objective of the study is to identify the impact of an external factor (music) on shoppers' state of *flow*, and to identify the relationships between the music, shoppers' emotions and *flow*. Shoppers' emotions and the state of *flow* are understood to be external to the researcher and thus can be objectively measured through the shoppers' responses. This implies that an objectivism approach is an appropriate ontological position to underpin the current study, as the

study is based on the objective nature of the reality. Nonetheless, the study also recognises that the shopping experience and enjoyment are subjective to each individual respondent and acknowledges subjectivity of the respondents' responses.

It was an important process to consider the researcher's ontological assumptions as it will be reflected onto what extent knowledge can be acquired i.e. epistemological assumptions (Guba and Lincoln, 1994).

5.1.1 Epistemology

According to Krauss (2005:759), epistemology questions "What is the relationship between the knower and what is known? How do we obtain knowledge? What counts as knowledge?" Therefore, epistemology is the philosophy of knowledge or how we come to know the truth and how do we know it is true (Trochim and Donnelly, 2007). Epistemology can be also described as the study of the criteria by which the researcher categorises what constitutes (and does not constitute) as the knowledge (Hallebone and Priest, 2009). Epistemology is also concerned with whether knowledge can be acquired or has to be personally experienced (Burrell and Morgan, 1979).

~~There are two contrasting positioning of epistemology which are realism and idealism. Realism stems from objectivism ontology, which believes that knowledge about the reality exists independently of one's mind. Idealism, on the other hand, stems from a constructivism ontology, which believes that the knowledge about reality exists subjectively in one's mind.~~

The epistemological stance of this study takes the realism position as it follows an ontologically objectivism stance which believes that knowledge about the reality exists independently of one's mind. Nonetheless, it must be noted that the researcher acknowledges that a researcher and what is researched cannot be totally separated. It is because that the researcher has predicted the research outcome by generating a set of hypotheses based on pre-existing knowledge from the review of the literature. This means there are some input from the researcher's pre-investigated knowledge and bias within the construction of the hypothesis.

5.1.2 Philosophical stances

From the ontological and epistemological understandings above, the researcher needs to adopt a philosophical stance to address the research questions. Stemming from the contrasting ontological and epistemological views of the world, there are two key research paradigms which stand at the polar spectrums in the Western tradition of social science; Positivism and Interpretivism (or Social Constructivism) (Galliers, 1991). Positivism believes that there is a single reality, which can be objectively measured and known. Therefore, a purpose of any study is to measure and quantify the phenomena by quantitative methods. Positivism stance stems from the ontologically objectivism and epistemologically realism point of view. On the other hand, interpretivism believes that there is no single reality or truth, and therefore the reality needs to be interpreted by using qualitative methods to understand the reality subjectively. Interpretivism therefore stems from ontologically constructivism and epistemologically idealism point of view.

This research takes a positivism stance, and this relates significantly to the methodological underlay of this study. Nevertheless, it is crucial to understand the different philosophical viewpoints of the research, and critically evaluate which philosophical stance is the most suited for this study. Thus, the next sections will explicitly discuss the terms positivism and interpretivism as well as other related philosophical beliefs such as post-positivism and critical realism.

5.1.2.0 Positivism

At the ontological level, positivism believes that reality is stable, and knowledge is objective and quantifiable. According to Walsham (1995), the positivists position themselves with the objectivism ontology, which considers the reality as independent of social construction. Furthermore, its epistemological stance is based on a belief that true knowledge is real, unchangeable therefore can be measured and acquired through observation and experiment. Predictions of outcomes for an observation (hypotheses) can be made based on the results that are previously measured and explained. This means that the observed result is measured from an objective viewpoint, and that observed result should be repeatable. This is the basis of the positivist paradigm of exploring social reality. Many previous studies on online atmospherics, *flow* and the

impact of music as a web atmospheric in an online setting are based on positivism and have tried to objectively measure the relationship between the variables and constructs using statistical tools (Eroglu *et al.*, 2003; Skadberg and Kimmel, 2004; Siepke, 2005; Fiore and Kelly, 2007; Kim *et al.*, 2009; Cheng *et al.*, 2009; Yoon, 2010; Koo and Ju, 2010; Lai and Chiang, 2012; Kim and Lennon, 2012; Ding and Lin, 2012; Cuny *et al.*, 2015; Gao and Bai, 2014; Richard and Chebat, 2016). The wide appreciation of the positivism in the field of online atmospherics and *flow* studies convinced the researcher to align with the positivism stance, and the justification for choosing this stance will be discussed in detail under the section 5.1.2.4.

Although positivism offers measurable objective explanation to describe a phenomenon in research, it can be challenged and criticised for not being very effective to understand the process associated with the behaviour. To challenge this disadvantage of positivism paradigm, post-positivism and interpretivism offer alternative theoretical, methodological and practical approaches to research by offering subjectivity in the process of scientific inquiry (Gephart, 1999).

There are other philosophical approaches to undertaking research and the following sections briefly explain these approaches in order to provide a comprehensive review of research methodology and to justify the adoption of the proposed positivism stance for this study.

5.1.2.1 Interpretivism

Interpretivism argues that reality can be fully understood only through subjective interpretation. Therefore, interpretivism adopts subjective idealism epistemology and ontologically constructivism where reality is socially constructed. In other words, interpretivism believes in understanding the world as it is from the subjective experiences of individuals of the external world. Knowledge, in interpretivism, contexts and time-dependent and is established through the meanings attached to the phenomena studied. Thus, interpretivism stresses the importance of analysis within context (Reeves and Hedberg, 2003).

~~Interpretivism approach in research aims to explain the subjective reasons and meanings that lie behind a social action in given time and context of the research.~~

~~Therefore, in an interpretivism research, obtainment of data is about researcher-subject interaction and not objectively observed variables (Cousins, 2002).~~

Nevertheless, interpretivism admits that their understanding and interpretations of reality can be too subjective, and it is inevitable that the research outcome is perceived less credible (Easterby-Smith *et al.*, 2012). It also is impossible to generalise one understanding of the phenomenon for the whole population because of its focus on the understanding of the phenomenon rather than the predictability of it, and its claim that the reality differs in different context. The key interest of interpretivism is not the generation of a new theory, but to evaluate and refine interpretive theories within different sociocultural context, and therefore does not fit the purpose of this study. This is the reason why the researcher dismissed adopting interpretivism for this study.

There are other philosophical stances such as *critical realism*, which believes that natural and social sciences can use the same methods to collect data and to explain a phenomenon, or *post-positivism*, which encourages the positivism focus on experimental and quantitative methods to be complemented by using qualitative methods to gain deeper understanding of the phenomenon outside of measured data and variables (Gephart, 1999). Having reviewed different stances of research philosophy, the next step is to evaluate each stance and select which is the best suited to achieve the current research aim.

~~The weaknesses of the two extreme philosophical stances: Interpretivism's extreme subjectivity and positivism's extreme objectivity, can be balanced and bridged by other philosophical stances such as the critical realist or post-positivism point of view. The critical realist view proposes that a reality exists independent of observer, nevertheless, in contrast to natural sciences, the social reality is not readily accessed, and the reality is socially constructed (Easton, 2010). Post-positivism acknowledges that although absolute knowledge, reality and object of our inquiry exist objectively outside and independent of the human mind, it cannot be measured with total accuracy by observations without subjectivity (Phillips, 1990). Nevertheless, from the literature review, a post-positivistic mixed-method approach is not yet common in the field of web-atmospheric and flow research. This methodological approach could be addressed in future research in this field.~~

Critical realists retain the objectivism ontological stance where there is a reality that is independent of our subjective mind in which science can evaluate objectively. However, critical realism also realises that the limitation in people's ability to know reality with certainty (i.e. understanding of reality are temporary and that a scientist's opinion of reality may not match to the actual reality).

Critical realism believes that the natural and social sciences can use the same methods to collect data and to explain a phenomenon. However, critical realism acknowledges that the theoretical terms do not always directly observe in their explanations. Critical realism believes that objects, processes and inanimate objects possess an associated symbolic meaning (Godfrey and Hill, 1995), which is measurable by the researcher's theoretical assumptions and tools. In the context of marketing and consumer behaviour, critical realism suggests that society interprets products or behaviour by adding symbolic meaning for consumers (Sayer, 1992).

Post positivism acknowledges that although absolute knowledge, reality and object of our inquiry exist objectively outside and independent of the human mind, it cannot be measured with total accuracy by observations without subjectivity (Phillips, 1990). Post positivists accept that objectivity is almost impossible to achieve, but it can still be pursued as a goal in our search for knowledge. Thus, post positivism encourages the positivism focus on experimental and quantitative methods to be complemented by using qualitative methods to gain deeper understanding of the phenomenon outside of measured data and variables (Gephart, 1999).

Nevertheless, from the literature review, a post positivistic mixed method approach is not yet common in the field of web atmospheric and *flow* research. This methodological approach could be addressed in future research in this field.

In contrast to post positivism, or indeed positivism, interpretivism reflects totally different epistemological and ontological beliefs, which offer different angles to the research philosophy.

5.1.2.2 Philosophical stance adopted

To start this section, it is important to consider what marketing research is trying to achieve and if marketing as a social science is indeed "science". Previously, marketing

scholars believed that research in marketing should be considered a science, and many of them adopted a positivist approach to research and theory development following the criticisms of a lack of rigour in the marketing research (Easton, 2002). Positivism has a particularly successful association with the physical and natural sciences as the conception of objective knowledge has been seen as the fundamental aim of science (Smith 1998). Similarly, Huberman and Miles (2002) believe that marketing and consumer studies should be treated more 'scientifically' as it enables researchers to apprehend and establish causal laws that predict and explain the marketing phenomena. However, for the benefit of this study, the starting point for selecting the suitable research philosophy and approach is to consider the research aim and the way the researcher challenges the development of theory employed for this study (Saunders *et al.*, 2015).

As described at the beginning of the chapter, the aim of this study is to develop a theoretical model to assess the relationship between the presence of music as a web atmospheric, shoppers' state of *flow*, and two shopper emotions which are arousal and pleasure. Generalising this model holds significant importance in this research in order to be able to develop an applicable and practical knowledge in the fields of online consumer behaviour, web atmospheric and shoppers' state of *flow*. This assumption that it is possible to identify a theoretical model to assess the relationship between the variables, and to develop a model that can be generalised, is more closely associated with the positivism approach as defined above. As discussed earlier, the interest of interpretivism is to explain the subjective reasons and meanings that lie behind a social action in given time and context of the research. Therefore, in an interpretivism research, obtainment of data is about researcher-subject interaction and not objectively observed variables (Cousins, 2002). This interest does not align with the research aim for this study, and the interpretivism research philosophy is rejected.

There has, however, been much debate that whether positivist approach is entirely suitable for the social sciences (Hirschheim, 1985). Gill and Johnson (2010) believe that natural science methods are relevant for studying inanimate phenomena but less suited when studying human beings. This point was also covered in the previous discussion on an ontological debate in terms of the more central positioning of internal realism. Since social science research, such as marketing, deals with complex human

beings and intangible constructs, empirical testing and establishing causal relationships between them are very difficult to achieve, especially as human interactions increase the complexity of phenomena (Huberman and Miles, 2002). Researchers would also struggle to remain totally objective during the whole research process as the researcher him/herself is also a human being (Churchill and Brown, 2007). In terms of this study, although an objectivism stance of the researcher will remain, the researcher also acknowledges that the subjectivity of the shoppers' evaluation of the emotion and experience will influence the research outcome.

Nevertheless, the research philosophy of this study remains that of a positivist stance with alignment closer towards critical realism on the continuum, acknowledging some subjectivity of the responses. The study retains objectivism ontological positioning and believes that the same objective and quantitative methods can be used to evidence both natural science and social science phenomena. One of the objectives of the study is to define and measure the concepts such as shopper emotions and *flow*, which is a key characteristic of positivism (Easterby-Smith *et al.*, 2012). In addition, the assumption positivism holds, that is to establish relationships between objects, mechanisms and consequential events/effects, is an element that aligns with the key objective of this study (Fielding and Fielding, 1986; Easterby-Smith *et al.*, 2012), as it tries to establish the relationship between music as a web atmospheric (objects), shoppers' internal responses including the state of *flow*, arousal and pleasure (mechanisms) and intentional behaviour (consequential events). The researcher also proposes that the regulatory relationship established in this study can be generalised.

5.1.3 Research Methodology

O'Leary (2004) describes methodology as the framework, which is associated with a particular philosophical assumption that is used to conduct the research. Allan and Randy (2005) believe that when considering a research methodology, the following criteria should be met: the most appropriate methodology should be the most appropriate to achieve objectives of the research, and the methodology should be able to replicate the methodology used in other studies of the same nature.

As business and marketing research comprises of cognitive, emotional, as well as behavioural components, a study can be developed on either qualitative or quantitative

approach (Saunders *et al.*, 2015). However, it is vital to question the choice of a methodological approach based on the given research objectives and suitable philosophical paradigm to uncover the phenomenon before deciding on the research methodology. By considering the objectives of this study, to define the major concepts in the conceptual framework (music as a web atmospheric stimulus, shoppers' state of *flow*, arousal and pleasure) and establish a relationship between them, the methodology is consistent with the positivist perspective whereby its ontological and epistemological position proposes that reality is measurable and objectively true, and this study will coincide with the approach that examines marketing as a science that can replicate the process of the natural science research. In this way, a positivism stance has therefore been adopted. The research approach commonly used within a positivism lens is deductive reasoning

5.2 Research Approach

The deductive approach is based on the belief that conclusions to phenomena, events, and realities are achieved through testing hypotheses and measuring facts (Gill and Johnson, 2010). This is based on the premise that theory is the first source of knowledge, and the research is a linear deduction process proceeding from theory to empirical findings (Eriksson and Kovalainen, 2008). The hypotheses are drawn out from the existing theories to explain the causal relationships among variables, mostly using quantitative methods (Saunders *et al.*, 2015).

By contrast, for the inductive approach, building a theory, is considered as the outcome of research (Bryman and Bell, 2015). In other words, the researcher begins by collecting empirical evidence to develop theoretical findings and not vice versa (Eriksson and Kovalainen, 2008). The process of inductive approach involves going back and forth between data and theory to determine validity rather than generalisability (Bryman and Bell, 2015).

To summarise, the deductive approach is used to explain what is happening, whereas the inductive approach investigates “why” of a phenomenon (Saunders *et al.*, 2015). The deductive approach is more commonly used in the research of social sciences to develop the theoretical knowledge base (Eriksson and Kovalainen, 2008).

Following the ontological and epistemological philosophies chosen for this study earlier in the chapter, a deductive research approach is chosen for this study, however, there are also further rationales to adopt this approach. Firstly, as discussed in the literature review, studies in web atmospherics and online shopper responses have adopted theories from environmental psychology (e.g. the SOR framework). As discussed in Chapter Three, the SOR framework illustrates that environmental stimuli in a retail environment stimulate shoppers' internal responses, which mediates subsequent behaviour (Mehrabian and Russell, 1974; Donovan and Rossiter, 1982). Consequently, the nature of this research will follow the same deductive approach in adopting the SOR paradigm to evaluate the impact of music on shoppers' state of *flow* and emotions (arousal and pleasure) in an online shopping environment.

Furthermore, this study plans to deduce findings from two sample groups of participants adopting the between-subjects control and intervention design. This is to evaluate the difference in responses between presence/absence of music while shopping online. A between-subjects design which is a type of experimental design in which different sets of subjects receive separate treatment for once only. The control and intervention design comprise of two groups in which one group of subjects undertakes a process or treatment that is being tested (intervention group) and the other is a comparison group (controlled group) which does not undertake the process/treatment (Kendall, 2003). The benefit of adopting a control and intervention approach is that, the two conditions can be compared (one with the treatment and one without), as the two groups are treated and observed in an identical manner, and the groups are analysed in terms of outcomes defined at the outset (Akobeng, 2005). Differences in outcomes are attributed to the presence or absence of the intervention process/treatment (i.e. music). To collect comparative data, the design requires two controlled environments; one set of participants were exposed to music (intervention group) and the other set were not (controlled group). Similar music/no-music between-subjects control and intervention design has been adopted by previous studies which evaluates the impact of music as a web atmospheric (Morin *et al.*, 2007; Lai and Chang, 2012; Kim and Lennon, 2017; Wang *et al.*, 2017), and this study is to follow this approach. The data collected from the two samples are to be statistically compared to see if there are any trait differences in the response. In this respect, it was considered that a positivist philosophical stance would best enable the researcher to answer the

research questions. If the study aim is to validate theories by investigating relationships between variables using statistical techniques, typically this type of research generally relates to deductive reasoning.

5.3 Research Design

A research design can be considered as a plan to achieve solving the research questions (Malhotra *et al.*, 2012), and as the “plan of study used as a guide in collecting and analysing data” (Churchill, 1999: 98), and it is vital to determine the type of data to be collected, the data collection technique and the sampling process (Hair *et al.*, 2010). Therefore, the research design should always be consistent with the research aim and objectives (Saunders *et al.*, 2015). Additionally, designing a well-defined research would increase the chance of it being effective and efficient (Malhotra and Birks, 2012).

5.3.0 Types of research design

There are two main categories of research design: exploratory and conclusive (see Figure 5.3) and the choice of research design can be made depending on whether the research aims to test the theory or hypotheses, or indeed to create the theory (Gill and Johnson, 2010).

In general, exploratory research aims to seek new insights and assess phenomena from a new angle to understand the nature of the problem (Robson, 2002; Saunders *et al.*, 2015). Similarly, exploratory marketing studies primarily are concerned about providing an insight and deeper understanding of the marketing phenomena under investigation (Malhotra *et al.*, 2012). The key attribute of exploratory research is to identify and explore constructs which can be developed into a new theory (Malhotra *et al.*, 2012). Therefore, exploratory research can be carried out on its own or as an initial step of a research design followed by descriptive or casual research (Malhotra and Birks, 2006). Although exploratory research is strongly associated with qualitative data collection techniques, quantitative techniques can also be utilised for exploratory purposes (see Figure 5.4) (Malhotra *et al.*, 2012).

Conclusive research, on the other hand, aims “to describe specific phenomena, to test a specific hypothesis and to examine specific relationships” (Malhotra *et al.*, 2012:89). In other words, the aim of a conclusive research is to draw definite conclusions for

implementation, and therefore is associated with the testing of hypotheses (Panneerselvam, 2004). Conclusive research can be divided into descriptive or causal research (See Figure 5.4).

Descriptive research is a pre-planned and structured approach. It can be characterised by prior formulation of specific research questions and hypotheses (Malhotra and Birks, 2006). The aim of descriptive research is to define various aspects of the phenomenon (e.g. attitudes, intentions, preferences, and behaviours) of a sample target population using scientific methods and procedures (Hair *et al.*, 2010). It has an observational nature, and it offers the opportunity to integrate the qualitative and quantitative data collection methods. Therefore, descriptive research is suited when the research objectives encompass testing specific hypotheses and evaluating relationships among the variables (Malhotra and Birks, 2006; Hair *et al.*, 2010).

Descriptive research can be divided into cross-sectional and longitudinal research designs (Malhotra *et al.*, 2012). Cross-sectional research gather data from respondents on only one occasion (Malhotra and Birks, 2006) to investigate a particular problem at a single point in time (Trochim and Donnelly, 2007). Within cross-sectional designs, there are two subcategories; single cross-sectional design and multiple cross-sectional design. In single cross-sectional designs, the data is collected from one sample at a single point in time. Whereas multiple cross-sectional designs use two or more different samples, and the data is collected from each sample only once (Malhotra and Birks, 2006). Although cross-sectional research designs enable a better representation of the target population compared to longitudinal designs (Malhotra and Birks, 2006), a major disadvantage of cross-sectional designs lies in the difficulty in establishing time order (i.e. when and how the observed phenomena have occurred), which is an important preconditioning for deducing causality between variables (Bollen, 1989). On the other hand, longitudinal research collects data from one or more fixed samples over an extended period of time at specified intervals (Malhotra and Birks, 2006; Trochim and Donnelly, 2007). Due to the characteristics of longitudinal design, it has the ability to collect larger amounts of data to provide an in-depth view of the situation and detect the changes that take place over time compared to a cross-sectional research. Nevertheless, the major weakness of the longitudinal design is that it suffers from response bias, and may not be representative (Malhotra and Birks, 2006).

Causal research is a type of conclusive research that focuses on an analysis of a situation or an issue to explain the cause and effect relationships, and can be conducted to measure the impact of specific changes on existing norms (Churchill, 1999; Malhotra and Birks, 2006; Hair *et al.*, 2010; Malhotra *et al.*, 2012). Experimental designs are considered as one of the main methods of casual research (Malhotra and Birks, 2006; Hair *et al.*, 2010). Similar to a descriptive research design, causal research is a pre-planned and structured approach by formulation of specific research questions and clearly structured hypotheses.

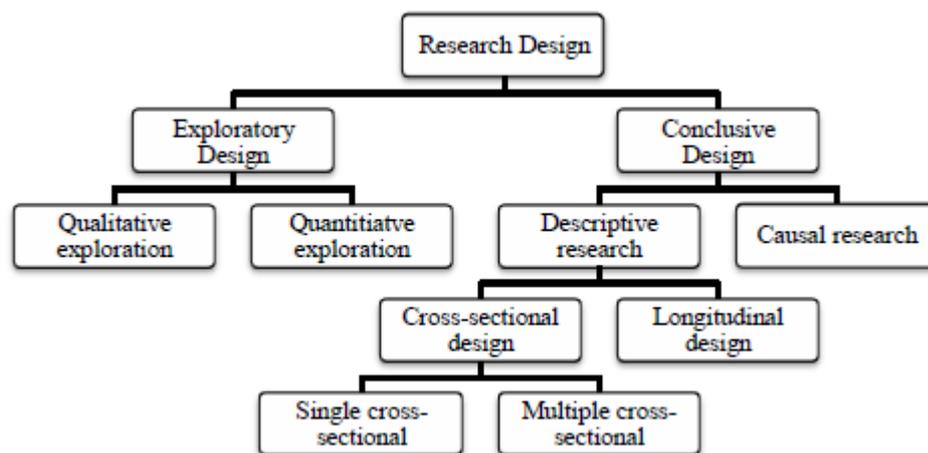


Figure 5. 4 Classification of marketing research designs (Malhotra *et al.*, 2012)

5.3.1 Research design adopted in this research

Based on the underpinning research philosophy and the nature of the aim and objectives of this study, the research design adopted is a conclusive, more specifically, a single cross-sectional research design. The aim of this study is to evaluate the impact of music (independent variable) on shoppers' state of *flow* (dependent variable) in an online retail environment. Hypotheses have been generated as detailed in Chapter Four, and the relationship to be evaluated is exhibited and highlighted in the conceptual framework. This, therefore, means that the study has adopted a deductive approach, and a single cross-sectional design fits the purpose of the study where hypotheses based on theories are tested to draw a conclusion on a relationship between variables within the phenomena, and whether an independent variable effects dependent variable, which can be generalized and implemented. Within between-subjects control and intervention approach, the intervention group receives a "treatment" that is to listen to music where control group does not. By manipulating the independent variable (music) the

researcher tries to determine if it affects the dependent variable (*flow*/arousal/pleasure), thus the study is experimental in design. This will determine whether there are relationships between music as a web atmospheric and shoppers' state of *flow*, and other constructs such as shoppers' arousal and pleasure, as well as determining the impact of music as an independent variable.

5.4 Research methods

Research methods can be described as a strategy to achieve the appropriate evaluation of the data, which moves from the underlying philosophical underpinnings to research design, and data collection (Myers, 2009). Although there are other distinctions in the research methods, the most common divisions of research methods are qualitative and quantitative.

The most obvious difference between qualitative and quantitative research is in the form of data collection and analysis. Quantitative research uses data collection and analysis techniques such as questionnaires and experiments, which generates numerical data to quantify research findings, and the data is evaluated by statistical analysis (Hittleman and Simon, 1997; Saunders *et al.*, 2015). Stainback and Stainback (1988:317) list three underlying purposes of quantitative research as; 'to describe, to compare and to attribute causality'. The examination of hypotheses should then enable researchers to identify causal factors between two or more social phenomena (Gill and Johnson, 2010). Bryman and Bell (2015) outline that quantitative approach reflects positivist philosophical stance by taking deductive approaches in hypotheses testing, so the study and findings can be replicated for validity and reliability. On the other hand, Malhotra *et al.* (2012) outline qualitative approaches that can be used for exploratory, descriptive and experimental research designs. Qualitative research lets the theory evolve rather than having an underlying theory in the beginning of the study. Therefore, this implies qualitative research is inductive.

Qualitative research approaches make use of data collection techniques and analysis which generates non-numerical data such as interviews, focus groups and observations (Saunders *et al.*, 2015). Qualitative research approaches attempt to understand phenomena through thoughts, processes and motivations of behaviour or expression of views, which cannot be quantified (Malhotra *et al.*, 2012; Saunders *et al.*, 2015). In

other words, the key aspect of qualitative research is to understand and interpret meanings about reality or phenomena (Easterby-Smith *et al.*, 2012). This nature of qualitative approach reflects more on the interpretivist research philosophies.

Quantitative research methods were originally developed in the natural sciences to study natural phenomena. On the other hand, qualitative research methods were developed in the social sciences to enable researchers to study social and cultural phenomena. The suitability of quantitative or qualitative methods needs to be assessed depending on the research context, purpose and nature of the research study in question, and neither of these methods is superior to the other.

Some who adopts philosophies such as post-positivism or critical realism argue that researchers can benefit from using mixed methods approach as they can combine these two methods for use in a single research project utilizing different advantages between quantitative and qualitative methods (Bryman and Burgess, 1999). Nevertheless, having reviewed both quantitative and qualitative methods, a quantitative method is the best fit for this study to help answer the research questions stated in Chapter One which requires identifying to what extent music has an impact on shoppers' state of *flow* and emotions in an online retail environment. As mentioned earlier, a positivist stance and quantitative method has been traditionally favoured in online consumer behaviour and atmospheric studies (Fiore and Kelly, 2007; Lai and Chiang, 2012; Oakes *et al.*, 2013) as well as in *flow* studies (Gao and Bai, 2014; Richard and Chebat, 2016), utilising research tools such as online questionnaires. A quantitative mass surveying enables economical and robust data analysis process, which allows a large-scale data sampling that is essential for generalisation of the tested model, and to maximise its statistical power (Mahoney, 2007; Saunders *et al.*, 2015).

In summary, the above philosophical underpinnings lead to deductive reasoning and aim to mirror scientific method and to test the hypothesis that is drawn from the theories and prior literature. This study adopts a between-subjects control and intervention approach as two sets of data (one where participants listen to music, and the other they do not) to compare the results to determine whether the presence/absence of music changes the nature of the responses. The results drawn out from this research is based on a quantitative research design and relies on numerical data analysis, which would provide more validity of data compared to the interpretive nature of qualitative research.

As the research is based on the objective positivist philosophical underpinning, the aspect of validity, reliability and generalisation of the result is significant. However, it needs to be acknowledged that although generalisation of results is possible, the data gathered by quantitative surveys may struggle to capture the real meaning of the phenomenon. This weakness could be addressed in a possible future research using a qualitative methodology.

5.5 Research Instrument

As discussed above, this study will follow a positivist paradigm with a deductive approach. To achieve collecting a quantitative dataset, a web-based self-administrated questionnaire and online data collection are considered the best fit to answer the research questions and achieving research objectives.

Questionnaires are one of the most popular quantitative surveying methods, defined as a "technique based upon the use of structured questionnaires given to a sample of a population" (Malhotra *et al.*, 2012:265). In particular, self-administrated questionnaires are those which respondents complete by themselves (Bryman, 2012; Bryman and Bell, 2015). Most questionnaires provide fixed-responses where respondents select their best-matched answer or rate their answers on a Likert scale (Cohen *et al.*, 2011; Malhotra *et al.*, 2012). The use of self-administrated questionnaires is believed to be the best fit for the purpose of this study as the data obtained using this tool is capable of explaining the relationships between the variables that are investigated. According to Bryman (2012), structured and self-administered questionnaires allow the researcher to obtain standardized responses, so that the differences in these responses can be investigated as a meaningful analysis.

The advantages of using a web-based surveying tools are cost and time efficiency to distribute and collect data (Malhotra *et al.*, 2012; Bryman and Bell, 2015). Web-based surveying tools such as online questionnaires make primary collection easier by saving time and costs as they can be mass circulated via emails, social media and other platforms as well as making the data transfer and analysis process easier due to their electronic format (Gill and Johnson, 2010). Nevertheless, when designing a research instrument, convenience is not the only factor a researcher should consider. As well as

ensuring the instrument is aligned with the research philosophy, research approach and research design, it needs to be the best way to capture the concepts under investigation.

The below section discusses the issues of measuring concepts such as shoppers' *flow* and emotions, the rationale for using an online questionnaire, the development of the instrument and the procedure, sampling approach, ethical consideration and also the pilot study.

5.5.0 Measurement of *flow* and emotions

It is important to consider how shoppers' state of *flow* (as a measure of enjoyment) and emotions can be captured and measured using the research instrument proposed above. Both the state of *flow* and emotions suffer from its ambiguous definition and measurement even though the terms "emotion" and "enjoyment" are used very frequently in everyday life (Koufaris, 2003; Scherer, 2005; Hoffman and Novak, 2009).

5.5.0.0 Measurement of *flow*

As discussed in Chapter Three, *flow* has suffered from a lack of operational definition, and there has also been an extensive debate in which the state of *flow* can be measured and captured. Hoffman and Novak (2009) believes that there are broadly two approaches to measuring the state of *flow*, which are unidimensional and multidimensional measures. A unidimensional measurement approach views the state of *flow* as a unidimensional construct with a set of sub-dividing constructs that comprise as antecedents and consequences of *flow*. A *direct* unidimensional measure of the state of *flow* can be measured with a simple self-report. Direct self-report measures are easy to administrate, and they have the ability to associate and compare the self-reports of the state of *flow* with a set of subsidiary constructs that serve as antecedents and consequences of the state of *flow* (Hoffman and Novak, 2009). Direct unidimensional measures assume that, the participants presented with a description of the *flow* are able to understand the concept of *flow* intuitively and holistically and able to report upon their experience. This "universal" understanding of the state of *flow* can then be correlated with specific hypothesized antecedents and consequences of the state of *flow* (Hoffman and Novak, 2009). Nevertheless, it can be argued that there is a possibility that different individuals interpret the state of *flow* in different ways, which can cause a measurement error. On the other hand, a *derived* unidimensional measure

of flow combines constituent constructs related to the state of *flow* into an overall measure. In other words, summed scales are used to measure the state of *flow*, where the items in the scales correspond to constructs that are related to the state of *flow* (Hoffman and Novak, 2009). The derived approach also benefits from a relative ease of administration by providing pre-generated items for subjects to respond. This means that the derived approach increases the likelihood that all subjects interpret the description of the state of *flow* in the same way. A major disadvantage of the derived unidimensional measures, however, is that it blurs the difference between the antecedents and consequences of the state of *flow*. This distortion creates a definitional problem in selecting which constructs and items should be comprised in the summed scale. For example, different researchers use varied and inconsistent sets of items in the summed scale to measure the state of *flow*. Therefore, while different subjects may interpret the scale items in the same way, different researchers may define the state of *flow* in the different way across different studies (Hoffman and Novak, 2009).

Multidimensional measures of the state of *flow* may offer a solution to some of the issues of derived unidimensional measures of the state of *flow*. Instead of combining measures such as control, concentration, enjoyment and challenge into a single construct that is assumed to be unidimensional, each of the sub-constituent constructs can be measured individually. This is a major advantage of multidimensional measures as it allows statistical tests to test whether the componential constructs should be considered as part of a higher-order factor measuring the state of *flow*, or as antecedents or consequences of this factor (Hoffman and Novak, 2009). This means that there are no assumptions made about the nature of the state of *flow*, and instead, it focuses on interrelationships among a set of constructs assumed to be relevant to the state of *flow*. The multidimensional measures also provide a basis for selecting items for a derived unidimensional scale measure of the state of *flow*. Nevertheless, it can be argued that the multidimensional approach increases the complexity of data collection, and the resulting structural model depends on the specific constructs that are collected (Hoffman and Novak, 2009).

Having reviewed the different approaches of measuring the state of *flow*, the researcher evaluated the different scales used in previous *flow* studies to select the most appropriate measurement scale. The *flow* items in the scale used for this study are

adapted from the ones used in Gao and Bai's (2014) and Richard and Chebat's (2016) scales which were based on Hoffman and Novak (1996), Lee *et al.* (2007) and Zhou (2012) to reflect an unidimensional measurement of *flow*. The unidimensional measurement of the state of *flow* reflects the temporarily unaware consumer experience, such as where an individual engages in an online shopping activity on a fashion retail website with total concentration, control, and enjoyment (Gao and Bai, 2014).

5.5.0.1 Measurement of emotions (arousal and pleasure)

King and Meiselman (2010: 168) define characteristics of emotions to be “brief, intense, and focused on a referent”. Whereas Desmet (2003) propose more complex characteristic of emotion as a multisided phenomenon that can be divided into numbers of following components such as: behavioural reactions (e.g. purchasing), expressive reactions (e.g. crying), physiological reactions (e.g. sweating), and subjective feelings (e.g. feeling sad). Scherer (2005) also suggests that there is no single way to measure emotion, as emotion is a continuous processing of these components, and therefore to provide a comprehensive and most accurate measure of emotion, the change in all those components needs to be measured. Yet, providing such comprehensive measurement procedure in both scientific and social studies is difficult, as it requires extensive resource and time to carry out such procedure. In fact, Desmet (2003) believe that most of the instruments that claim to measure emotions simply measure one of these components. Nevertheless, those emotional components can be measured by two different approaches: non-verbal (objective) and verbal (subjective) measurements.

Non-verbal instruments enable the researcher to measure either the expressive or the physiological component of emotion (Desmet, 2003). An expressive reaction is a facial, vocal, and postural expression that accompanies the emotion which can be measured with instruments such as Facial Expression Analysis Tool (Kaiser and Wehrle 2001). On the other hand, a physiological reaction is the change in activity in the nervous system. Emotions show a variety of physiological changes such as blood pressure responses, skin responses, pupillary responses, brain waves, and heart responses, and they can be measured with diverse techniques.

The key benefit of non-verbal instruments is that they can offer measurements which can be used cross-nationally and cross-culturally as they are language-independent, and

they are less subjective as they do not rely on participants' own judgement of the emotion. However, these instruments can only reliably measure a limited set of basic emotions, and these instruments cannot assess more complex mixed emotions. Furthermore, there is no way to determine how exact or certain which physiological reactions are linked to a specific emotion (Caisedo and Beuzekom, 2006). In addition, using non-verbal instruments needs experimental laboratory setting. Although some claim that non-verbal instruments are unobtrusive because they do not disturb participants during the measurement by interfering with them (Desmet, 2003), laboratory setting can feel intrusive for the participants as the experience is not in a real-life setting.

The above limitations of non-verbal instruments are overcome by verbal self-report instruments, which enables to assess the subjective feeling component of emotions. Desmet (2003) suggest that subjective feeling is the conscious awareness of the emotional state one is in, and it can only be measured through self-report. The most common type of self-report instruments requires respondents to report their emotions using a set of verbal prompts or rating scales. Scherer (2005) believe that there is no objective way of measuring emotion, and self-reporting of the emotion is the only way to evaluate emotion although both non-verbal indicators can be used to speculate the emotional state of a person.

The key advantage of the verbal instruments can measure any set of emotions and can be used to measure mixed emotions although they are difficult to apply within different languages and cultures as translation and interpretation of the words that represent emotions may differ between cultures or even between individuals. To overcome the language disadvantage some pictorial instruments have been adopted such as SAM (Self-Assessment-Manikin) (Lang *et al.*, 1980) or PrEmo (Desmet, 2003), however, the interpretation of what emotion the picture is representing is very ambiguous, and in effect, it can be argued that this ambiguity makes the measurement scale even more subjective than the worded scales.

5.5.0.2 Measurement approach adopted for this study

Although non-verbal instruments can obtain more objective quantitative data and coincide more with a positivism approach, it requires an extensive laboratory setting

with sophisticated equipment, subsequently making the shopping experience of the study unauthentic. On the other hand, verbal self-report instruments, such as a worded scaled questionnaire, is more suitable for this study as it strives to measure mixed emotions and also complex psychological states such as *flow*. Verbal instruments are used for many studies, which tried to measure *flow* in online shopping experience (Novak and Hoffman, 1999; Hsu *et al.*, 2012 Noort *et al.*, 2012, Gao and Bai, 2014; Richard and Chebat, 2016). Novak and Hoffman (1996) suggest that the Activity/Survey method, where respondents are asked to complete a task and then complete a questionnaire is useful for either simultaneously or retrospectively measuring the state of *flow* for specific events. However, they also warn that the validity of the responses depends on how immediate respondents complete the questionnaire after the event, as the reliability of responses decreases with time *after* rather than *during* an activity. Considering the above advantages and weakness of each measuring instruments, it is appropriate to utilise worded scaled self-administrative questionnaire in the activity/survey method to measure shoppers' state of *flow* and emotions.

As discussed earlier, online data collection method has many advantages such as reduced response time, lower cost, ease of data entry and data organization, and it reaches a wide audience (Granello and Wheaton, 2004). In addition, another advantage of using an online questionnaire form is its ability to format answering systems. For example, making the answers being "required" ensures no missing answers, or restricting it to a single answer ensuring the participants are not giving multiple answers.

Nevertheless, it has to be acknowledged that there are limitations regarding online methods to collect useful, valid and reliable data. Particularly, there is no way to monitor the sampling frame with a self-reported identity, and therefore gathering data through Internet population can represent a biased sample of the total population (Fielding *et al.*, 2008; Balter and Brunet, 2012). The issues particular to online surveying methods will be discussed in more detail in the later sections under sampling and ethics.

In summary, following the positivistic approach of the study and to capture the shoppers' state of *flow* and emotions most accurately, an online structured self-

administrative questionnaire with a close-ended answering system was used to collect data.

The next section will discuss the research instrument design and procedure, key issues associated with sampling of online data collection, and ethical concerns related to online data collection. Furthermore, the pilot study, which was conducted to test the measuring instrument, will be described and the result and reflection of the pilot data collection and the data analysis method are then discussed.

5.5.1 Questionnaire generation

Two types of structured self-administrative questionnaires were constructed on Google Forms, and included a participant information sheet, which clearly stated the purpose of the study, a consent form, which ensured data confidentiality and anonymity of the data collection, and questionnaire completion instructions (see Appendix 3 and 4).

In addition to questions on participant demographics, the questionnaire consisted of 3 item scales (27 questions) which measures; consumer emotion (arousal, pleasure and dominance), *flow*, web characteristics (site informativeness, site effectiveness, site entertainment), product attitude and purchase intentions. The scale items used in the questionnaire are derived from a combination of noteworthy research by Gao and Bai (2014) and Richard and Chebat (2016) (see Table 5.2). The set of questions used by other researchers have been validated and evidenced to capture the shoppers' emotions and the state of *flow* in previous studies, however, they have never been used to test the external variable (i.e. music). Although the researcher has included questions to measure all the elements included in the full framework (see Figure 5.1), the analyses are only run for the constructs of primary interest (*flow*, arousal, pleasure) and for the constructs of secondary interest (product attitudes and purchase intentions). The questions to measure dominance, Site Informativeness and Site Effectiveness are included, because these constructs form a part of the proposed conceptual framework. Dominance is a part of PAD emotional dimensions, and Site Effectiveness and Site Informativeness are the part of web atmospheric cues. All of these constructs are considered as determinant of *flow* by previous literature (Gao and Bai, 2014; Richard and Chebat, 2016). Therefore, simply ignoring these constructs and deleting questions

from the questionnaire could potentially lead to a common method bias and lack of validity of the framework.

Table 5. 2 Scale item development

| Constructs | Scale items | Authors |
|--|---|---|
| <i>Arousal</i> (construct of primary interest) | 1) After viewing this website, I felt relaxed/ stimulated | Donovan and Rossitier (1982) |
| | 2) After viewing this website, I felt calm/excited | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| | 3) After viewing this website, I felt sleepy/wide-awake | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| <i>Pleasure</i> (construct of primary interest) | 4) After viewing this website, I felt annoyed/pleased | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| | 5) After viewing this website, I felt dissatisfied/ satisfied | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| | 6) After viewing this website, I felt happy/unhappy | Donovan and Rossitier (1982) |
| <i>Dominance</i> (construct not tested) | 7) I had a lot of control over what I could do while my visiting experience to this website | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| | 8) While I was on this site, I could choose freely what I wanted to see | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| | 9) While I was on this site, I controlled what happened in my online information searches | Richard and Chebat (2016) (Mehrabian and Russell (1974) PAD scale modified) |
| <i>Entertainment</i> (construct not tested) | 10) This website is fun to browse | Richard and Chebat (2016) Gao and Bai (2014) (adapted from Chen and Wells (1999)) |
| | 11) This website is exciting | Richard and Chebat (2016) Gao and Bai, 2014 (adapted from Chen and Wells (1999)) |
| | 12) This website is entertaining | Richard and Chebat (2016) Gao and Bai (2014) (adapted from Chen and Wells (1999)) |
| <i>Informativeness</i> (construct not tested) | 13) This website is useful to me | Richard and Chebat (2016); Gao and Bai, (2014) (adapted from |

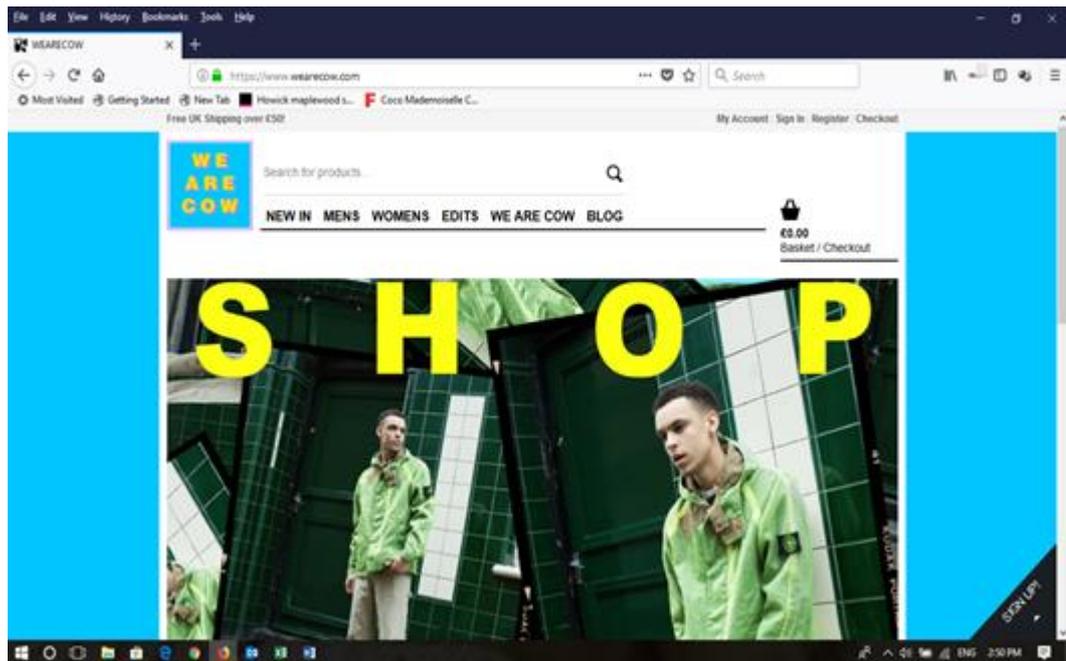
| | | |
|--|--|---|
| | | Chen and Wells (1999)) |
| | 14) This website is resourceful to me | Richard and Chebat (2016) Gao and Bai (2014) (adapted from Chen and Wells (1999)) |
| | 15) This website is knowledgeable for me | Richard and Chebat (2016) Gao and Bai, (2014) (adapted from Chen and Wells (1999)) |
| <i>Effectiveness (construct not tested)</i> | 16) The information on this website is accurate | Richard and Chebat (2016) Gao and Bai (2014) (adapted from Bell and Tang (1998)) |
| | 17) The information on this website is up-to-date | Richard and Chebat (2016) Gao and Bai (2014) (adapted from Bell and Tang (1998)) |
| | 18) The information on this website is relevant | Richard and Chebat (2016) Gao and Bai (2014) (adapted from Bell and Tang (1998)) |
| <i>Flow (construct of primary interest)</i> | 19) While visiting this site, I forgot about my immediate surroundings | Richard and Chebat (2016) (adapted from Hoffman and Novak (1996)) |
| | 20) When using this website, my attention was focused on the activity | Gao and Bai, (2014) (adapted from Lee <i>et al.</i> (2007) and Zhou, (2012)) |
| | 21) While visiting this site, I was not conscious of how long I had been surfing | Richard and Chebat (2016) (adapted from Hoffman and Novak (1996)) |
| <i>Product attitudes (construct of secondary interest)</i> | 22) I dislike/like the products on this website | Gao and Bai (2014) (adapted from Eighmey, (1997)) |
| | 23) I have negative/positive feelings about the products on this website | Gao and Bai (2014) (adapted from Eighmey, (1997)) |
| | 24) The products on this website are unattractive/attractive | Gao and Bai (2014) (adapted from Eighmey, (1997)) |
| <i>Purchase intentions (construct of secondary interest)</i> | 25) The likelihood of purchasing products from this website is high | Gao and Bai, (2014) Richard and Chebat (2016) (adapted from Dodds <i>et al.</i> (1991)) |
| | 26) My willingness to buy through this website is high | Gao and Bai, (2014) Richard and Chebat (2016) (adapted from Dodds <i>et al.</i> (1991)) |
| | 27) The probability that I would consider buying through this website is high | Gao and Bai, (2014) Richard and Chebat |

A 5-point Likert scale was selected as the most appropriate participant evaluation system. Likert scales enable a semantic differential system, which provides the respondents with the option to indicate their level of agreement with the pre-generated statements. A Likert scale assists in the statistical analysis to identify association and interdependence between variables as well as conducting comparative analysis, and it allows the researchers to utilise statistical tools such as SEM (Collis and Hussey 2009). Lozano *et al.* (2008) proposes that the optimum number of alternatives achieving satisfactory reliability and validity is between four and seven, and the number of alternatives most frequently found in Likert-type scales is five.

It was a challenge gaining permission from fashion retailers to use their website for this study. Large fashion retailers were reluctant to participate, and there was no success in gaining permission, or even a response from large main-stream fashion retailers such as NEXT or Topshop. However, since researching the market trend, a vintage clothing is gaining increased popularity in the UK and becoming a mainstream rather than niche subculture as discussed in Chapter Two (Clarke *et al.*, 2012; Cassidy and Bennett, 2012; BBC, 2016; The Telegraph, 2016). Hence smaller vintage clothing retailers were approached. An existing British chain vintage fashion shop, 'We Are COW', which has both an online and offline presence and sells clothing for both women and men was chosen for the study (see Figure 5.5). This vintage fashion retailer has been selected because of accessibility, and because it fitted the selection criteria of being an online and in-store retailer, where currently music is played in the in-store retail setting.

After being granted access, the store owner was consulted around a relevant genre of music currently played in the physical store. The genre of the music selected for this study is aligned with the music they play in the store. As Kim *et al.* (2009) suggest, musical fit should be considered as an appropriate methodological issue. The store manager suggested that they play "indie pop and rock" music in the store as this genre of music usually reflects the store image, identity and character. The term "indie" originally represented "an attitude, a subculture and a territory of music that was quietly, stubbornly, alternative. In the UK it meant anti-commercialism wearing a cardigan and glasses; a protest against the mainstream sporting twee hairslides" (Rogers, 2007)

although more recently, indie “came to mean any shambolic guitar band that wore vintage clothes and harked back nostalgically to the past” (Rogers, 2007). From this description, both indie music and vintage second-hand clothing share the characteristics of “going against the mainstream” and “being different” by being independent of major labels. 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.



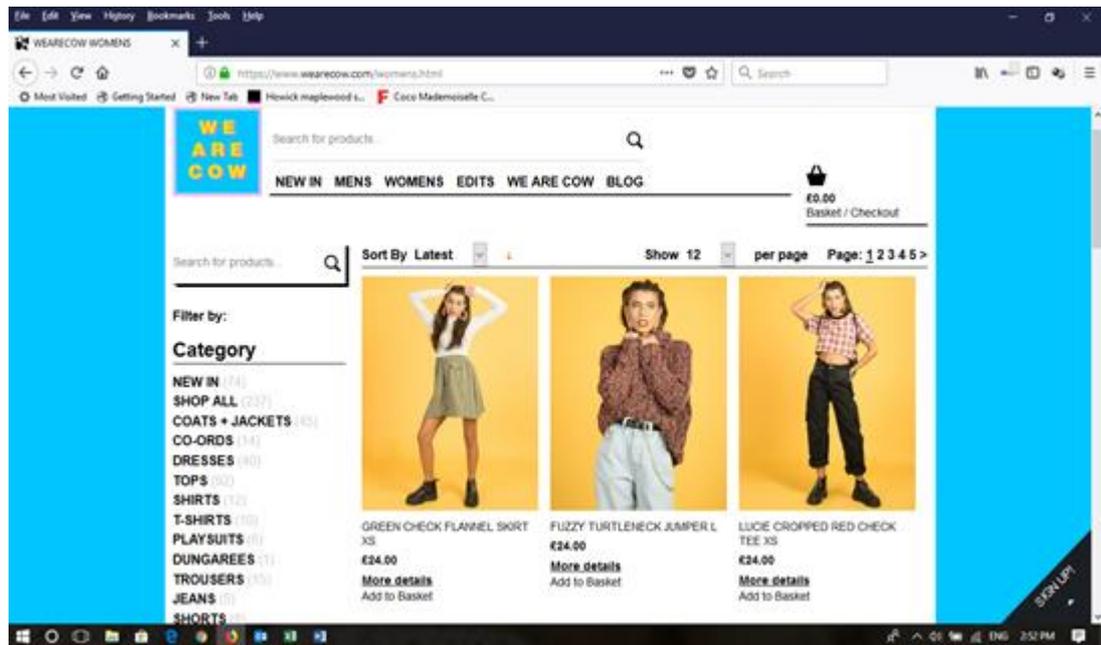


Figure 5. 5 Screenshots of the We Are COW website

The playlist selected is called “NEW INDIE/POP/ROCK 1HR COMPILATION - (2016/2017 Playlist)”, and as the name of the playlist suggests, the genre of the songs is broadly a mixture of indie pop and indie rock. None of the songs on the playlist are widely well known or from the charts. Researcher has intentionally chosen the playlist with the not well-known songs as familiarity of the songs is known to potentially influence the responses (Garlin and Owen, 2006), and the researcher did not want this to be a variable affecting the data. Indie music is a genre that belongs to popular music which can be characterized by pop conventions and structure, and a melodic, light-hearted sound. As exemplified in the songs from the playlist, indie pop artists generally use typical rock instrumentation (drums, guitar, bass, vocals), but sometimes including added textures with the use of synthesizer, piano and strings.

Although achieving consistency and congruency of the music and store identity and atmosphere was a priority as congruity between the music and general store atmosphere and products lead to a higher level of pleasure and arousal (Spangenberg *et al.*, 2005; Demoulin, 2011), speed of the music could not have been ignored as tempo has a greater effect on arousal, and psychological arousal induced by the tempo is connected to behaviour change (Garlin and Owen, 2005; Kampfe *et al.*, 2010). It is suggested that music over 94 beats-per-minute (BPM) is considered fast, and less than 72BPM slow (Milliman, 1982; Wu *et al.*, 2008; Ding and Lin, 2012). The one-hour long playlist

consisted of 19 songs with various speeds from Larghetto (broadly with 60-66BPM) to Allegro (fast, quickly, and bright with 120-156BPM). At the beginning of the playlist, most of the songs are Allegro or Allegretto (moderately fast with 112–120BPM) which most of the participants would have started listening from (see the table in Appendix 2 for the list of musical tempi and the table of song and artist names with the speed of the playlist used). In addition, most of the songs in the playlist share the characteristics of electro-pop or dance music, which the enhanced rhythm section (drums, synthesizers, rhythm guitar) plays the consistent subdivided beats in 16th beat notes creating the drive in the music and making it “feel” faster. Towards the end of the playlist, the songs are slightly slower, however, the first moderately slow song (at Andante 96BPM) is at 21 minutes in of the playlist, and it is likely that many of the participants will have been exposed to a moderately fast to fast speed of music during the browsing experience.

5.5.2 Sampling

Traditionally, an internet questionnaire was not considered the most suited method to represent the population in terms of generalisability, as there was a lack of accessibility to the internet, and it was regarded as something for someone younger and possessing more wealth and education (Sheehan, 2002; Wilson and Laskey, 2003; Evans and Mathur, 2005). However, the recent growth in the use of the internet have changed this perspective. For example, in the UK, 87.9% of adults have used the internet, and within this, more than 90% of the population was in the age group 45-54, more than 88% in 55-64, more than 74% in 65-75. This means that internet use is no longer limited to the younger generations who possesses more wealth and technical knowledge. Therefore, collecting samples online can offer a fair representation of the population in the UK.

Although probability sampling enables more representative sampling by including all elements in the population and increases generalizability and reduces sampling error and researcher bias (Fisher, 2004; Fricker, 2012), Bryman and Bell (2015) suggest that non-probability sampling ensures differences in respondents and provides more in-depth understanding. In general, researchers prefer probability sampling to non-probability sampling as probabilistic ones are more accurate and rigorous (Saunders *et al.*, 2015). Probability sampling, such as list-based sampling, requires an access to a large list of contacts (Fricker, 2012), and with that, the set sampling frame becomes likely to be more homogenous (i.e. university students, employees of large

corporations), which is not what this study is trying to capture. It is also very difficult to gain access to any large corporate or marketing mailing lists as data privacy issues have become more prominent in the recent years. To gain access to a large data set, the data sampling method leaned towards non-probability using snowballing sampling method where an initial group of respondents is selected usually at random. Once their questionnaire is completed, they are asked to promote the questionnaire and recruit future subjects from among their peers. This process may be carried out by obtaining referrals from referrals, thus leading to a snowballing effect (Dillon *et al.*, 1994).

The online questionnaires were sent to individuals on the researcher's email contact list. It was also shared onto volunteer panels such as Survey Tandem and callforparticipants.com. Furthermore, the snowballing sampling method was used utilising the social networking sites (SNSs) such as Facebook, Twitter and Google+. It has been evidenced that using SNSs as a channel can, not only facilitates the access to "hard to reach" population, but also expand sample size and the scope of the study while reducing cost and time constraints (Benfield and Szlemko, 2006; Balter and Brunet 2012). In line with this finding, SNSs have proven to be the most effective means in this study due to the common sharing function. Furthermore, in Balter and Brunet's (2012) study, virtual response rates using Facebook were higher than traditional snowball technique. This was also consistent with this study. The higher response rate through Facebook snowball sampling method can be explained by the fact that the participants could see the researcher's profile and the questionnaires being shared into interest groups, and therefore they were more confident to participate in the study (Balter and Brunet, 2012). Using SNS snowball sampling can minimise some barriers associated with online techniques to collect data, and the possibility to have access to offline contacts by the recommendation given by SNS contacts one can reduce problems associated with selection bias and representation (Balter and Brunet, 2012).

The main limitation with the recruitment of participants through the Internet and SNS snowballing sampling, however, lies in the generalisation of the result. Although virtual snowball sampling method can be considered a semi-random sampling procedure (Balter and Brunet, 2012), the result may not be appropriate for a statistical generalisation due to a less structural random selection of participants. It is not generally possible to select online respondents by a randomised process, and even the

Internet usage is near saturation levels in the UK, the sampling frame problem is persistent (Fielding *et al.*, 2008). Nevertheless, although the sampling system may not represent the most accurate population mix, this innovative method has the potential to replicate the authenticity of an online shopping environment and deliver a data set that will provide a starting point to uncover the paradigm.

The target sample size was set to around 250-300 each for Questionnaire 1 and Questionnaire 2, which is an average for *flow* and online atmospheric studies using a surveying method (Siepke, 2005; Yoon, 2010; Kim and Lennon, 2012; Cuny *et al.*, 2015). An estimate of 2000 mixed gender samples were approached, although the reach of samples via SNS snowballing sampling is incalculable. The researcher expected a realistic response rate of around 30%, which gives 3% buffer as a safety measure following the average response rate of 33% (Nuty, 2008).

The sampling targeted mixed gender participants aged around 25-34 as a representative group of consumers who would be most likely to purchase fashion items (Mintel, 2017). The sampling also incorporated a wider age category of 35-44 as they are also a dominant age group for purchasing fashion items online (Mintel, 2017). Using social networking websites to promote the surveys were also an effective way to incorporate the target sample age as ages 25-34 and 35-44 are very active on social networking websites (ONS, 2017).

There are, however, issues of statistical interference with gathering data from the Internet community with a non-probability method especially as the data was self-reported. It must be acknowledged that there is no guarantee that participants have provided accurate information, and the data gathered may not represent the truth of the paradigm (Wright, 2005). The authenticity of the collected data is a special problem in any online research as researchers can never be sure who is responding. Researchers often have no way to check respondents' claims of racial, ethnic, or gender identity (Fielding *et al.*, 2008). Nonetheless, it was stated clearly in the participant consent form and the participant information sheet that strict anonymity and confidentiality was assured for this data collection, therefore, the participants would have no incentive to give false information. It can indeed be regarded as an advantage of using an online surveying method in that it can achieve total anonymity from an ethical perspective.

The following section discusses the importance of ethical concerns within online research and procedures taken to ensure the confidentiality and anonymity of the data.

5.5.3 Ethics

Conducting online based research can lead to risks especially regarding participant identity, anonymity and confidentiality. The confidentiality of participants' responses was assured, and appropriate data storage security measures considered. For example, the responses were identified as codes rather than names or any identifying features during the research, and the data gathered has been digitalized and stored onto a password secured personal storage device instead of storing or sharing them on online cloud-based storage platform or shared interface (such as university computer system) to minimise the possibility of any other parties gaining access to the data.

5.4.3.0 Access and consent

All responses given by the participants were treated confidentially and anonymously. Before being directed to the main questionnaire, all the participants were directed to an online information sheet and online consent form (see Appendix 3 and 4). These forms explained the purpose of the research and the various ways in which the information will be used. The form also informed the participants that the result and findings may be published in public academic sources, although the confidentiality and anonymity of the participants will be maintained throughout. The questionnaire was only carried out if the participants agreed to give their consent. Participants were also made fully aware that they may withdraw from the study at any time even if they had started the questionnaire. At the end of the questionnaire, before the data is submitted by the participants, a 'submit response' button appeared. This was to make sure that participants are aware and agreed that their responses are being submitted to the researcher. The participants were also informed that they could amend their answers before submitting them. The contact detail of the researcher was provided in case they had any outstanding questions, comments or complaints.

Once the thesis is submitted all the data (both digital and hard copy form if made for any reason) will be destroyed from any hard drive by deleting the files and reformatting the hard drive to ensure that any data is erased. All the data will be destroyed five years

after the completion of this study. This information was also included in the information sheet to inform participants.

5.5.4 Data collection

One of the main criticisms of positivistic data collection methods is that they tend to be artificial and inflexible in nature, and therefore the results do not effectively explain the significance of the actions (Easterby-Smith *et al.*, 2012). As expected, many of the positivist studies, which have evaluated *flow* and the impact of music as a web atmospheric has used artificial websites or more experimental laboratory settings (Chung *et al.*, 2009; Kim *et al.*, 2009; Ding and Lin, 2012; Lai and Chiang, 2012; Kim and Lennon, 2012; Richard and Chebat; 2016). To tackle this methodological weakness, the researcher set up a procedure to replicate a more authentic shopping experience. The questionnaire was answered on the participants' computer at their convenient place and time as they would typically shop online. As discussed earlier, this study took a between-subjects control and intervention approach. A between-subjects design is a type of experimental design in which different sets of subjects receive separate treatment once only. Therefore, two sets of questionnaires were distributed. In this study, participants are randomly assigned to either Questionnaire 1 or 2 but not both. Questionnaire 1 asks participants to visit the chosen retailer's website and browse for at least 5 minutes. Then, having explored the website once, the participants are asked to complete the questionnaire. These participants would explore the website without any music played in the background. Questionnaire 2 asks participants to follow exactly the same procedure. Nevertheless, at the start of the process, these participants are instructed to open the YouTube link to the music playlist in a separate web window (playlist is discussed under section 5.5.1), and to start playing the music before they entered the retailer's website. This enables enabling music to be played in the background while they explore the website. This also means that the music was played from the same device as the device the respondents are using to browse the website enabling a telepresence design. As discussed earlier, the researcher has ensured that the music played was not familiar to the participants by choosing a YouTube playlist that included more niche artists and no songs have been in the charts as familiarity of the songs may affect the response of the participants (Garlin and Owen, 2006). Kim *et al.* (2009) have suggested that there is a need for an atmospheric study that uses a

telepresence design as it would enable the study to replicate a more holistic virtual shopping experience.

5.6 Pilot study

A pilot study was conducted to check whether respondents understood all the questions asked in the questionnaire, to ensure the validity of the instrument used to measure the variables, and to remove problems if necessary before distributing the questionnaire to the intended participants (Saunders *et al.*, 2015). The data for the pilot study was collected from 126 respondents; 64 who *did not* listen to music while browsing the website (Gender: Male = 18, Female = 46, Age: *Mean (M)* = 34.3, Standard deviation (*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).

5.6.0 Validity and reliability of the measurement scale

There are multiple steps taken in this study to ensure the measurement reliability and validity using statistical techniques. These steps will be explained in detail in the measurement model assessment section Chapter Six. However, from the pilot study, it is important to consider the validity and reliability of the measurement scale.

The validity of a measuring instrument is the extent to which the score from a measure represents the variable they are intended to measure, and whether it is correlated with other variables which they are expected to be correlated with and not with the variables that are conceptually distinct.

The content validity was estimated by drawing the hypothesis from the literature (see Chapter Four), and this will be tested by using the appropriate method also generated based on previous literature. The face validity is a type of validity that concerns the extent to which a measurement scale is assumed to measure the construct of interest. All indicators were developed upon the scales from the studies that validated and used them as a measure of shoppers' emotion and *flow* in an online environment (Gao and Bai, 2014; Richard and Chebat, 2016), and therefore the face validity has been achieved. The validity of the measurement scale can also be judged based on the measure's reliability.

Hence one of the key purposes of the pilot test for this study is to test the reliability of the measures. In other words, whether the items for a specific construct are all measuring the same attribute.

By testing the reliability of the scale, the researcher can ensure the scale is free from random error and can identify whether the findings can be replicated by others using the same scale (Briggs and Cheek, 1986; Burns and Burns, 2008). A random error leads to inconsistency leading to lower reliability, whereas systematic sources of error are considered not to have a major impact on reliability as they affect the measurement in a constant way, and do not lead to inconsistency of the data (Creswell, 2003; Malhotra, 2004). Reliability of the measures can be tested in several ways. Firstly, testing the stability of the measurement over time. The stability of the research is determined if a study is re-tested at a later time shows a high correlation between the outcomes from the first and second measurements (Bryman and Bell, 2015). Secondly, by testing the internal consistency of the measures against other measures within the same questionnaire (Malhotra, 2004; Pallant, 2016). Internal reliability determines whether a scale used for measuring is reliable by “assessing the commonness of a set of items that measure a particular construct” (Burns and Burns, 2008:417). In other words, reliability can be determined by examining the association between the results obtained from the different items in the scale. If the association is high, it means the scale yields is consistent with the results and is therefore reliable (Briggs and Cheek, 1986). The internal consistency reliability tests whether each item of the scale consistently measures the characteristics of the construct (Malhotra, 2004).

The most commonly used statistical tool to measure the reliability of the scale is Cronbach's alpha reliability test (Creswell, 2003). Cronbach's alpha coefficient offers an indication of the average correlation among all the scale items in the instrument. It measures the internal consistency of the scale items, that is how closely related a set of items are as a group, and thus the reliability of the scale. The coefficient values range from 0 to 1, with higher values indicating greater reliability. Values of .60 or less are generally considered to indicate unsatisfactory internal consistency reliability (Malhotra, 2004). However, Nunnally (1978) recommends that a minimum Cronbach alpha coefficient of .70 should be achieved within each scale. Cronbach's alpha coefficient is, however, quite sensitive to the number of items in the scale (Briggs and

Cheek, 1986; Malhotra, 2004; Pallant, 2016), and with a smaller number of scales such as fewer than ten items, it is common to find lower Cronbach's alpha coefficient values.

Cronbach alpha coefficient result from the pilot study to two decimal places for each construct are as follows; Arousal .68, Pleasure .84, *Flow* .64, Product Attitude .84, Purchase Intentions .92 (see Table 5.3). Most of the scales achieved Cronbach alpha coefficient of $>.70$ or just below .70. Looking at these Cronbach's alpha coefficient values, it can be concluded that the measurements for the nine constructs are highly reliable. There was a wide spread of the respondents' answers across all indicators, suggesting that the participants could differentiate between the latent variables. The purpose of a pilot study is to help to identify any potential problems with measurements, and if there is a problem, to address and amend it before the final questionnaire is implemented. In this study, no significant problems were identified within the measurement scale used, and therefore no items were amended or deleted.

Table 5. 3 Cronbach's alpha reliability test result

| Construct | Cronbach's Alpha | Number of items |
|----------------------------|-------------------------|------------------------|
| <i>Arousal</i> | .68 | 3 |
| <i>Pleasure</i> | .84 | 3 |
| <i>Flow</i> | .64 | 3 |
| <i>Product Attitude</i> | .84 | 3 |
| <i>Purchase Intentions</i> | .92 | 3 |

5.6.1 Crosstab analysis

Prior to performing Pearson's correlation analysis, a crosstab analysis was performed to demonstrate the frequency distribution of the variables to examine the basic relationships within the collected data. The full tables for crosstab analysis are presented in Appendix 5.

The results for arousal indicators (Relaxed/Stimulated, Calm/Excited, Sleepy/Wide-awake) suggests that music did not change the spread of the result considerably,

although the percentages for arousal level were slightly higher for the people who listened to music.

The results for pleasure indicators (Annoyed/Pleased, Dissatisfied/Satisfied, Unhappy/Happy) suggest that respondents who listened to music were overall felt more sense of pleasure compared to those who did not listen to music

The results for the three *flow* indicators (Immediate surroundings, Focused, Time) show that the spread of percentages is very similar for both who listened to music and those who did not listen to music. This suggests that music has no association with *flow*, which is an unexpected finding.

The results for product attitude indicators (Like, Positive, Attractive) suggest that respondents who listened to music have more positive and less negative attitude towards the products compared to those who did not listened to music.

The results for the purchase intentions indicators (Likelihood of purchase, Willingness to purchase, Probability of purchase) suggests that there is a weak and possibly negative association between music and purchase intentions.

5.6.2 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 no significant correlation between music (participants who *did not* listen to the music and who listened to the music while browsing the website) and *flow* indicators (see Table 5.4).

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 two *flow* indicators; "I forgot about immediate surroundings" ($r = -.01, p > .05$) and "My attention was focused on the activity" ($r = -.04, p > .05$) although not significant. There was a positive correlation between the variable music and another *flow* indicator ("I was not conscious of how long I have been browsing"), but also not significant ($r = .11,$

$p > .05$). This result was unexpected, as, from the literature, it was anticipated that the presence of music would correlate with a higher arousal level (see Table 5.4).

Table 5. 4 Correlation analysis between music and flow

| | I forgot about immediate surroundings | My attention was focused on the activity | I was not conscious of how long I have been browsing |
|-----------------------|---------------------------------------|--|--|
| <i>Music/No-music</i> | $r = -.01, p = .90$ | $r = -.04, p = .69$ | $r = .11, p = .24$ |

The correlation analysis indicates that there was no significant correlation between music and arousal indicators (see Table 5.5).

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 indicators; “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 indicator (“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 with a higher arousal level (see Table 5.5). 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 levels. 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”.

Table 5. 5 Correlation analysis between music and arousal

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

The correlation analysis between arousal and *flow* indicators showed some significant correlation between the two groups of participants (see Table 5.6). 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/Wideawake” ($r = .29, p < .05$). 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” ($r = -.30, p < .05$).

Table 5. 6 Correlation analysis between arousal and flow

| | | Relaxed/Stimulate d | Calm/Excited | Sleepy/Wide- awake |
|----------------------|---|-------------------------|-------------------------|-------------------------|
| <i>No- music</i> | 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 | $r = .19$ $p = .13$ | $r = .32$ $p = .01$ | $r = .19$ $p = .13$ |
| <i>Music</i> | 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 | $r = -.30$ $p = .02$ | $r = -.15$ $p = .24$ | $r = -.20$ $p = .12$ |

The correlation analysis between arousal and pleasure also showed some significant correlation between the two groups of participants. For participants who *did not* listen to the music, “Sleepy/Wideawake” 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 5.7).

Table 5.7 Correlation analysis between arousal and pleasure

| | | Relaxed/Stimulated | Calm/Excited | Sleepy/Wide-awake |
|-----------------|------------------------|-------------------------|-------------------------|-------------------------|
| <i>No-music</i> | 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 | $r = .20$ $p = .11$ | $r = .12$ $p = .34$ | $r = .35$ $p = .01$ |
| <i>Music</i> | 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 | $r = -.27$ $p = .03$ | $r = -.09$ $p = .51$ | $r = -.05$ $p = .71$ |

The correlation analysis between *flow* and pleasure 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 5.8).

Table 5. 8 Correlation analysis between *flow* and pleasure

| | | Annoyed/Pleasant | Dissatisfied/Satisfied | Unhappy/happy |
|-----------------|--|------------------------|------------------------|------------------------|
| <i>No-music</i> | 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 | $r = .35$ $p = .01$ | $r = .29$ $p = .02$ | $r = .16$ $p = .22$ |
| <i>Music</i> | 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 | $r = .46$ $p = .00$ | $r = .32$ $p = .01$ | $r = .32$ $p = .01$ |

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.

5.6.3 Independent samples t-test

Following the correlation analysis, an independent t-test was performed to examine the differences in level of *flow* and arousal by music (i.e. whether there were variations in *flow* and arousal among participants who listened to music compared to those who did not listen to music).

Firstly, the three indicators of *flow* (I forgot about immediate surroundings/My attention was focused on the activity/I was not conscious of how long I have been browsing/I forgot about immediate surroundings) was grouped together by creating a composite variable. The Levene's test for equality of variances was significant with .27 which is below threshold of .05 (see Table 5.9). The t-value was -1.416, $df = 124$, and

it was not significant ($p > .05$). This result indicates that there was no difference between the level of *flow* for participants who listened to music compared to those who did not listen to music, suggesting that music did not increase shoppers' state of *flow*.

Table 5. 9 Independent samples t-test between music and *flow*

| | | Levene's test | | T-test for equality of means | | | |
|-------------|-------------------------|---------------|---------|------------------------------|-----|---------|-----------------|
| | | F | P-value | t | df | P-value | Mean difference |
| <i>Flow</i> | Equal variances assumed | 1.220 | .271 | -1.416 | 124 | .159 | -.674 |

Next, the three indicators of arousal (stimulated/excited/wide-awake) was grouped together by creating a composite variable. The Levene's test for equality of variances was significant with .08 which is above threshold of .05. The t-value was .510, df = 124, and it was not significant ($p > .05$) (see Table 5.10). This result indicates that there was no difference between the arousal levels for participants who listened to music compared to those who did not listen to music, suggesting that music did not increase shoppers' arousal.

Table 5. 10 Independent samples t-test between music and arousal

| | | Levene's test | | T-test for equality of means | | | |
|----------------|-------------------------|---------------|---------|------------------------------|-----|---------|-----------------|
| | | F | P-value | t | df | P-value | Mean difference |
| <i>Arousal</i> | Equal variances assumed | 3.102 | .081 | .510 | 124 | .611 | .185 |

5.6.4 Conclusion from the pilot study

From the pilot study, it can be concluded that the wording and length of the scales were proven to be appropriate. In addition, from the Cronbach's alpha coefficients test, the scale items are highly reliable, and therefore the reliability and the validity, to a certain extent, of the measurement scale are apparent. This means that no items were amended or deleted from the questionnaire for the main data collection. The reliability and validity will be tested in more detail once the main data is gathered (see Chapter Five). Nevertheless, there was a suggestion to amend the wording of the instruction to have

better clarity describing the procedure, which was amended for the main data collection phase.

From the Pearson's correlation analysis, the initial results indicate that although there was not a direct association between music and the level of arousal, there was a significant correlation relationship between the variables, and the presence of music somewhat influenced the level of significance (negative or positive). Interestingly, the presence of music led to negative correlation between arousal and pleasure, and between arousal and *flow*. Independent samples t-test evidenced that there was no difference in the level of participants' state of *flow* nor arousal between those who listened to music and those who did not. The result from the pilot study 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. Nevertheless, A further analysis will be performed with the full data in the main analysis to evaluate this in more detail.

5.7 Chapter summary

This chapter has outlined the methodological approach undertaken in this research. It opened with a discussion on the common research philosophy associated with social science and online marketing research. Following a critical evaluation of ontological, epistemological and methodological underpinnings, a positivism research philosophy was chosen, and an aligned research approach, design and method have been developed to achieve the research objectives outlined in Chapter Two. A between-subjects control and intervention design was adopted to test two different conditions; one where half of the participants listen to music, and the other half do not listen to music. A quantitative survey method using questionnaires was chosen to collect the primary data, in which, validity and

reliability of the scale indicators were tested in the pilot study. Chapter Six presents the analysis of the full data collected and evaluation of the results.

The aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment.

Chapter Six: Findings

6.0 Introduction

This research aims to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment.

To achieve the research aim, four objectives have been generated:

1. To establish whether music as a web atmospheric directly affects shoppers' state of *flow* in an online retail environment.
2. To establish the relationships between music as a web atmospheric, *flow*, arousal and pleasure in an online retail environment.
3. To confirm the relationship between *flow* and its outcomes in an online retail environment.
4. To develop a conceptual framework that captures the key relationships between music as a web atmospheric, shoppers' state of *flow*, arousal, and pleasure in an online retail environment.

In this chapter, results from a selection of statistical techniques are outlined and interpreted to fulfill the objectives. In Chapter Four, a conceptual framework was developed based on the previous literature (see Figure 6.1), and sixteen hypotheses were proposed. Music as a web atmospheric was hypothesised to directly affect shoppers' state of *flow* and indirectly affect shoppers' *flow* through arousal. Furthermore, both shoppers' state of *flow* and arousal were hypothesised to directly affect pleasure. These are the main relationship paths to be investigated and are surrounded by the dotted line on the full framework. In addition, the researcher hypothesised that shoppers' arousal directly affects *flow*, arousal directly affects pleasure, and *flow* directly affects pleasure for both who listens to music and those who do not (see Figure 6.2).

Furthermore, the researcher also infers that music may have a moderating effect on these paths (see Figure 6.3). In addition, to complete the full picture of the framework, the researcher hypothesises that the shoppers' state of *flow* directly affects purchase intentions and indirectly affect purchase intentions through product attitudes. These paths are hypothesised to confirm the findings from the previous literature, and have been treated as hypotheses of secondary interest. The hypotheses are restated as below and they are mapped onto the Figures 6.1, 6.2 and 6.3;

H1. Music as a web atmospheric directly affects shoppers' state of flow in an online fashion retail environment

H2. Music as a web atmospheric directly affects shoppers' arousal in an online fashion retail environment

H3. Shoppers' arousal directly affects the state of flow for all shoppers in an online fashion retail environment

H4. Shoppers' arousal directly affects the state of flow for shoppers who do not listen to music in an online retail environment

H5. Shoppers' arousal directly affects the state of flow for shoppers who listen to music in an online retail environment

H6. Shoppers' arousal directly affects pleasure for all shoppers in an online fashion retail environment

H7. Shoppers' arousal directly affects pleasure for shoppers who do not listen to music in an online retail environment

H8. Shoppers' arousal directly affects pleasure for shoppers who listen to music in an online retail environment

H9. Shoppers' state of flow directly affects pleasure for all shoppers in an online fashion retail environment

H10. Shoppers' state of flow affects pleasure for shoppers who do not listen to music in an online retail environment

H11. Shoppers' state of flow affects pleasure for shoppers who listen to music in an online retail environment

H12. Music moderates the relationship between shoppers' arousal and flow in an online retail environment

H13. Music moderates the relationship between shoppers' arousal and pleasure in an online retail environment

H14. Music moderates the relationship between shoppers' flow and pleasure in an online retail environment

H15 Shoppers' state of flow directly affects purchase intentions in an online retail environment

H16 Shoppers' pleasure indirectly affects purchase intentions through product attitudes in an online retail environment

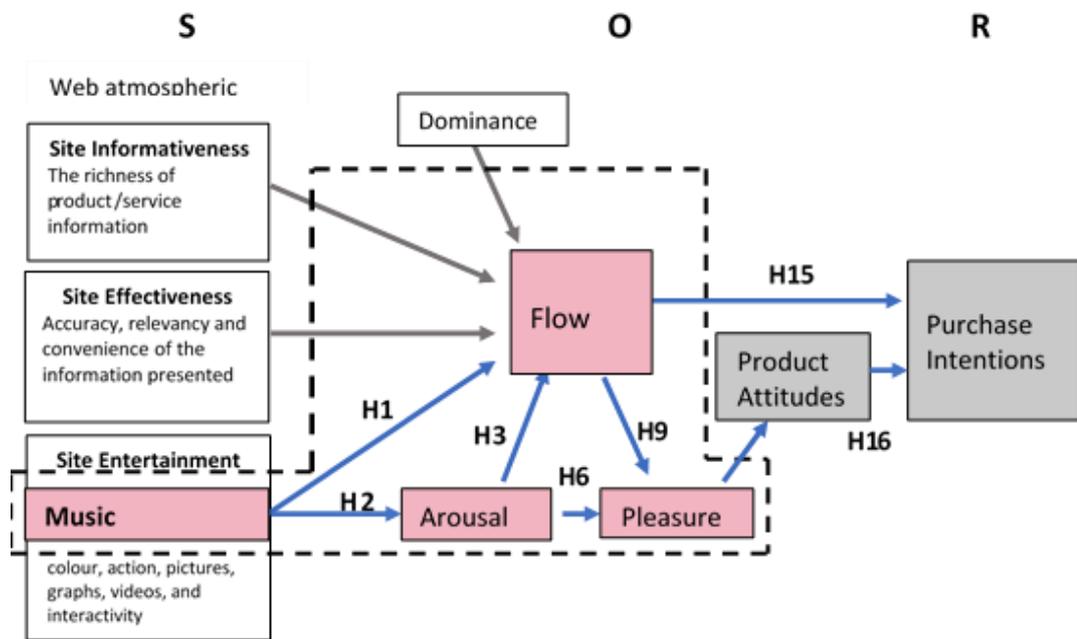


Figure 6. 1 Full conceptual framework with the hypotheses label

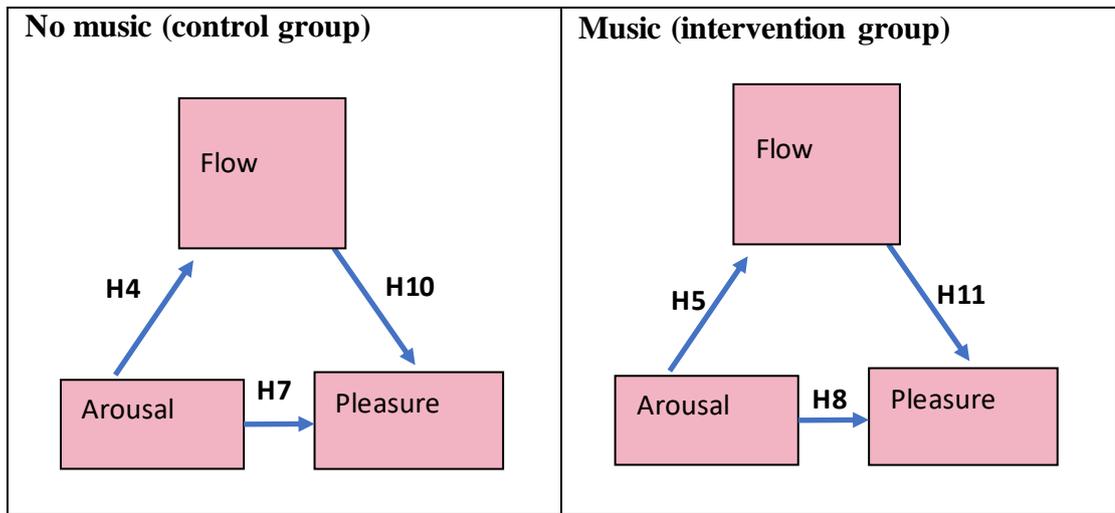


Figure 6. 2 Control and intervention models with the hypotheses label

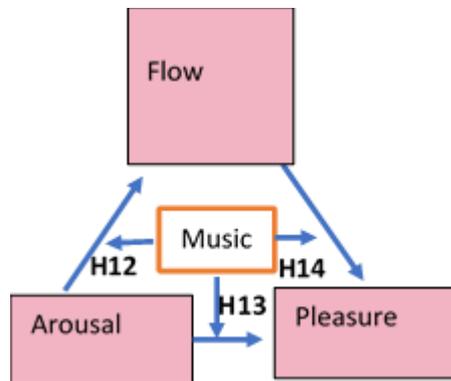


Figure 6. 3 Moderation effect model with the hypotheses label

An appropriate data collection tool was designed in Chapter Five, and the data analysis methods are considered in this chapter to interpret the collected data.

In the subsequent section, the choice of data analysis method is discussed to open this chapter. Data analysis is the most crucial step in converting information gathered by the relevant research tools into conclusions (Jacob, 1984). One of the most challenging aspects of the research design processes is to choose the most appropriate statistical technique to analyse the data gathered to make meaning of it (Malhotra, 2004). Thus, it is essential to understand the different statistic techniques, the type of questions they can help address and their underlying assumptions (Creswell, 2003).

6.0.0 Choosing the data analysis method

The nature of the research problem and the research approach has informed that structural equation modelling (SEM) has been considered as the most suitable data analysis method for this study for the following reasons. Firstly, observing constructs

such as *flow* directly, 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). Secondly, the conceptual framework and the results from the pilot study showed that the relationships between the constructs are complex and intertwining. Simple correlation analysis and comparing the means would not suffice to unravel those relationships. SEM enables the examination of the effect of constructs across multiple variables via direct, indirect or bi-directional paths of influence. This examination is to demonstrate the extent to which one construct affects or predicts construct or latent variable (Baumgartner and Homburg, 1996). Thirdly, the study is complex as two sets of data (music/no-music) must be tested and compared to assess the impact of music as a web atmospheric. Multi-group analysis via SEM, allows the comparison and testing of whether pre-defined data groups have significant differences in their group-specific parameter estimates, and therefore is generally regarded as an analysis of continuous moderating effects (Sarstedt *et al.*, 2011). This approach allows the pathways from arousal to *flow*, arousal to pleasure, and *flow* to pleasure to be tested to ascertain whether the presence of music strengthens the association between these constructs. It permits differences in the various relationships across group-specific parameters to be assessed, i.e. to test latent variables which may or may not be affected by the presence of music.

As well as SEM, an initial independent samples t-test was also undertaken to determine whether music increased the level of the participants' state of *flow* and arousal compared to those who did not listen to music. This would offer initial findings, which can be confirmed by further SEM analysis.

Before proceeding to any data analysis, some preliminary analysis must be undertaken to check the data and the scale items of the survey instrument. Descriptive analysis such as cross-tabs and Pearson's correlation analysis were performed to check the data for any outliers. Then the validity of the scale items will be tested by Cronbach's alpha reliability test, and by confirmatory factor analysis (CFA) prior to proceeding to SEM analysis.

6.0.1 Chapter outline

To open the chapter, the result of the preliminary analysis is presented to outline the characteristics of the data gathered. These initial analyses comprise of descriptive statistics including demographic analysis of the samples, cross tabulation analysis, Cronbach's alpha reliability test and correlation analyses. Although these initial analyses were not performed to test the hypotheses, they had to be undertaken to understand the basic patterns and relationships between the variables (i.e. relationships between questions) by comparing relationships between questions or scale items and checking whether the distribution of the data is appropriate for further analysis.

Then, the result from an independent samples t-test is presented. Independent samples t-test was performed to compare the mean of the responses between the two groups (the participants who listened to music and who did not), an independent samples t-test was performed for *flow* and arousal. This was to determine whether music increased the level of participants' state of *flow* and arousal compared to those who did not listen to music.

Next, the result of the confirmatory factor analysis (CFA) is presented, which examined the relationship between observed variables and their underlying latent constructs based on pre-established theories. This test was performed to examine how well the measured variables or items represented the constructs. It confirmed that the measurement model is valid for analysing the structural model.

Then, the result from the structural equation modelling (SEM) is presented. The direct and indirect path analyses examined the proposed hypothesised relationships between the latent constructs and evaluated the conceptual framework.

Finally, the result from multi-group analysis is presented, which evaluated the group invariance between the two participant groups (those who listened to music and those who did not). Consequently, this analysis examined the moderation effect of music on the path relationships between the constructs.

6.1 Descriptive analysis

Prior to analysing the data, it is essential to check and screen the data set for any errors or outliers. Then, once the data set is inspected, the descriptive phase of the data analysis can begin by assessing the nature of the variables (Pallant, 2016). Descriptive statistics can provide provide simple summaries about the basic features of the data,

the sample and the measures by counting the frequency distribution of responses gathered from the field work. The reporting of the descriptive analysis simply describes what the data shows, determines the normality of the data distribution, and checks variables for any infringement of assumptions (Pallant, 2016). It is a visual display that organises and presents frequency counts or the number of occurrences of a particular value or characteristic in a way in which the information can be interpreted more easily. The calculation of frequency distribution shows how many respondents fall into each category, and it can also provide more detailed information, compared to a single number or percentage, when describing the responses (Creswell, 2003). To start, a sample demographic has been analysed to show the distribution of the variable such as sample age. This is to check whether the collected samples generally fit within the target age groups. Then Cronbach's alpha reliability test was performed to examine whether the scale items accurately measure the variable of interest. Finally, bivariate analyses such as cross-tabulations and correlation analysis were performed to describe the relationship between two different variables.

6.1.0 Sample demographics

A self-administrated questionnaire was shared on Social Networking Services (SNSs) such as Facebook and Twitter, and emails, therefore the reach and an accurate response rate are not calculable. However, 462 usable samples in total were collected.

The samples' demographic characteristics can be briefly summarised in the Table 6.1.

Table 6. 1 The samples' demographic characteristics

| Questionnaire 1 | Questionnaire 2 | Total |
|-----------------|-----------------|------------|
| Male 65% | Male 58% | Male 62% |
| Female 35% | Female 43% | Female 38% |
| Total 53% | Total 47% | 100% |

65% of the total respondents were aged 25-34 (see Table 6.2). As can be seen in Figure 6.4, the spread of the age is concentrated between 20 and 39. 62% and 68% of the participants who listened to music and who did not were aged 25-34. This result indicates that the collected data suitably reflects the target age of 18-34 (with the focus of ages 25-34) which is stated in Chapter Two.

Table 6. 2 Breakdown of the spread of the age

| Age | Frequency | Per cent |
|---------------------------------|-----------|----------|
| 18-24 | 65 | 14 |
| 25-34 | 299 | 64.9 |
| 35-44 | 70 | 15.2 |
| 45-54 | 19 | 4.0 |
| 55-64 | 7 | 1.5 |
| 66 | 1 | 0.2 |
| Total (excluding missing value) | 461 | 99.8 |

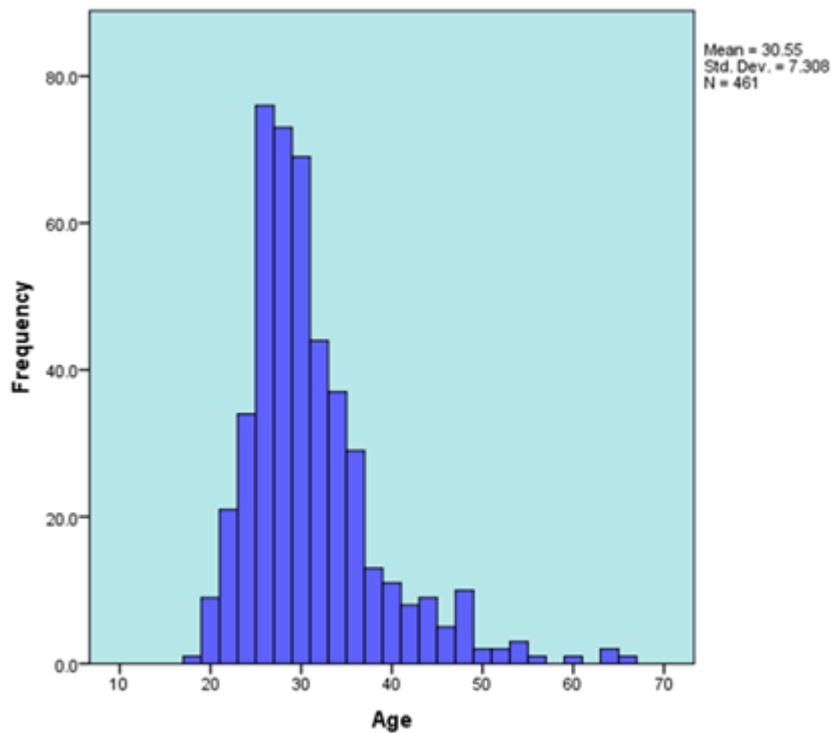


Figure 6. 4 Spread of age

Further to this, an independent t-test was performed between the age and music/no-music. From the result in Table 6.3, the Levene's test for equality of variances was

not significant with p-value of .69 which is above the threshold of .05. This suggests that homogeneity of variance assumption was met. Results of the t-test of equality of means showed that t-value was 1.17, degree of freedom (df) = 459, and it was not significant ($p > .05$). This result means that there are no differences between the age groups (i.e. the sample population does not vary by age). In addition to the distribution of the age presented in Figure 6.4, this result shows that the age of the sample population represents the population composition.

Table 6. 3 Independent samples t-test for respondents' age by music/no-music

| | | Levene's test | | T-test for equality of means | | | Mean |
|-------------|-------------------------|---------------|---------|------------------------------|-----|---------|------------|
| | | F | P-value | t | df | P-value | difference |
| <i>Flow</i> | Equal variances assumed | .157 | .692 | 1.174 | 459 | .241 | .800 |

An independent samples t-test was also performed on the PI against gender to test if there is a difference in purchase intentions between the two gender.

From the result in Table 6.4, Levene's test of equality of variances was used to verify whether the variances are equal or homogenous across the samples. The test revealed that the homogeneity of variance assumption was violated because Levene's test was statistically significant with p-value $< .001$. As the group variances are unequal in the population an alternative option was to perform a robust parametric test (e.g. Welch's t-test), a statistical test of the equality of group variances. However, the normality of the sample distribution was checked as independent samples t-test requires that the dependent variable is normally distributed (or approximately normally distributed) within each group. A graphical test of normality of the samples was performed which showed that the samples were not normally distributed. As such, non-parametric test was performed using Mann-Whitney U test instead of parametric test as this test does not require the assumption of normality to be satisfied. Mann-Whitney's U test identifies the differences between two independent samples on a continuous measure (Field, 2013; Pallant, 2016), and instead of comparing the means, it compares medians and evaluates whether the two groups differ significantly (Pallant, 2016). This means

that unlike the independent-samples t-test, the Mann-Whitney U test allows researcher to come to different conclusions depending on the distributional assumption of the data.

Table 6. 4 Independent samples t-test for PI by gender

| | | Levene's test for equality of variances | | T-test for equality of means | | | |
|-----------|-------------------------|---|---------|------------------------------|-----|---------|-----------------|
| | | F | P-value | t | df | P-value | Mean difference |
| <i>PI</i> | Equal variances assumed | 31.625 | .000 | -3.129 | 460 | .002 | -1.008 |

The result of the Mann-Whitney U test (table 6.5) evidenced that there were differences between purchase intentions by gender. The mean differences between the two groups (male/female) which was significant ($p < .05$) suggests that purchase intentions for buying clothes from this website for male was higher than female. This result is against the report that females are more likely than males to have bought clothes online (71% of females versus 60% of males) (Mintel, 2017). Nonetheless, there is a trend of an increase in men purchasing clothes online (Mintel, 2017), and this study sample population may reflect this change in the trend.

Table 6. 5 Mann-Whitney U test result for PI compared with gender

| | Purchase Intention |
|-----------------------|---------------------------|
| Mann-Whitney U | 22487.50 |
| Wilcoxon W | 38597.50 |
| Z-score | -2.05 |
| P-value | 0.41 |

Overall the age distribution of the sample population was similar to the actual population. Although the distribution of sample population by gender compared to purchase intentions were different to the actual population. It was found that males were more likely to buy online than females which is consistent with the increasing trend of men buying clothes online.

6.1.1 Reliability analysis of the scale items

Reliability of a scale is the consistency of the results from the same scale if repeated measurements are made (Tabachnick and Fidell, 2014). The reliability of a scale can be considered as an indication of how free the measurement scale is from random error (Briggs and Cheek, 1986), and it can be assessed by determining the proportion of systematic variation. As discussed in detail in Chapter Five, the most frequently used indicator of internal consistency, which is a measure of reliability, is Cronbach's alpha coefficient test. Ideally, the Cronbach's alpha coefficient of a scale should be over .70 (Briggs and Cheek, 1986; Tabachnick and Fidell, 2014; Pallant, 2016), and a value of .60 or less generally indicates poor internal consistency reliability (Malhotra, 2004).

For the main data analysis, Cronbach's alpha reliability test was performed for 15 scale items which formed nine latent constructs of interest. Cronbach alpha coefficient to two decimal places for each construct are as follows; Arousal .73, Pleasure .81, *Flow* .67, Product Attitude .83, Purchase Intentions .92. All the scales achieved Cronbach alpha coefficient of >.70 or just below .70, which indicates a satisfactory internal consistency, and that the scale items used in the questionnaires are reliable (Table 6.6).

Table 6. 6 Cronbach's alpha reliability test

| Construct | Cronbach's Alpha | Number of items |
|---------------------|------------------|-----------------|
| Arousal | .731 | 3 |
| Pleasure | .811 | 3 |
| <i>Flow</i> | .666 | 3 |
| Product Attitude | .826 | 3 |
| Purchase Intentions | .922 | 3 |

6.1.2 Crosstab analysis

Following the same procedure as the pilot study, a crosstab analysis was performed to examine the distribution of two or more variables by tabulating their results in 2-dimensional grids. It is used to find out relationship between variables, and to identify the type of response of a particular category of respondents. It provides comparative

data on two or more variables across multiple features at a glance. Use of crosstab permitted the researcher to summarize the data in categorical variables and to determine if there are any associations present in the data. The full tables from the crosstab analysis are presented in the Appendix 5.

Firstly, the crosstab results for all the arousal indicators (Relaxed/Stimulated, Calm/Excited, Sleepy/Wide awake) compared to presence/absence of music revealed that the distribution of the responses is similar for both participants who listened to music and for those who did not listen to the music (see Appendix 5 for all the tables for crosstab analysis).

Secondly, the crosstab results for all the pleasure indicators (Annoyed/Pleased, Dissatisfied/Satisfied, Unhappy/Happy) compared to presence/absence of music indicated that the distribution of the responses is similar for both participants who listened to music and for those who did not listen to music.

Thirdly, the crosstab results for all the three flow indicators (Immediate surroundings, Focused, Time) compared to presence/absence of music indicated that the distribution of the responses is similar for both participants who listened to music and for those who did not listen to the music.

Nonetheless, the crosstab results for product attitude indicators (Like/Positive/Attractive) compared to presence/absence of music revealed that the presence of music may be associated with more positive and less negative product attitudes.

Finally, the crosstab results of the three indicators for purchase intention (Likelihood of purchase, Willingness to purchase, Probability to purchase) compared to presence/absence of music indicated that music may be associated with a higher level of purchase intentions.

Overall, these crosstab analysis results may help to explain some of the correlation analysis results which is shown in the subsequent section.

6.1.3 Correlation analysis between music and constructs

Having performed the crosstab analysis, Pearson's correlation analysis was performed to test the extent to which the strength of the relationship between the variables is significant.

As discussed in Chapter Five, (see 5.5.5.1), Pearson's correlation analysis can provide indications of association, which are either positive or negative, as well as the strength of the relationship. It can test if there is a positive linear relationship between the variables, a negative linear relationship between the variables, or no linear relationship between the variables. It is, therefore, a good basic statistical tool to determine the association between the variables.

The result from Table 6.7 indicates that there were significant correlation between music (participants who *did not* listen to music and who listened to the music while browsing the website) and one product attitude indicator "Like" ($r = .11, p < .05$), as well as two purchase intention indicators "Likelihood of purchase" ($r = .10, p < .05$) and "Probability of purchase" ($r = .10, p < .05$).

The result from Table 6.7 indicates that there was no correlation between music (participants who *did not* listen to music and who listened to music while browsing the website) and one arousal indicator "Relaxed/Stimulated" ($r = -.00, p > .05$), which was not significant. There was a weak positive correlation between music and two arousal indicators; "Calm/Excited" ($r = .02, p > .05$) and "Sleepy/wide awake" ($r = .03, p > .05$), and both were not significant. This initial correlation result indicates that the presence of music had no obvious association with their level of arousal, which corresponds with the crosstab result.

Furthermore, the result indicates that there was no significant correlation between music (participants who *did not* listen to music and who listened to the music while browsing the website) and pleasure indicators; "Annoyed/Pleased" ($r = .07, p > .05$), "Dissatisfied/Satisfied" ($r = .07, p > .05$) and "Unhappy/Happy" ($r = .07, p > .05$). This result also corresponds with the crosstab result.

The result indicates that there was no significant correlation between the presence of music (participants who *did not* listen to music and who listened to the music while browsing the website) and *flow* indicators; "I forgot about immediate surroundings" ($r = .05, p > .05$), "My attention was focused" ($r = .07, p > .05$) and "I was not conscious

of how long I have been browsing” ($r = .06, p > .05$). This result also corresponds with the crosstab result.

Likewise, the result indicates that there was not a significant correlation between music (participants who *did not* listen to music and who listened to the music while browsing the website) and one product attitude indicator “Like” ($r = .11, p < .05$), however, not with the other 2 indicators “Positive” ($r = .08, p > .05$) and “Attractive” ($r = .07, p > .05$).

The result indicates that there was a significant correlation between music (participants who *did not* listen to music and who listened to the music while browsing the website) and two purchase intention indicators “Likelihood of purchase” ($r = .10, p < .05$) and “Probability of purchase” ($r = .10, p < .05$), however, not with the other indicator “Willingness to purchase” ($r = .08, p > .05$). This result indicates that the presence of music has some significant positive association with purchase intentions.

Table 6. 7 Correlation analysis between music and constructs

| | | | |
|---------------|---------------------------------------|--------------------------|-------------------------|
| | Arousal | | |
| <i>Music/</i> | Relaxed/Stimulated | Calm/Excited | Sleepy/Wide-awake |
| <i>No</i> | $r = -.00, p = .97$ | $r = .02, p = .72$ | $r = .03, p = .56$ |
| <i>music</i> | | | |
| | Pleasure | | |
| | Annoyed/Pleased | Dissatisfied/Satisfied | Unhappy/Happy |
| | $r = .07, p = .13$ | $r = .07, p = .13$ | $r = .07, p = .15$ |
| | Flow | | |
| | I forgot about immediate surroundings | My attention was focused | I forgot about time |
| | $r = .05, p = .25$ | $r = .07, p = .13$ | $r = .06, p = .23$ |
| | Product attitudes | | |
| | Like | Positive | Attractive |
| | $r = .11, p = .02$ | $r = .08, p = .11$ | $r = .07, p = .10$ |
| | Purchase intentions | | |
| | Likelihood of purchase | Willingness to purchase | Probability of purchase |
| | $r = .10, p = .04$ | $r = .08, p = .11$ | $r = .10, p = .04$ |

6.1.4 Correlation analysis between the constructs and the two groups

To determine which factors are correlated more highly between two groups (music/no music), three correlation analyses examining three key constructs (*flow*, arousal and

pleasure) were run for each group. This analysis would reveal whether there are significant differences in the association between variables for participants who listened to music and those who did not.

6.1.4.0 Correlation analysis between arousal and flow

The correlation analysis between arousal and *flow* questions showed some significant correlation between the two groups of participants (participants with and without music) (see Table 6.8). For participants who did not listen to music, the answers for the question “I forgot about immediate activity” very significantly correlated with all the arousal indicators; “Relaxed/Stimulated” ($r = .21, p < .01$), “Calm/Excited” ($r = .38, p < .01$), “Sleepy/Wide-awake” ($r = .38, p < .01$). Furthermore, the answers for the question “My attention was focused on the surroundings” significantly correlated with “Relaxed/Stimulated” ($r = .16, p < .05$) and also very significantly correlated with “Calm/Excited” ($r = .30, p < .01$) and “Sleepy/Wide-awake” ($r = .40, p < .01$). Finally, the question “I was not conscious of how long I have been browsing” significantly correlated with “Relaxed/Stimulated” ($r = .17, p < .05$) and very significantly correlated with “Calm/Excited” ($r = .29, p < .01$) and “Sleepy/Wide-awake” ($r = .31, p < .01$).

For participants who listened to music, the question “I forgot about immediate surroundings” showed significant correlation with two arousal indicators “Relaxed/Stimulated” ($r = .15, p < .05$) and “Sleepy/Wide-awake” ($r = .16, p < .05$), but not significant with “Calm/Excited” ($r = .05, p > .05$). The question “My attention was focused on the activity” very significantly correlated with “Relaxed/Stimulated” ($r = .20, p < .01$) and with “Sleepy/Wide-awake” ($r = .27, p < .01$), ~~although not significantly correlated with “Calm/Excited” ($r = .08, p > .05$).~~ The question “I was not conscious of how long I have been browsing” also showed very significant correlation coefficient with all the arousal indicators; “Relaxed/Stimulated” ($r = .31, p < .01$), “Calm/Excited” ($r = .22, p < .01$) and “Sleepy/Wide-awake” ($r = .30, p < .01$).

The above findings suggest that for both participants who listened to music and who did not, the level of arousal correlated with *flow*.

Table 6. 8 Correlation analysis between arousal and *flow*

| <i>Flow</i> | Arousal | | |
|-------------|--------------------|--------------|-------------------|
| | Relaxed/Stimulated | Calm/Excited | Sleepy/Wide-awake |
| | | | |

| | | | | |
|-----------------|--|------------------------|------------------------|------------------------|
| <i>No-music</i> | I forgot about immediate surroundings | $r = .21$ $p = .00$ | $r = .38$ $p = .00$ | $r = .38$ $p = .00$ |
| | My attention was focused on the activity | $r = .16$ $p = .02$ | $r = .30$ $p = .00$ | $r = .40$ $p = .00$ |
| | I was not conscious of how long I have been browsing | $r = .17$ $p = .01$ | $r = .29$ $p = .00$ | $r = .31$ $p = .00$ |
| <i>Music</i> | I forgot about immediate surroundings | $r = .15$ $p = .02$ | $r = .05$ $p = .44$ | $r = .16$ $p = .01$ |
| | My attention was focused on the activity | $r = .20$ $p = .00$ | $r = .08$ $p = .19$ | $r = .27$ $p = .00$ |
| | I was not conscious of how long I have been browsing | $r = .31$ $p = .00$ | $r = .22$ $p = .00$ | $r = .30$ $p = .00$ |

6.1.4.1 Correlation analysis between arousal and pleasure

The correlation analysis between arousal and pleasure indicators showed some significant correlation within both groups of participants (see Table 6.9). For participants who did not listen to music, “Annoyed/Pleased” was significantly correlated with “Relaxed/Stimulated” ($r = .16, p < .05$), and highly significantly correlated with “Calm/Excited” ($r = .37, p < .01$) and “Sleepy/Wide-awake” ($r = .46, p < .01$). “Dissatisfied/Satisfied” was highly significantly correlated with all the three arousal indicators; “Relaxed/Stimulated” ($r = .22, p < .01$), “Calm/Excited” ($r = .46, p < .01$), “Sleepy/Wide-awake” ($r = .47, p < .01$). “Unhappy/happy” was also highly significantly correlated with all the three arousal indicators; “Relaxed/Stimulated” ($r = .21, p < .01$), “Calm/Excited” ($r = .45, p < .01$), “Sleepy/Wide-awake” ($r = .38, p < .01$).

For participants who listened to music, “Annoyed/pleased” was highly significantly correlated with all the three arousal indicators; “Relaxed/Stimulated” ($r = .31, p < .01$), “Calm/Excited” ($r = .32, p < .01$), “Sleepy/Wide-awake” ($r = .55, p < .01$). “Dissatisfied/Satisfied” was also highly significantly correlated with all the three arousal indicators; “Relaxed/Stimulated” ($r = .26, p < .01$), “Calm/Excited” ($r = .36, p < .01$), “Sleepy/Wide-awake” ($r = .50, p < .01$). “Unhappy/happy” was significantly correlated with “Relaxed/Stimulated” ($r = .14, p < .05$), and highly significantly

correlated with “Calm/Excited” ($r = .25, p < .01$) and “Sleepy/Wide-awake” ($r = .38, p < .01$).

As expected, a higher level of arousal was associated with a higher level of pleasure for both who listened to music and those who did not. Nevertheless, the correlation coefficient between pleasure and relaxed/stimulated was higher for those who listened to music than those who did not listen to music. In addition, the correlation coefficient between pleasure and sleepy/wide-awake was also higher for those who listened to music than those who did not listen to music.

Table 6. 9 Correlation analysis between arousal and pleasure

| | | Arousal | | |
|----------------------|----------------------------|------------------------|--------------------|-----------------------|
| | | Relaxed/Stimulat ed | Calm/Excited | Sleepy/Wide- awake |
| <i>No- music</i> | Annoyed/pleased | $r = .16, p = .01$ | $r = .37, p = .00$ | $r = .46, p = .00$ |
| | Dissatisfied/satisfi ed | $r = .22, p = .00$ | $r = .46, p = .00$ | $r = .47, p = .00$ |
| | Unhappy/happy | $r = .21, p = .00$ | $r = .45, p = .00$ | $r = .38, p = .00$ |
| <i>Music</i> | Annoyed/pleased | $r = .31, p = .00$ | $r = .32, p = .00$ | $r = .55, p = .00$ |
| | Dissatisfied/satisfi ed | $r = .26, p = .00$ | $r = .36, p = .00$ | $r = .50, p = .00$ |
| | Unhappy/happy | $r = .14, p = .03$ | $r = .25, p = .00$ | $r = .38, p = .00$ |

6.1.4.2 Correlation analysis between flow and pleasure

The correlation analysis between *flow* and pleasure indicators showed highly significant correlation for all the indicators within both groups of participants (see Table 6.10). For participants who did not listen to music, “I forgot about immediate surroundings” was highly significantly correlated with all the pleasure indicators; “Annoyed/Pleased” ($r = .45, p < .01$), “Dissatisfied/satisfied” ($r = .46, p < .01$) and “Unhappy/happy” ($r = .41, p < .01$). “My attention was focused on the activity” was also highly significantly correlated with all the three pleasure indicators; “Annoyed/Pleased” ($r = .36, p < .01$), “Dissatisfied/satisfied” ($r = .35, p < .01$) and “Unhappy/happy” ($r = .37, p < .01$). “I was not conscious of how long I have been browsing” was also highly significantly correlated with all the three pleasure

indicators; “Annoyed/Pleased” ($r = .44, p < .01$), “Dissatisfied/satisfied” ($r = .39, p < .01$) and “Unhappy/happy” ($r = .34, p < .01$).

Similarly, for participants who listened to the music, “I forgot about immediate surroundings” was highly significantly correlated with all the pleasure indicators; “Annoyed/Pleased” ($r = .32, p < .01$), “Dissatisfied/satisfied” ($r = .35, p < .01$) and “Unhappy/happy” ($r = .28, p < .01$). “My attention was focused on the activity” was also highly significantly correlated with all the three pleasure indicators; “Annoyed/Pleased” ($r = .28, p < .01$), “Dissatisfied/satisfied” ($r = .28, p < .01$) and “Unhappy/happy” ($r = .31, p < .01$). “I was not conscious of how long I have been browsing” was also highly significantly correlated with all the three pleasure indicators; “Annoyed/Pleased” ($r = .35, p < .01$), “Dissatisfied/satisfied” ($r = .31, p < .01$) and “Unhappy/happy” ($r = .38, p < .01$).

From the previous literature, a higher level of *flow* was associated with a higher level of pleasure, and this result is consistent with the previous literature (Richard and Chebat, 2016).

Table 6. 10 Correlation between *flow* and pleasure

| | | Pleasure | | |
|-----------------|--|------------------------|------------------------|------------------------|
| | | Annoyed/Pleased | Dissatisfied/Satisfied | Unhappy/happy |
| <i>No-music</i> | I forgot about immediate surroundings | $r = .45$ $p = .00$ | $r = .46$ $p = .00$ | $r = .41$ $p = .00$ |
| | My attention was focused on the activity | $r = .36$ $p = .00$ | $r = .35$ $p = .00$ | $r = .37$ $p = .00$ |
| | I was not conscious of how long I have been browsing | $r = .44$ $p = .00$ | $r = .39$ $p = .00$ | $r = .34$ $p = .00$ |
| <i>Music</i> | I forgot about immediate surroundings | $r = .32$ $p = .00$ | $r = .35$ $p = .00$ | $r = .28$ $p = .00$ |
| | My attention was focused on the activity | $r = .28$ $p = .00$ | $r = .28$ $p = .00$ | $r = .31$ $p = .00$ |
| | I was not conscious of how long I | $r = .35$ $p = .00$ | $r = .31$ $p = .00$ | $r = .38$ $p = .00$ |

6.1.5 Summary of descriptive analysis

The initial descriptive analyses have enabled the researcher to check and screen the data prior to the data analysis. The above sections provide simple summaries about the basic features of the data, the sample and the measures. The sample demographics have been analysed to show the distribution of the variable such as sample age, and it revealed that the sample gathered fits within the target age groups proposed in Chapter Five. Cronbach's alpha reliability test revealed that the scale items are reliable. Finally, bivariate analyses such as cross-tabulations and correlation analysis were performed to describe the basic association between two different variables. The results showed that there were some positive associations between the variable to be further tested in the main analysis using SEM. The researcher can now proceed with the hypotheses testing.

6.2 Comparing the means between two groups

Prior to performing SEM analysis to assess the hypothesised relationships in the conceptual framework, a statistical analysis was used to test *H1* and *H2* by comparing the mean difference between the two groups. T-tests can be used when there are two sets of data (i.e. participants who listened to the music and who did not) to compare the mean score on the continuous variable to establish whether two means differ significantly (Field, 2013; Pallant, 2016). There are two major types of t-tests; paired samples t-test and independent samples t-test. Paired samples t-tests can be used when the two sets of data are produced by the same people but at different times. Whereas independent t-tests are used when comparing two groups of people on one occasion. Therefore, an independent samples t-test was performed to compare the differences in the means of shoppers' state of *flow* and arousal between participants who listened to music and those who did not listen to music.

Firstly, the three indicators of *flow* (I forgot about immediate surroundings/My attention was focused on the activity/I was not conscious of how long I have been browsing/I forgot about immediate surroundings) were grouped by creating a composite variable. In order to accept the estimate of the means of the t-test, the Levene's test of homogeneity/equality of variances must be achieved. The Levene's test for equality of variances performed was statistically significant with p-value <.001 (see Table 6.11). This result violated the homogeneity of variance assumption and

showed that the variances are unequal across the samples. An alternative approach (i.e. Welch's t-test) could have been considered to test the equality of group variances. However, the normality of the distribution of the samples was checked to ascertain whether the data was normally distributed as this is a requirement for performing parametric t-test. A graphical test revealed that the samples were not normally distributed. As such, non-parametric test was performed using Mann-Whitney U test as this test does not require the assumption of normality to be satisfied. Mann-Whitney U test result revealed that the distribution of *flow* is the same across participants who listened to music and those who did not, and therefore suggests that music did not increase the level of *flow* (see Table 6.12). Thus, *H1* was rejected.

Next, the three indicators of arousal (stimulated/excited/wide-awake) were grouped by creating a composite variable. The Levene's test for equality of variances was not significant with p-value of .86 which is above the threshold of .05. The t-value was -.357, degree of freedom(df)= 460, and it was not significant ($p > .05$) (see Table 6.11). This result indicates that **there was no difference between the arousal levels for participants who listened to music compared to those who did not listen to music, suggesting that music did not increase shoppers' arousal.** This outcome was also supported by the Mann-Whitney U test showing that **the difference in means of arousal was the same across the participants who listened to music and those who did not** (see Table 6.12). Thus, *H2* was also rejected.

Table 6. 11 Independent samples t-test between music and *flow* and arousal

| | | Levene's test | | T-test for equality of means | | | |
|----------------|-------------------------|---------------|---------|------------------------------|-----|---------|-----------------|
| | | F | P-value | t | df | P-value | Mean difference |
| <i>Flow</i> | Equal variances assumed | 8.380 | .004 | -1.647 | 460 | .100 | -.395 |
| <i>Arousal</i> | Equal variances assumed | .029 | .866 | -.357 | 460 | .721 | -.087 |

Table 6. 12 Mann-Whitney U test

| Null hypothesis | P-value | Decision |
|-----------------|---------|----------|
| | | |

| | | |
|---|------|----------------------------|
| The distribution of Arousal is the same across categories of Music/No-music | .176 | Retail the null hypothesis |
| The distribution of <i>Flow</i> is the same across categories of Music/No-music | .248 | Retail the null hypothesis |

6.3 Testing of measurement scale using confirmatory factor analysis (CFA)

Confirmatory Factor Analysis (CFA) is used when the researcher already has some knowledge of the underlying latent variable structure within the scale used. Exploratory Factor Analysis (EFA), on the other hand, is often used when developing scales and measures. To determine the underlying structure, EFA summarises the patterns of correlation and looks for sets of groups of closely related (or not related) items by reducing a broad set of variables using a smaller set of factors or components (Pallant, 2016). However, the scale structure and questions for questionnaires for this study adopted the Gao and Bai's (2014) and Richard and Chebat's (2016) question format. This means that the underlying relationships between shoppers' state of *flow*, arousal pleasure and other variables have been established and validated (Gao and Bai, 2014, Richard and Chebat, 2016). Therefore, confirmatory factor analysis (CFA) is more suitable for this study as the scales have been based upon previous literature, especially with the reliability of the scale items being evidenced with Cronbach's Alpha reliability test. CFA then enables the researcher to test the validity of the indicator variables. The full structural modelling involves relations among latent variables, and the primary concern in working with a complete model is to examine to what extent these relations are valid, and it is critical that the measurement items of each latent variable are psychometrically sound (Byrne, 2010). Thus, it is essential to test the validity of the measurement model prior to attempting to evaluate the structural model. Once the measurement model is validated to be operating adequately, the researcher can then proceed to the testing of the hypothesised structural model (Schumacker, 2002).

Using CFA, the measurement model is evaluated using the goodness of fit measures to show that the indicator variables are reasonably valid until the measurement model is valid. The model fit will assess how well the hypothesised model (i.e. factor structure) accounts for the correlations between variables in the dataset. To determine acceptable thresholds, goodness of fit of the model will be tested using some of the following

measures: Chi-square test, Comparative Fit Index (CFI), Tucker-Lewis index (TLI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI). Convergent and discriminant validity, as well as reliability, can be established in CFA to ensure that the factors demonstrate validity and reliability. There are few measures that can be used to determine validity: Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV). Common method bias can also be used to test for response bias in the dataset, which may be due to some external factors (e.g. conducting an online questionnaire).

CFA, in summary, is an essential preliminary phase, which tests the validity of the measurement model by examining the relationship between the observed variables and the underlying latent variables.

In CFA, a measurement model is drawn to illustrate the path diagrams and the links between measured variables (Byrne, 2010). As discussed in Chapter Three, the conceptual model of music and *flow* was developed based on the online consumer behaviour models, namely SOR, and the theory of *flow* which are reviewed in the literature. The three main latent variables (arousal, pleasure and *flow*) are also derived from the literature of consumer behaviour theory, online atmospheric studies and *flow*. This model was developed to demonstrate the relationships between music consumers' emotional response and *flow*. Table 6.13 presents an overview of the latent and observed variables that have been measured and to be tested in CFA. A statistical software AMOS (Analysis of Moment Structures), which is an add-on to the SPSS software, is used in this study to test the measurement model (CFA) as well as the structural equation models with latent variables, to examine the relationships between the hypotheses in the later sections.

Table 6. 13 Overview of latent and observed variables

| Latent variables | Observed variables | Scale Items |
|-------------------------|---------------------------|--|
| <i>Flow</i> | Surround | While visiting this site, I forgot about my immediate surroundings |
| | Focused | When using this website, my attention was focused on the activity |
| | Time | While visiting this site, I was not conscious of how long I had been surfing |

| | | |
|-----------------|------------|---|
| <i>Pleasure</i> | Pleased | After viewing this website, I felt annoyed/pleased |
| | Satisfied | After viewing this website, I felt dissatisfied/satisfied |
| | Happy | After viewing this website, I felt happy/unhappy |
| <i>Arousal</i> | Stimulated | After viewing this website, I felt relaxed/stimulated |
| | Excited | After viewing this website, I felt calm/excited |
| | Wideawake | After viewing this website, I felt sleepy/wide-awake |

6.3.0 Model specification

Firstly, the model specification was drawn in AMOS 23 that shows the observed variables (in rectangular boxes) and latent variables (in ellipses) (See Figure 6.5). This model specification shows the relationship between 15 observed variables and three latent variables listed in Table 6.13 above. Once the observed variables and latent variables are established, the validity of these observed indicators loading on their corresponding latent variable needs to be calculated.

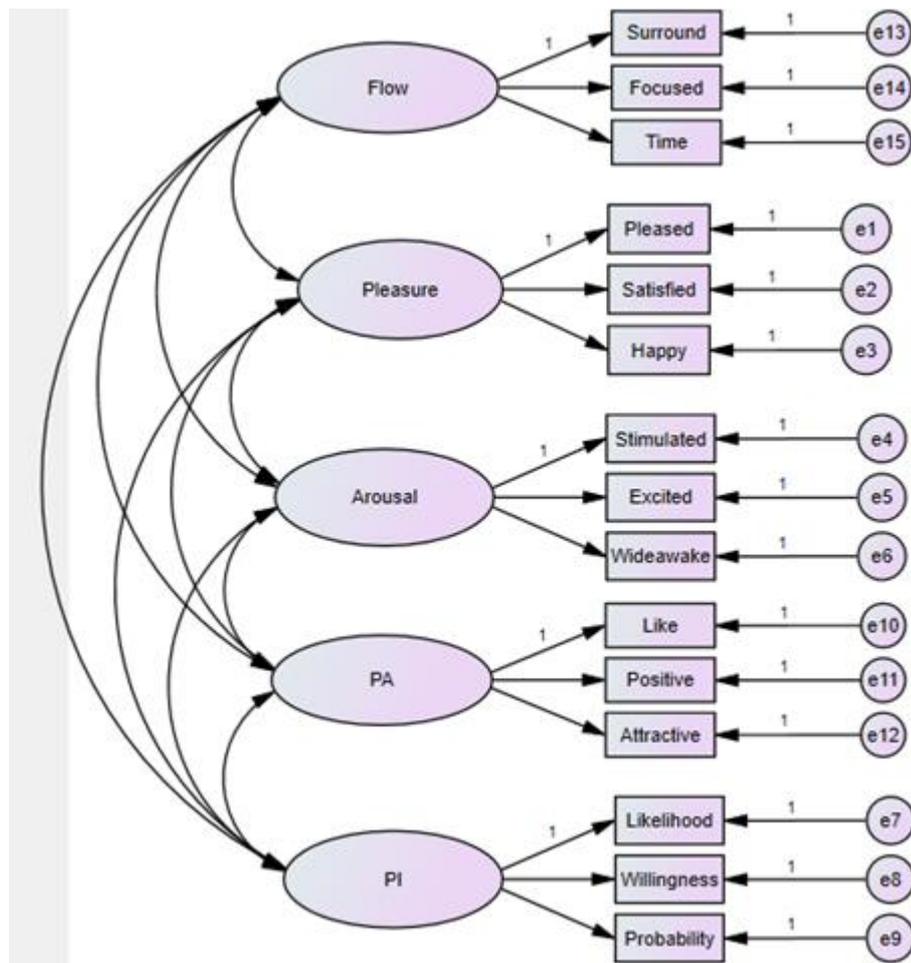


Figure 6. 5 CFA model specification

6.3.1 CFA model measurement

The initial CFA model is shown in Figure 6.5 with the standardised regression weights between the observed variables and latent constructs, and the co-variances between the latent constructs. As can be seen, the factor loadings (B) between most latent variables and observed variables are satisfactory ($B > .60$) except between *flow* and *focused* ($B = .48$). This outcome can potentially cause a problem with the model fit. To improve the model, a modification to the model was made, and "Focused" was taken out from the model specification (see Figure 6.6). No further variables have been eliminated. It can also be pointed out that the covariance between the pleasure and product attitudes are relatively high. This outcome could indicate that there may be discriminant validity issues.

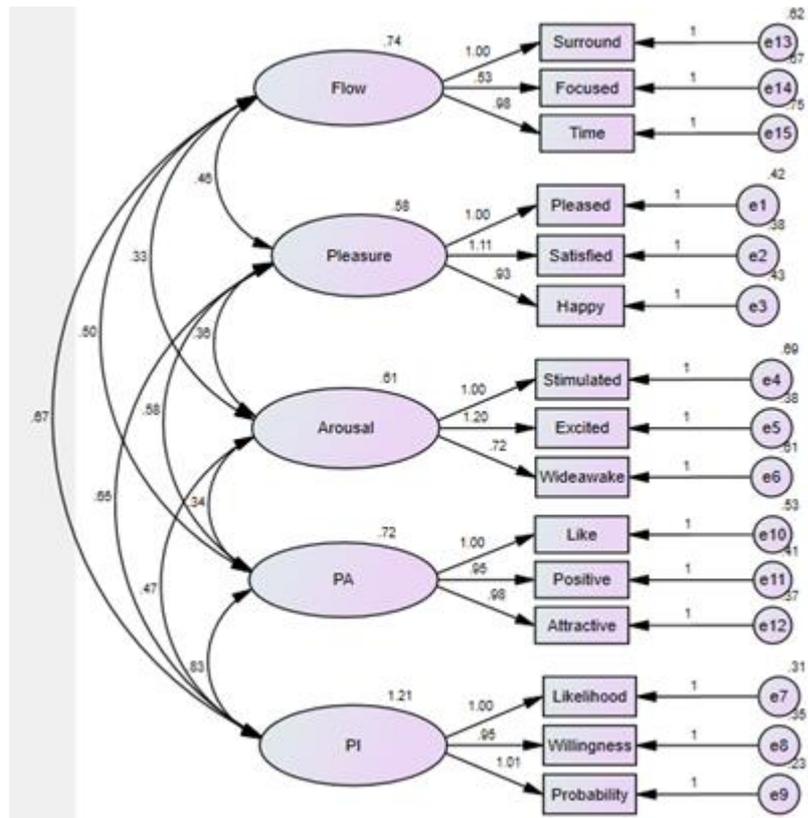


Figure 6. 6 CFA model measurement

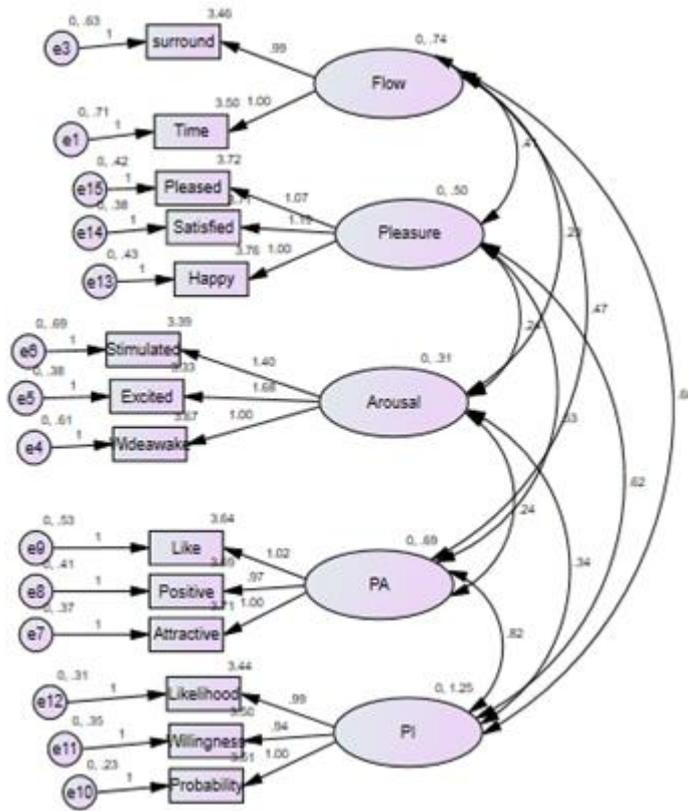


Figure 6. 7 Modified model measurement with "focused" eliminated

6.3.2 Assessment of the model fit

In CFA, the fit of the model can be assessed by evaluating the fit of the covariance between the sample covariance matrix and the estimated covariance matrix (Tabachnick and Fidell, 2014). A number of different fit indices can be used to examine the fit of the model. Chi-square analysis is the most common index to measure the model fit; however, there are other indices to assess the model fit, and the following sections discuss the various indices used for this analysis.

6.3.2.0 Chi-square

CFA performed for the full dataset revealed that the measurement model yielded a chi-squared value of 137.1 with 67 degrees of freedom with a p -value of .00. It is suggested that a nonsignificant ($p > .05$) chi-square (default model) value indicates a good model fit, and a significant chi-square ($p < .05$) indicates lack of satisfactory model fit (Byrne, 2010). This means that the result indicated a poor fit of the model ($p < .001$). A nonsignificant chi-square can indicate a good fit; however, it is anticipated that chi-squared value is sensitive to sample sizes that exceed 200, and the larger the sample size, the more likely the rejection of the model (Hair *et al.*, 2010).

As such, several goodness-to-fit indices have been developed that look at the model fit to minimize the effect of sample size bias, which is inevitable for chi-square value (Tabachnick and Fidell, 2007), and researchers are recommended to account for several goodness-to-fit indices as well as the chi-square value in their analysis report (Bollen and Long, 1993). However, different fit indices assess the fit of the structural equation model in a different manner, and choosing the ones to report is a vital process (Byrne, 2010).

To select a suitable goodness-to-fit index that demonstrates the fit of the model in research, Jaccard and Wan (1996) recommend the use of at least three fit tests, one from each of the first three categories; (1) chi-square; GFI, NFI, or CFI, NNFI and SRMR; (2) Chi-square, AGFI, TLI, and RMSEA; (3) IFI and SRMR or RMSEA. In addition, Kline (1998) recommended that at least four tests, such as chi-square; GFI, NFI, or CFI, NNFI, and SRMR should be reported. Diamantopoulos and Siguaw (2000) suggest that the results of the chi-square test used in conjunction with the RMSEA, EVCI, SRMR, CFI, and GFI indices should be sufficient to investigate the model's overall fit. Following the recommendations from the above, in conjunction with the

chi-square test, four goodness-of-fit indices were chosen; NFI, CFI, TLI and RMSEA from the category (1), (2) and (3) of Jaccard and Wan's (1996) recommendation.

6.3.2.1 Normed Fit Index (NFI)

The Normed Fit Index (NFI) compares a hypothesized model with the null (independence) model providing a measure of complete covariation of a data, and it rescales chi-square value into 0 (no fit) to 1.0 (perfect fit) range (Bentler and Bonnett, 1980; Bryman, 2012; Schumacker and Lomax, 2010). For instance, $NFI = .50$ means the researcher's model improves fit by 50% compared to the null model. Schumacker and Lomax (2010) suggest that NFI values above .95 are reasonable, between .90 and .95 acceptable, and below .90 indicate that the model needs to be modified. The NFI, however, is not sensitive to simple model misspecification, and it has the tendency to underestimate for small sample sizes compared to its revised version of CFI (Hu and Bentler, 1999; Bryman, 2012). Therefore, Bentler (1990) suggested using CFI instead of NFI. Nevertheless, the NFI value for the initial measurement model is .96, which satisfies the threshold of .90 and shows a good fit of the model.

6.3.2.2 Comparative Fit Index (CFI)

The Comparative Fit Index (CFI) is subsequently developed by Bentler (1990) to overcome the deficiency of sample size related bias in the NFI index. Similar to NFI, CFI compares the fit of the hypothesised model to an independence model (Tabachnick and Fidell, 2014), being able to represent the ratio between the discrepancy of the model of interest to the discrepancy of the independence model. In other words, the CFI indicates the extent to which the hypothesised model is better than the independence model. CFI, along with RMSEA, is an adjusted measure for the issues of sample size which is the disadvantage of the chi-squared test or NFI, and it is one of the least affected measures by sample size (Fan *et al.*, 1999).

Moreover, it has been argued that the CFI is a favourite model fit index by marketing researchers (Cadogan *et al.*, 2002), it is robust even under severe multivariate nonnormality (Ping, 1995; West *et al.*, 1995). The CFI value has a range between 0 and 1, and larger the value, the better the model fit. With values larger than .90 was preliminarily considered to be an acceptable fit (Bentler, 1990), however, later, Hu and Bentler (1999) set a more stringent CFI cut-off value .95. The CFI value of the initial measurement model is .98, and it reached Hu and Bentler's (1999) CFI cut-off value of .95 indicating a good fit of the model.

6.3.2.3 Tucker-Lewis Index

Tucker-Lewis Index (TLI) was developed preliminary for CFA but also has extended use in SEM. Similar to NFI and CFI, the measure compares the hypothesised model against a null model, and it scales from 0 (no fit) to 1.0 (perfect fit) (Schumacker and Lomax, 2010). The TLI is moderately sensitive to simple model misspecification but is very sensitive to complex model misspecification. It is also relatively independent of the distribution and sample size bias, therefore recommended to be reported (Hu and Bentler, 1999). For TLI, the higher the value, the better (the value can exceed 1.0), and at least .95 is recommended as the cut-off value. The TLI for this measurement model has achieved .97 which indicates the good fit of the model.

6.3.2.4 Root Mean Square Error of Approximation (RMSEA)

The Root Mean Square Error of Approximation (RMSEA) is regarded as one of the most informative criteria amongst fit indices (Bryman, 2012). The RMSEA avoids issues of sample size, which is the weakness for chi-squared or NFI, by analysing the discrepancy between the hypothesised model, and how well it would fit the population covariance matrix if it were available (Browne and Cudeck, 1993). Values less than .05 are a close fit, between .05 and .08, is an adequate fit, and between .08 and .10 are a mediocre fit, values larger than .10 are a poor fit (Bryman, 2012; MacCallum *et al.*, 1996). In addition, Hu and Bentler (1999) recommend an RMSEA cut-off value close to .06, and this cut-off value of model fit indices have been widely applied in various fields of social science research using structural equation modelling techniques. RMSEA is valued for a number of reasons to be included in the analysis report. Firstly, RMSEA is moderately sensitive to model misspecification but less affected by distribution and sample size bias (Hu and Bentler, 1999). Secondly, the interpretive guidelines for the RMSEA are proven to provide an appropriate conclusion of the model fit (Hu and Bentler, 1999). And lastly, confidence intervals can be built around RMSEA estimates which provide vital information about how precise the fit estimate is, which is not available for almost all other fit indexes (McCallum and Austin, 2000). For this initial measurement model, RMSEA value is .05, which is less than MacCallum *et al.*'s (1996) as well as Hu and Bentler's (1999) suggested cut-off value, suggesting a close fit of the measurement model.

6.3.2.5 Goodness of Fit Indices for Each Group

CFA was also performed for two separate datasets; 1) responses from participants who listened to music, and 2) responses from participants who did not listen to music. The same goodness-of-fit indices are used, and the results are as follows; for the participants who listened to music (Chi-square = 99.06, $p < 0.5$; CFI = .98; TLI = .97; NFI = .94; RMSEA = .05) and the participants who did not listen to music (Chi-square = 81.52, $p > .05$; CFI = .99; TLI = .99; NFI = .96; RMSEA = .03). These results indicate that in addition to the full dataset showing good model fit, the measurement models of the two groups also revealed good model fit indices for the individual datasets.

6.3.2.6 Summary of initial measurement model fit assessment

To summarise, the purpose of CFA is to determine the validity of the observed (indicator) variables on their corresponding latent variables, to ensure each latent variable is psychometrically sound before an attempt to test the full structural model.

The results obtained from the CFA analysis indicated that the specified measurement model has an overall good fit once the observed value "focused" for *flow* has been taken out. Four goodness-of-fit indices of the measurement model recommended by the above showed that the overall fit of the measurement model and the observed data were satisfactory. Although the chi-square value for the full data and the group data for the participants who listened to the music did not result satisfactory ($p < .05$), Byrne (2010), Schumacker and Lomax (2004), and Tabachnick and Fidell (2014) argue that, with a reasonable sample size (i. e. > 200) and good approximate fit indicated by other indices (for example NFI, CFI, RMSEA, SRMR and GFI), the chi-square coefficient may be ignored, and a further model modification is not necessary.

Above result suggests that the relationship between the observed variables and the underlying latent variables is valid, and therefore capable of being evaluated in the SEM analysis.

6.3.3 Convergent validity test

Before performing structural equation modelling to test the model after performing CFA, the factors need to demonstrate adequate reliability and validity. Convergent validity indicates whether all the questions employed in the questionnaire describe each construct in the best way. To evaluate the convergent validity, three measures; item

reliability, the composite reliability of the constructs and average variance extracted (AVE) were tested.

6.3.3.0 Item reliability

The factor loadings of each construct measured exceeded 0.5 which indicated that the reliability criteria of scale items were achieved (Hair *et al.*, 2010).

6.3.3.1 Composite reliability

Composite reliability (CR) is a test to measure the overall reliability of a collection of items (Hair *et al.*, 2010). The cut-off point of CR is .70. Table 6.14 presents the CR for each of the constructs.

Table 6. 14 Composite validity of all the constructs

| Constructs | CR |
|-------------------|-----------|
| <i>Flow</i> | 0.688 |
| <i>Arousal</i> | 0.747 |
| <i>Pleasure</i> | 0.811 |
| <i>PA</i> | 0.826 |
| <i>PI</i> | 0.922 |

CR was achieved as all the constructs exceeded the coefficient value of .70,

6.3.3.2 Average variance extracted (AVE)

AVE also achieved the cut-off point of greater than .50 for all the constructs. This result suggests that the CFA results evidenced a satisfactory fit of the model (see Table 6.15).

Table 6. 15 AVE value of all the constructs

| Constructs | AVE |
|-------------------|------------|
| <i>Flow</i> | 0.524 |
| <i>Arousal</i> | 0.502 |
| <i>Pleasure</i> | 0.589 |
| <i>PA</i> | 0.613 |
| <i>PI</i> | 0.798 |

Furthermore, internal consistency reliability was tested using Cronbach's alpha coefficient test (see Table 6.6). Most of the scales achieved Cronbach's alpha coefficient of >.70 or just below .70, which indicates that the scale items used in the questionnaire achieved satisfactory internal consistency, and is reliable (Malhotra, 2004).

6.3.3.3 Discriminant validity test

Firstly, a conventional discriminant validity test was performed. There are a couple of ways that determines that discriminant validity is achieved. Firstly, AVE must be greater than MSV. Second, the square root of AVE must be greater than inter-construct correlations (Hair *et al.*, 2010). As seen in the Table 6.16 and Table 6.17, the analysis revealed some validity concerns for two constructs. Firstly, the square root of the AVE for Product Attitude (PA) is less than one the absolute value of the correlations with another factor. Similarly, the square root of the AVE for pleasure is less than the absolute value of the correlations with another factor. In addition, the AVE for PA and pleasure is less than the MSV. However, the CR for *flow* is .688, which is very close to the cut-off point of .70, so this is less problematic. Nonetheless, the discriminant validity issues for the two constructs (pleasure and PA) indicates that these latent factors may be better explained by some other variables from a different factor instead of by its own observed variables.

To overcome the validity issue presented by the conventional way to test the discriminant validity, an alternative method was used to test the discriminant validity. By using a bootstrap test, the confidence interval examined all the latent constructs which were tested (Byrne, 2010; Raykov, 2011). Results showed that the estimates between all the constructs examined were within the confidence limits. Thus, the confidence interval (CI) of the estimate for arousal and *flow* was .586 and .334, CI of the estimate for arousal and pleasure was .712 and .484, and CI of the estimate for *flow* and pleasure was .762 and .591. In addition, the correlations among the three latent constructs were highly significant ($p = .001$); thus, the latent constructs are distinct, and not explaining the same construct.

Table 6. 16 Validity and reliability table

| Factor | CR | AVE | MSV | MaxR(H) |
|-----------------|-----------|------------|------------|----------------|
| <i>PA</i> | 0.826 | 0.613 | 0.814 | 0.828 |
| <i>Pleasure</i> | 0.811 | 0.589 | 0.814 | 0.902 |
| <i>Flow</i> | 0.688 | 0.524 | 0.501 | 0.919 |
| <i>Arousal</i> | 0.747 | 0.502 | 0.359 | 0.938 |
| <i>PI</i> | 0.922 | 0.798 | 0.781 | 0.965 |

CR – composite reliability, *AVE* – average variance extracted, *MSV* - maximum shared variance, *MaxR(H)* – maximum reliability

For Convergent Validity: $AVE > 0.5$, $CR > 0.7$

Table 6. 17 Factor correlation matrix with the square root of AVE on the diagonal

| | PA | Pleasure | Flow | Arousal | PI |
|-----------------|--------------|-----------------|--------------|----------------|--------------|
| PA | 0.783 | | | | |
| Pleasure | 0.902 | 0.768 | | | |
| Flow | 0.651 | 0.681 | 0.724 | | |
| Arousal | 0.510 | 0.599 | 0.481 | 0.708 | |
| PI | 0.884 | 0.782 | 0.708 | 0.541 | 0.894 |

For Discriminant Validity: $MSV < AVE$, Square root of AVE greater than inter-construct correlations

6.3.3.4 Common method bias

Measurement errors in a dataset can threaten the validity of constructs (Podsakoff *et al.*, 2003), and one of the critical causes of measurement error arises from common method bias. Common method bias refers to a bias in the dataset which is due to something external to the measures influencing the responses. A systematic response bias can be caused when gathering data using a single (common) method such as an online questionnaire. If a single factor explains more than 50% of the variance, a common method bias issues are present, and the variance of the measure “is attributed to the measurement method rather than to the constructs the measures represent” (Podsakoff *et al.*, 2003:879). Therefore, to examine the potential common method bias, factor analysis was performed via SPSS to reduce the factor dimensions (Podsakoff *et al.*, 2003). The percentage of variance explained was less than 50% which indicates that the dataset is free from common method bias. However, the percentage of variance explained was 48.2% which is very close to the threshold of 50%. The potential bias and variation in responses may have been caused by the study instrument having two sets of participants (who listened to music and who did not listen to music) being the external factor influencing participants’ responses.

6.3.4 Summary of confirmatory factor analysis

Above CFA results suggest that by eliminating “focused” from the measurement model, an adequate model fit was achieved, and the researcher was then able to proceed with analyses using SEM.

6.4 Analysis of the conceptual framework and hypotheses using structural equation modelling

Structural equation modelling (SEM) is a statistical technique which enables examination of sets of relationships between continuous independent and dependent variables (Tabachnick and Fidell, 2014). In SEM, the hypothesised relationships are transformed by a series of structural equations. These structural relations can be estimated to provide a clear conceptualisation of the theory, which is under investigation, and can be presented by a series of structural equations (Byrne, 2010). In marketing research, there are many constructs that can only be measured by observed measures or indicators which may fluctuate in their degree of validity because of its subjectivity (i.e. intentions), and SEM's ability to perform a strict construct organisation is most suited to explain marketing phenomena (Steenkamp and Baumgartner, 2000). Thus, it has become a popular analytical tool in social science and marketing science (Shim *et al.*, 2001; Kim and Park, 2005). Furthermore, SEM enables the researcher to model the impact of environmental and controllable stimuli in the retail environment, such as music, on consumer internal and behavioural responses, which are what this study is aiming to achieve (Bagozzi, 1983).

SEM can be used to analyse the structural relationship between the observed variables and latent constructs by using a combination of factor analysis and multiple regression analysis. Multiple regression analysis can be used when a researcher wants to predict the value of a dependent variable based on the value of two or more other independent variables (Pallant, 2016), and it can address a wide variety of research questions. It is particularly suitable for examining real-life, instead of laboratory-based research questions as it enables a more complex exploration of the interrelationship amongst a set of variables. Nevertheless, multiple regression alone can only ascertain the existence of relationships and cannot determine the underlying causal mechanism. For example, regression analysis can determine if there is a relationship between the level of arousal and pleasure; however, it cannot determine if changing the level of either

one of those variables causes the change in the level of other variables. This means, therefore, that regression analysis is not sufficient enough to test proposed hypotheses and establish relationships within the model.

SEM is very sensitive to outliers and multivariate normality, therefore to ensure reliable results from structural equation modelling, there must be no violated assumptions of multivariate normality and outliers within the data. Similar to CFA, the fitness of a structural model can be accessed by goodness-of-fit indices including; CFI, TLI, RMSEA, AGI and AGFI.

If the results from goodness-of-fit indices reveal any evidence of model misfit, modifications can be made based on theoretical evidence and modification indexes (Jöreskog and Sörbom, 1997). This modification should improve the SEM model fit which increases the accuracy of hypotheses testing and developing a more acceptable model (Byrne, 2010).

The confirmatory factor analysis (CFA) in the previous section tested the entire system of variables simultaneously to determine the extent to which it is consistent with the data. Results from CFA indicate that the final modified model fit the sample data adequately, identifying the latent constructs and their observed variables forming the basis for SEM.

SEM is used to analyse the structural relationship between these observed variables and latent constructs. These constructs and variables are used to present the structural model based on the hypotheses which were identified from reviewing the literature.

6.4.0 SEM path diagram specification

A structural model was developed upon the conceptual framework and the relationships specified in the fourteen hypotheses from Chapter Four.

6.4.0.0 SEM model measurement

The initial structural model diagram for all the latent constructs was drawn in AMOS. Figure 6.8 illustrates the full model, and the initial standardised regression weights of the model are shown. The model shows that there are some relatively strong relationships between constructs; however, music seems to have smaller standardised regression weights on any constructs. Before assessing the estimates, the model fit was tested using the goodness of fit indices.

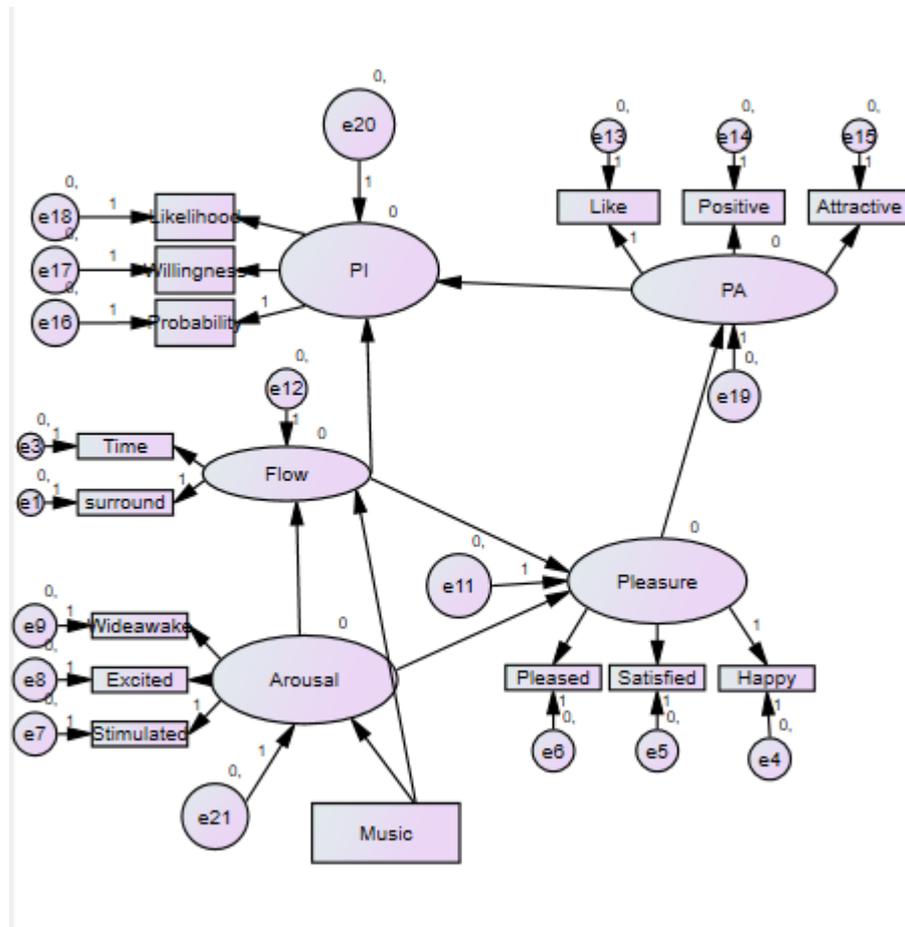


Figure 6. 8 SEM full model

6.4.0.1 Assessment of the model fit

The same model fit indices previously discussed and used for CFA model (CFI, NFI, TLI and RMSEA) were employed to test overall model fit of the SEM model. Table 6.18 shows the summary of fit indices computed by AMOS.

Table 6. 18 Summary of fit indices computed for the initial full model

| Fit Index | Model fit indices computed | Suggested Threshold |
|------------|----------------------------|---|
| Chi-Square | 149.1 (df=80) $P = .00$ | $P < .05$ (Field, 2013) |
| CFI | 0.98 | $\geq .95$ (Hu and Bentler, 1999) $\geq .90$ (Bentler, 1990) |
| NFI | 0.96 | $> .95$ Good Fit $> .90$ Acceptable Fit (Schmacker and Lomax, 2010) |
| TLI | 0.98 | $> .90$ (Hu and Bentler, 1999) |

| | | |
|-------|------|---|
| RMSEA | 0.04 | $\leq .05$ Good Fit $< .05$ to $\leq .08$ Adequate Fit $< .08$ to $\leq .10$ Mediocre Fit (Schmacker and Lomax, 2010) |
|-------|------|---|

The summary above indicates a good fit of the structural model even though the value of chi-square is significant. Nevertheless, similar to CFA, chi-squared value is sensitive to sample sizes that exceed 200, and the larger the sample size, the more likely the rejection of the model (Hair *et al.*, 2010), and therefore can be overlooked.

6.4.1 Direct effect results using the full model

Firstly, the direct effect of music on arousal was examined using the full data. To reiterate, despite product attitudes and purchase intentions included in the full conceptual framework, the focus of this study remains to evaluate the relationships between the key four constructs; music as a web atmospheric, shoppers' state of *flow*, arousal and pleasure. This is due to the fact that the pathways between shoppers' state of *flow*, product attitudes and purchase intentions have already been verified by previous literature (Gao and Bai, 2014; Richard and Chebat, 2016), and there is no hypothesised direct relationship between music and these constructs.

Firstly, the direct effect of music on arousal was examined using the full data. In addition to independent samples t-test, the omnibus SEM result indicates that there was no direct effect of music on *flow* ($r = .11, p > .05$) nor on arousal ($r = .02, p > .05$) (see Table 6.19). **This emphasises the findings from independent samples t-test and Mann-Whitney U test that music did not affect the level of arousal and *flow* (see section 6.4), and indicates that the first and second hypotheses (*H1* and *H2*) were not supported.**

Omnibus SEM test for the overall dataset comprising participants who listened to music and who did not listen to music revealed that **shoppers' arousal has a significant effect on the state of *flow* ($\beta = .49, p < .01$). This result supports *H3*** and is in line with Richard and Chebat's (2016) findings, which evidenced that shoppers' arousal affects the state of *flow*. Omnibus SEM test for the overall dataset comprising participants who listened to music and who did not listen to music also revealed that **shoppers' arousal directly affects pleasure ($\beta = .34, p < .01$). This finding supports *H6*** and is in line

with Demolin's (2011) and Richard and Chebat's (2016) findings that arousal affects pleasure.

In addition, omnibus SEM test for the overall dataset comprising participants who listened to music and who did not listen to music revealed that **shoppers' state of flow has a significant direct effect on pleasure ($\beta = .43, p < .01$)**. This result supports *H9* and is in line with Richard and Chebat's (2016) findings.

The result indicates that arousal affects both *flow* and pleasure, and this finding is in line with Richard and Chebat's (2016) findings. Although product attitudes and purchase intentions are not the key focus of this study, the direct effect analysis was also run on these constructs to complete the testing for the whole framework. Likewise, omnibus SEM test results showed that *flow* directly affects purchase intentions ($\beta = .26, p < .01$). This aligns with previous findings that *flow* encourages purchase intentions (Hsu *et al.*, 2012; Noort *et al.*, 2012; Gao and Bai, 2014; Richard and Chebat, 2016). Further findings from omnibus SEM test depicted that **there was a direct effect of pleasure on product attitudes ($\beta = .89, p < .01$) and direct effect of product attitudes on purchase intentions ($\beta = .71, p < .01$)**, indicating that *H15* and *H16* are supported. This result is in line with Richard and Chebat's (2016) findings that *flow* leads to higher pleasure, and pleasure subsequently positively influences cognitive responses such as product attitudes, which result in greater purchase intentions.

Table 6. 19 Standardized regression weights of the extended model

| Regression pathways | | | Estimate | S.E. | C.R. | P-value |
|---------------------|------|-------------|----------|------|--------|---------|
| Arousal | <--- | Music | .029 | .082 | .351 | .725 |
| <i>Flow</i> | <--- | Arousal | .540 | .074 | 7.321 | *** |
| <i>Flow</i> | <--- | Music | .114 | .090 | 1.271 | .204 |
| Pleasure | <--- | Arousal | .305 | .056 | 5.456 | *** |
| Pleasure | <--- | <i>Flow</i> | .427 | .060 | 7.165 | *** |
| PA | <--- | Pleasure | 1.084 | .077 | 14.151 | *** |
| PI | <--- | PA | .927 | .074 | 12.536 | *** |
| PI | <--- | <i>Flow</i> | .335 | .071 | 4.743 | *** |

PA – Product attitudes, PI – Purchase intentions S.E. – standard error, C.R. – critical ratios

6.4.1.0 The squared multiple correlations (r^2)

The squared multiple correlations (r^2) provides an estimate of the overall predictive power of a set of indicator variables by measuring how close the data is to the linear

regression line (Kwan and Chan, 2014). In other words, it provides the proportion of variance of a construct explained by the antecedent constructs or measures. It helps to understand the strength of the relationship between a model and the response variable (Azen and Sass, 2008).

Firstly, the squared multiple correlations (r^2) coefficient value of pleasure was .56. In other words, arousal explains the 56% of the variability in pleasure (see Table 6.20).

The squared multiple correlations (r^2) coefficient value of *flow* was .23. In other words, arousal explains the 23% of the variability in *flow*. The squared multiple correlations (r^2) coefficient value of pleasure was .56 which indicates that arousal and *flow* explain 56% of pleasure.

The squared multiple correlations (r^2) coefficient value of purchase intentions was .80 which indicates that *flow* and product attitudes explain 80% of the variability in purchase intentions.

Table 6. 20 Squared multiple correlations of the full model

| Constructs | Estimate (r) |
|-------------------|---------------------|
| Arousal | .000 |
| <i>Flow</i> | .249 |
| Pleasure | .564 |
| PA | .799 |
| PI | .797 |

6.4.2 SEM path diagram specification for arousal/pleasure/*flow* model

Prior to performing multi-group analysis, SEM analysis was performed on a simpler arousal/pleasure/*flow* model in AMOS (see Figure 6.9) to test the relationship between arousal, pleasure and *flow* for both groups of participants who were exposed to music and for those who were not exposed to music to test hypotheses *H4*, *H5*, *H7*, *H8*, *H10*, and *H11*.

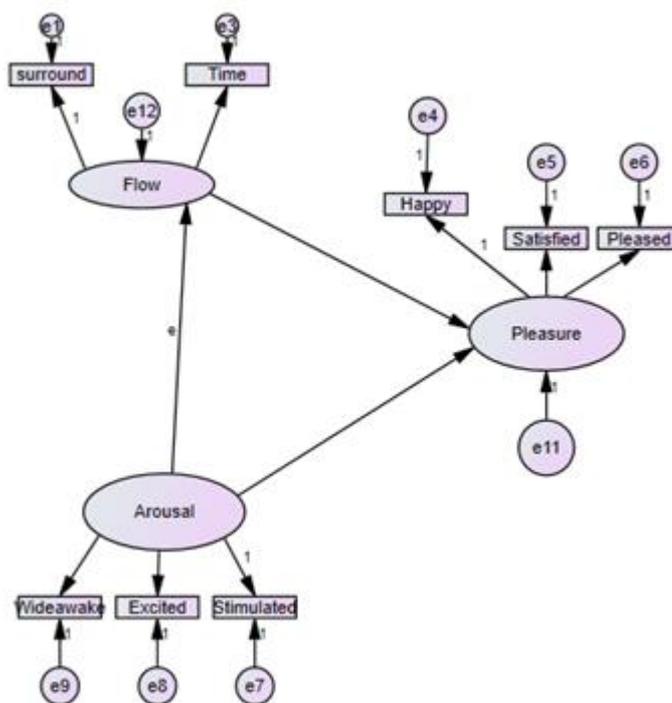


Figure 6. 9 Model specification of the arousal/pleasure/flow model

6.4.2.0 Assessment of the model fit of arousal/pleasure/flow model

To assess the model fit of the arousal/pleasure/flow model, the same fit indices previously used were applied. The summary of the indices computed is presented in Table 6.21. The indices suggest that the model is an adequate fit.

Table 6. 21 Summary of fit indices computed for arousal/pleasure/flow model

| Fit Index | Model fit indices computed | Suggested Threshold |
|-------------------|----------------------------|---|
| <i>Chi-Square</i> | 149.1 (df=80) $P = .00$ | $P < .05$ (Field, 2013) |
| <i>CFI</i> | 0.93 | $\geq .95$ (Hu and Bentler, 1999) $\geq .90$ (Bentler, 1990) |
| <i>NFI</i> | 0.91 | $> .95$ Good Fit $> .90$ Acceptable Fit (Schmacker and Lomax, 2010) |
| <i>TLI</i> | 0.90 | $> .90$ (Hu and Bentler, 1999) |
| <i>RMSEA</i> | 0.07 | $\leq .05$ Good Fit $< .05$ to $\leq .08$ Adequate Fit $< .08$ to $\leq .10$ Mediocre Fit (Schmacker and Lomax, 2010) |

6.4.3 SEM path analysis

Using path analysis, direct, indirect and partial mediation effects were tested between two groups. In addition, squared multiple correlations of the variables were examined to test the overall predictive power of a set of indicator variables.

6.4.3.0 Direct effect analysis

Using the arousal/pleasure/*flow* model, SEM analysis was performed on two datasets (see Figures 6.10 and 6.11). **The results showed that for both groups of participants, arousal's effect on *flow* was significant ($p < .01$). Therefore, *H4* and *H5* are supported.** Furthermore, the standardised regression weights of arousal on *flow* were $\beta = .50$ and $\beta = .40$ respectively for participants who listened to and did not listen to music (see Table 6.21), which indicates that the effect of arousal on *flow* was stronger for participants who were exposed to music.

Similarly, **the results showed that for both groups of participants, arousal significantly affects pleasure ($p < .01$), thus, *H7* and *H8* are supported.** Nevertheless, the standardised regression weights of arousal on pleasure were $\beta = .33$ and $\beta = .39$ respectively for participants who listened to and did not listen to music (see Table 6.22), which indicates that the effect of arousal on pleasure was stronger for participants who were not exposed to music. Some studies suggest that music-induced arousal does not amplify pleasure. Instead, soothing music (low or moderate arousing music) was found more favourable and pleasurable compared to when exposed to arousing music or no music at all (Stratton and Zalalowski, 1984; Chebat *et al.*, 2001). This notion indicates that although some participants may have been aroused by being exposed to music, it may not have affected the level of participants' pleasure.

And finally, **the results showed that for both groups of participants, *flow*'s effect on pleasure was significant ($p < .01$), thus *H10* and *H11* are both supported.** Nevertheless, the standardised regression weights of *flow* on pleasure were $\beta = .50$ and $\beta = .51$ respectively for participants who listened to and did not listen to music with only .01 difference in regression weights (see Table 6.22). This result indicates that the effect of *flow* on pleasure was similar for both participants who were and were not exposed to music.

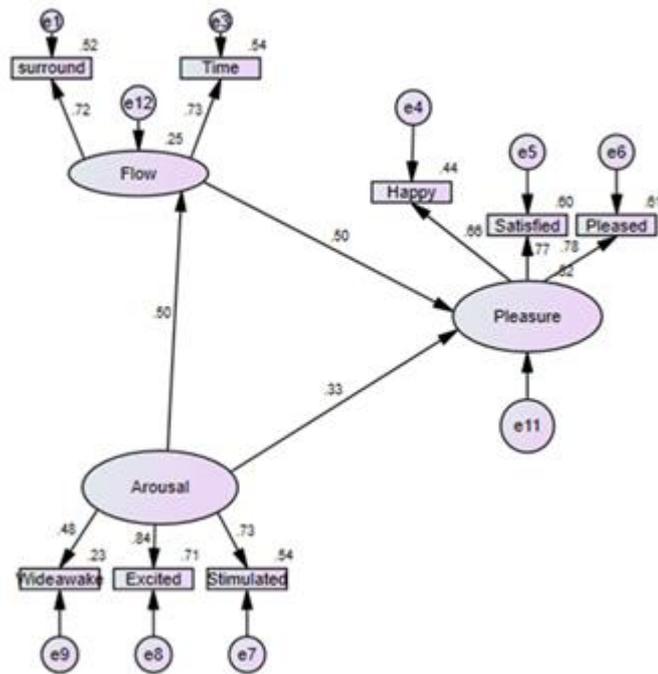


Figure 6. 10 Path analysis of the data for participants who listened to music

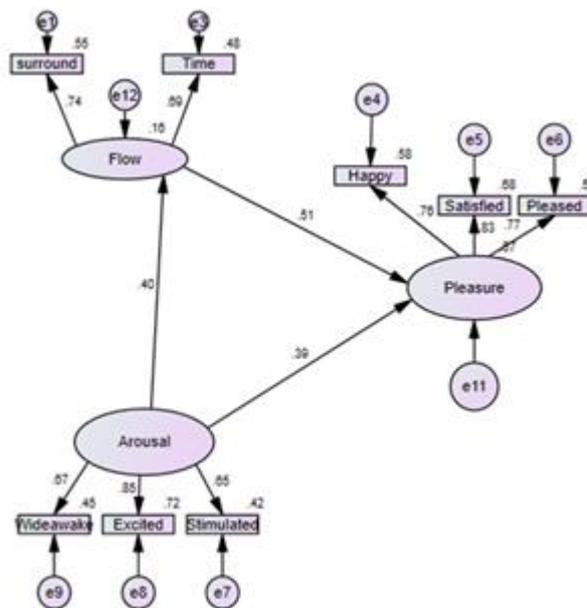


Figure 6. 11 Path analysis of the data for participants who did not listen to music

Table 6. 22 Standardized regression weights for participants who listened to music and who did not

| Participants who listened to music | | | Estimate | S.E. | C.R. | P |
|---|------|-------------|----------|------|-------|-----|
| <i>Flow</i> | <--- | Arousal | .500 | .072 | 6.727 | *** |
| Pleasure | <--- | Arousal | .333 | .065 | 3.625 | *** |
| Pleasure | <--- | <i>Flow</i> | .496 | .079 | 4.627 | *** |
| Participants who did not listen to music | | | Estimate | S.E. | C.R. | P |
| <i>Flow</i> | <--- | Arousal | .403 | .072 | 6.727 | *** |
| Pleasure | <--- | Arousal | .389 | .091 | 4.427 | *** |
| Pleasure | <--- | <i>Flow</i> | .511 | .089 | 4.980 | *** |

S.E. – Standard error, *C.R.* – critical ratios

6.4.3.1 Indirect (mediated) effect analysis

The standardised indirect (mediated) effect of arousal on pleasure via *flow* is .25 for participants who listened to music, and .21 for participants who did not listen to music (see Tables 6.23 and 6.24). This is in addition to any direct (unmediated) effect that arousal may have on pleasure. This result indicates that *flow* mediated the effect of arousal on pleasure for both participants who listened to music and who did not. The findings also suggest that mediating effect of *flow* has a stronger effect on the relationship between arousal and pleasure for those who listen to music.

Table 6. 23 Standardized indirect effects for participants who listened to music

| | Arousal | <i>Flow</i> | Pleasure |
|-------------|---------|-------------|----------|
| <i>Flow</i> | .000 | .000 | .000 |
| Pleasure | .248 | .000 | .000 |

Table 6. 24 Standardized indirect effects for participants who *did not* listen to music

| | Arousal | <i>Flow</i> | Pleasure |
|-------------|---------|-------------|----------|
| <i>Flow</i> | .000 | .000 | .000 |
| Pleasure | .206 | .000 | .000 |

6.4.3.2 Squared multiple correlations (r^2)

The squared multiple correlations (r^2) coefficient value of *flow* was .25 for participants who listened to music and .16 for participants who did not listen to music (see Table 6.25). In other words, arousal explains the 25% of the variability in *flow* for participants who listened to the music and 16% for those who did not listen to music.

The squared multiple correlations (r^2) coefficient value of pleasure was .52 for participants who listened to music and .57 for participants who did not listen to music (see Table 6.25). In other words, arousal and *flow* explain the 52% of the variability in pleasure for participants who listened to the music and 57% for those who did not listen to music.

Table 6. 25 Squared multiple correlations of participants who listened to music and who did not listen to music

| | Music | No-music |
|-------------|-------|----------|
| <i>Flow</i> | .250 | .163 |
| Pleasure | .521 | .573 |

The above direct and indirect effect analysis and squared multiple correlations revealed that **the effect of the pathways from arousal to *flow*, arousal to pleasure, *flow* to pleasure are significant for those who listened to music and for those who did not listen to music.** In other words, the presence of music did not change the structure of the path relationship. Nonetheless, the standardised regression weights indicated some difference in the nature of those relationships between constructs. Especially, the standardised regression weights for the direct effect of arousal and *flow* showed a significant difference between participants who were exposed to music and who were

not. These relationships between constructs will be investigated further using multiple-group analysis in the subsequent section.

6.5 Multi-group analysis

Multi-group analyses in SEM can be performed to examine group invariance. For instance, it will test whether the hypothesised structural model is moderated by specific variables of interest such as “respondents who listened to music while shopping online compared to those who did not”. A multi-group analysis is necessary as this study aims to look at the extent of variation across the pathways from arousal to *flow*, *flow* to pleasure, and arousal to pleasure which is due to the presence of music.

To perform multi-group analysis, first a test is run to assess whether the constrained model is different from the unconstrained model. The findings revealed that there was a significant difference between the constrained model ($\chi^2 = 108.34$; $df = 34$) and unconstrained model ($\chi^2 = 127.6$; $df = 42$) providing the p -value of 0.01. This result indicates that the results from the two different groups (music/no-music) are different at the model level (see Table 6.26).

Table 6. 26 Chi-square coefficients

| | Chi-square | Df | p-value |
|------------------------------|------------|----|---------|
| Overall Model | | | |
| Unconstrained | 108.34 | 34 | |
| Fully constrained | 127.646 | 42 | |
| Number of groups | | 2 | |
| Difference | 19.306 | 8 | 0.013 |
| Chi-square Thresholds | | | |
| 90% Confidence | 111.05 | 35 | |
| Difference | 2.71 | 1 | 0.100 |
| 95% Confidence | 112.18 | 35 | |

| | | | |
|-----------------------|--------|----|-------|
| Difference | 3.84 | 1 | 0.050 |
| <i>99% Confidence</i> | 114.97 | 35 | |
| Difference | 6.63 | 1 | 0.010 |

Individual pathways from arousal to *flow*, *flow* to pleasure, and arousal to pleasure were tested one by one to assess the extent to which these were significantly different because of the presence of music. The key finding from the multi-group SEM was the impact of music on the path from arousal to *flow*. The chi-squared difference for regression path from arousal to *flow* was significant with $\chi^2 = 117.6$ and 35 degrees of freedom which is above the threshold of 99% confidence for those who listened compared to those who didn't listen to music (See Table 6.26). **Thus, *H12* was supported suggesting that the state of arousal positively, and more significantly, influences shoppers' *flow* state in the presence of music while shopping online compared to when there is no music.** In other words, music moderates the relationship between arousal and *flow*.

Nonetheless, the result indicates that the path from arousal to pleasure ($\Delta\chi^2 = 108.3$; $df = 35$) did not achieve the threshold of acceptable confidence levels. Thus, music did not moderate the relationship between arousal and pleasure. In addition, **the result showed that the path from *flow* to pleasure ($\Delta\chi^2 = 110.7$; $df = 35$) did not achieve the threshold of acceptable confidence levels. Thus, music did not moderate the relationship between *flow* and pleasure. Thus, *H13* and *H14* were not supported.**

6.6 Summary of the chapter

From the analysis above, it was evidenced that some hypotheses are supported, and some are not supported. Table 6.27 summarises the hypotheses set out at the start of this chapter and the test results.

Table 6. 27 Summary of hypotheses and the results

| Hypotheses | Supported/Not supported |
|--|-------------------------|
| <i>H1. Music as a web atmospheric directly affects shoppers' state of flow in an online retail environment</i> | Not supported |

| | |
|---|---------------|
| <i>H2. Music as a web atmospheric directly affects shoppers' arousal in an online retail environment</i> | Not supported |
| <i>H3. Shoppers' arousal directly affects the state of flow for all shoppers in an online retail environment</i> | Supported |
| <i>H4. Shoppers' arousal directly affects the state of flow for shoppers who do not listen to music in an online retail environment</i> | Supported |
| <i>H5. Shoppers' arousal directly affects the state of flow for shoppers who listen to music in an online retail environment</i> | Supported |
| <i>H6. Shoppers' arousal directly affects pleasure for all shoppers in an online retail environment</i> | Supported |
| <i>H7. Shoppers' arousal directly affects pleasure for shoppers who do not listen to music in an online retail environment</i> | Supported |
| <i>H8. Shoppers' arousal directly affects pleasure for shoppers who listen to music in an online retail environment</i> | Supported |
| <i>H9. Shoppers' state of flow directly affects pleasure for all shoppers in an online retail environment</i> | Supported |
| <i>H10. Shoppers' state of flow directly affects pleasure for shoppers who do not listen to music in an online retail environment</i> | Supported |
| <i>H11. Shoppers' state of flow directly affects pleasure for shoppers who listen to music in an online retail environment</i> | Supported |
| <i>H12. Music moderates the relationship between shoppers' arousal and flow in an online retail environment</i> | Supported |
| <i>H13. Music moderates the relationship between shoppers' arousal and pleasure in an online retail environment</i> | Not supported |
| <i>H14. Music moderates the relationship between shoppers' flow and pleasure in an online retail environment</i> | Not supported |
| <i>H15 Shoppers' state of flow directly affects purchase intentions in an online retail environment</i> | Supported |
| <i>H16 Shoppers' pleasure indirectly affects purchase intentions through product attitudes in an online retail environment</i> | Supported |

Firstly, the result from independent t-test evidenced that there was no significant mean difference in the level of *flow* and arousal between participants who listened to music and who did not; thus, *H1* and *H2* were rejected. This finding was further confirmed by the SEM analyses showing that there was no significant effect of music on either *flow* or arousal.

Nevertheless, the omnibus SEM analysis results using the full set of data confirmed the theoretical relationship between shoppers' arousal, pleasure and the state of *flow* on account that arousal directly affected *flow*, arousal directly affected pleasure, and *flow* directly affected pleasure. It was evidenced that the state of *flow* also mediated the effect of arousal and pleasure. Furthermore, individual analyses for those who listened to music and those who did not suggest that the effect of the pathways from arousal to *flow*, arousal to pleasure, *flow* to pleasure are significant for all the participants, as well as for both participant groups those who listened to music and for those who did not listen to music. Therefore, *H3 - H11* are all supported.

Furthermore, from the multi-group analysis, it was evidenced that the exposure to music has enhanced the relationship between participants' arousal and *flow*. In other words, the presence of music moderated the effect of arousal on participants' level of *flow*. This result indicates that music enhances the strength of the relationship between shoppers' arousal and *flow* while shopping online compared to when there is no music, hence supporting *H12*. Nonetheless, further moderation tests showed that music did not enhance the relationship between shoppers' level of arousal and pleasure, neither did it strengthen the effect of *flow* on pleasure (i.e. both tests were not significant), rejecting *H13* and *H14*. The results suggest that music does not heighten the effect of arousal on pleasure and *flow* on pleasure, but music has the tendency to enhance the effect of arousal on shoppers' state of *flow*, while shopping in an online retail environment.

Finally, SEM analyses using full dataset confirmed the direct effect of *flow* and purchase intentions and the indirect effect of pleasure on purchase intentions through product attitudes. Thus, *H15* and *H16* are supported.

Overall, supported hypotheses confirmed all the paths on the conceptual framework except that music did not affect shoppers' *flow* nor arousal. The effect of the pathways from arousal to *flow*, arousal to pleasure, *flow* to pleasure are significant for those who listened to music and for those who did not listen to music whether the participants were exposed to music or not. Nevertheless, the result evidenced that music moderated

and enhanced the relationship between arousal and *flow*. This result indicates that music as a web atmospheric does not directly affects shoppers' enjoyment (measured by *flow*) nor arousal; however, it has a tendency to enhance shoppers' enjoyment provided that shoppers are aroused. This means that if the retailer achieves a high arousal website environment (i.e. by using another web atmospheric such as animations and warmer colour), music can effectively enhance shopper's enjoyment (measured by *flow*) in an online retail environment.

The aim of this study is to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment.

Chapter Seven: Discussion and conclusions

7.0 Introduction

This final chapter concludes the thesis and provides a summary of the findings and discussions. The research presented in the preceding chapters represents a study, which evaluates the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment. Undertaking this research was important as little is known about the impact of music in an online retail context. To date, there has been no empirical study that investigates the extent to which music directly affects shoppers' state of *flow*. This is despite music being widely known as an important atmospheric in a traditional retail environment. In addition, *flow* has been evidenced to have a positive influence on online shoppers' intentional behaviour (Hoffman and Novak, 2009; Gao and Bai, 2014; Richard and Chebat, 2016). The contribution of this research is, therefore, to provide a new innovative empirical study, which evaluates the relationship between music as a web atmospheric and shoppers' state of *flow*.

In Chapter One, a research aim was proposed to evaluate the relationship between music as a web atmospheric and shoppers' state of *flow* (a measure of enjoyment) in an online fashion retail environment.

To achieve the research aim, the following objectives of the study were proposed:

- To establish whether music as a web atmospheric directly affects shoppers' state of *flow* in an online retail environment.
- To establish the relationships between music as a web atmospheric, *flow*, arousal and pleasure in an online retail environment.
- To confirm the relationship between *flow* and its outcomes in an online retail environment.

- To develop a conceptual framework that captures the key relationships between music as a web atmospheric, shoppers' state of *flow*, arousal, and pleasure in an online retail environment.

Critical review of the literature explored the current understanding of the role of music as a web atmospheric and shoppers' state of *flow* and highlighted the gap in knowledge. Although the researcher acknowledged that various characteristics of music (i.e. tempo, volume) may affect shoppers' *flow* and emotional responses in different ways, this was the first study to test the relationship between music as a web atmospheric and *flow*, and therefore testing presence/absence of music was considered to be the starting point to uncover the phenomenon. A conceptual framework was developed based on the previous literature, and sixteen hypotheses were proposed to examine the relationships within the framework. It was then followed by the development of an appropriate data collection instrument to enable extensive quantitative evaluation to be undertaken. A control and intervention research design was adopted to evaluate the differences in the responses between controlled group (absence of music) and intervention group (presence of music). The collected data were statistically analysed using structural equation modelling (SEM), and the evaluation of the findings from the online data collection and its analysis are presented in Chapter Six.

This concluding chapter summarises the key findings and presents the revised conceptual framework which is based on those findings. It then highlights the contributions and research implications including theoretical, methodological and practical implications. It then offers managerial implications and suggestions for marketers. Finally, it concludes with an acknowledgement of the research limitations and provides recommendations for future studies.

7.1 Overview of the study

It is important to assess the whole research and discuss how this study has answered the research aim and filled the knowledge gap by contributing original knowledge to the existing literature.

At the start of the study, an extensive critical narrative literature review was carried out to identify the gap in knowledge. The review indicated that although the impact of music as an in-store atmospheric has been widely researched and associated with a range of desired marketing outcomes (North and Hargreaves, 1998; Turley and

Milliman, 2000; Oakes, 2000; Oakes *et al.*, 2014), studies evaluating the role of music in an online retail setting have been less abundant. Shoppers' state of *flow* was identified as a measure of shoppers' enjoyment in an online retail environment (Hoffman and Novak, 1996; Koufaris, 2002; Skadberg and Kimmel, 2004; Gao and Bai, 2014; Richard and Chebat, 2016), whereas arousal and pleasure are identified as the key emotional dimensions. Arousal is a state of feeling that relates to mental alertness, and it describes the extent to which a shopper feels stimulated, alert or active in an environment, whereas pleasure is the extent to which a shopper feels pleasant, happy, good or satisfied in the retail environment (Mehrabian and Russell, 1974). Both shoppers' state of *flow* and emotions (arousal and pleasure) in the context of online shopping have been found to encourage consumer intentional behaviours such as purchase and return (Hsu *et al.*, 2012; Noort *et al.*, 2012; Gao and Bai, 2014; Richard and Chebat, 2016). However, little is known about what enhances shoppers' state of *flow* within online shopping experiences. In other words, whether a specific web atmospheric stimulus, such as music, can influence the shoppers' state of *flow* has not been explored. This study proposed that the complex and holistic nature of *flow* is capable of capturing the aesthetic states of shoppers within the online shopping experience, especially in regards to shoppers' enjoyment and emotions in an online retail context.

From the previous evidence and the identified gap in the literature, the researcher has drawn a conceptual framework. The framework was developed upon the Stimulus-Organism-Response based models capturing the attributes and relationships between music, shoppers' state of *flow*, arousal and pleasure in an online retail setting (see Chapter Four). Based on the conceptual framework, sixteen hypotheses were proposed to evaluate the structure of the framework as well as to test the nature of the relationships within the framework (i.e. strength).

Following an appropriate philosophical underpinning to investigate the research aim, a quantitative approach was adopted to test the hypotheses and the conceptual framework. An online quantitative self-administrative questionnaire was generated and launched using Google Forms. It was distributed to the potential targeted respondents via e-mail and through social media. Following the between-subject control and intervention approach, two sets of participants visited the retailer's website and completed the questionnaire in their own time and environment. One set of respondents were

instructed to play a chosen YouTube playlist while exploring the retailer's website and then asked to complete the questionnaire. The other set of respondents were instructed to explore the same retailer's website, but without any music, then asked to complete the same questionnaire. An appropriate ethical procedure was undertaken to ensure participants' confidentiality and anonymity.

Validation of the proposed constructs and their measurement scales was performed in two separate stages. Initially, pilot data were collected for measure purification purposes. The data from pilot study were tested to examine internal consistency of the scales using Cronbach's coefficient alpha reliability test. Secondly, the actual survey data were collected to confirm the proposed constructs reliability and validity using Cronbach's coefficient alpha reliability test, confirmatory factor analysis (CFA), convergent and discriminant validity tests.

Quantitative data analysis was performed using SPSS and AMOS 23.0 statistical software. Using the independent samples t-test, the first analysis evaluated if music had any effect on the mean difference of the respondents' state of *flow* and arousal. Then by using SEM, the analysis evaluated and confirmed the relationship between the latent constructs within the conceptual framework. A multi-group analysis then evaluated the extent to which the presence of music strengthens the pathways from arousal to *flow*, arousal to pleasure, and *flow* to pleasure. The key findings from the analysis are presented in the next section.

7.2 Key findings

This study provides four key findings, the details of which are presented below.

- 1) Music did not directly affect shoppers' state of *flow*.**
- 2) Music did not directly affect shoppers' arousal.**
- 3) Shoppers' arousal directly affected *flow*, arousal directly affected pleasure, *flow* directly affected pleasure for both who listened to music and those who did not.**
- 4) Music moderated the relationship between shoppers' arousal and the state of *flow*.**

The result from the independent samples t-test showed that there was no significant difference in the level of shoppers' state of *flow* between the participants who listened

to music and those who did not. The independent samples t-test also revealed that there was no significant difference in the level of shoppers' arousal between the participants who listened to music and those who did not. These results were supported by further path analysis via SEM revealing that music did not affect the participants' state of *flow* nor arousal. This finding indicates that music as a web atmospheric did not directly affect shoppers' state of *flow*, neither does music indirectly affect shopper's state of *flow* via arousal in an online retail setting. This indicates that the two paths from music to *flow* and music to arousal on the proposed framework to be insignificant. These findings were not in line with previous published research that suggest the Site Entertainment directly affect shoppers' state of *flow* (Gao and Bai, 2014), that music directly affects shoppers' arousal in an online retail environment (Cheng *et al.*, 2009; Ding and Lin, 2012; Lai and Chiang, 2012).

It must be considered why the presence of music did not directly affect shoppers' state of *flow*. Gao and Bai (2014) evidenced that web atmospheric characteristics such as Site Informativeness, Site Effectiveness, and Site Entertainment directly affect shoppers' state of *flow*. According to Gao and Bai (2014) Site Entertainment reflects the aspects of website design that provide sensory and hedonic elements such as colour, music, action, pictures, graphs, videos, and interactivity (Cheng and Well, 1999; Eroglu *et al.*, 2003; Gao and Bai, 2014). Nevertheless, they did not test whether specific elements within Site Entertainment, such as music, directly affected *flow*. From the correlation analysis, the result indicated that the presence of music did not correlate with Site Entertainment indicators. In other words, despite Gao and Bai (2014) considering music as a low-task relevant Site Entertainment web atmospheric cue, music did not appear to contribute to the aspect of Site Entertainment. This finding challenge existing literature and asks the question as to whether music can be considered as a web atmospheric that is capable of adding hedonic value. This may be one of the reasons why many web designers raised their concern regarding the use of music in the background of a retail website, as instead of adding value to the website design, music can be perceived as a negative feature that irritates web store visitors (Huffman, 2008; Fisher, 2009). Nonetheless, these negative views had not been supported by any academic studies or empirical findings. This study offers an empirical evidence as to why music as a web atmospheric does not increase shopper enjoyment, and therefore is not suitable to be integrated as a website design. Nonetheless, the

correlation analysis also confirmed that the presence of music did not have a negative association with shoppers' state of *flow* either. In other words, having music in the background does not make the shopping experience un-enjoyable.

The findings evidenced that the shoppers' arousal and pleasure significantly relate to the state of *flow* for both participants who listened to music and those who did not. This supported the pathways between *flow*, arousal and pleasure in the proposed framework. In particular, the level of shoppers' arousal directly affected shoppers' state of *flow* and pleasure, as well as indirectly affecting shoppers' pleasure through the state of *flow*. This finding indicates that the presence of music did not change the pathways from arousal to *flow*, arousal to pleasure, *flow* to pleasure. This finding is important as it reassures the theoretical relationship between shoppers' state of *flow*, arousal and pleasure within the framework for both shoppers who listened to music and for those who did not (see Figure 7.1).

Furthermore, the findings suggest that there was a difference in the nature of the structure (i.e. strength) between emotions (arousal and pleasure) and the state of *flow* for participants who listened to music and for those who did not. As mentioned earlier, there was no significant direct effect of music on shoppers' state of *flow* or arousal. Yet, the presence of music moderated the effect of shoppers' arousal on the state of *flow*. This result indicates that music enhances the strength of the relationship between shoppers' arousal and the state of *flow* while shopping online compared to when there is no music. This finding added a new dimension in the proposed framework as music being a moderator between arousal and *flow* (see Figure 7.1). Nonetheless, further moderation tests showed that music did not enhance the relationship between shoppers' level of arousal and pleasure, neither did it strengthen the effect of shoppers' state of *flow* on pleasure (i.e. both tests were not statistically significant). In fact, the results showed that the effect of arousal on pleasure was weaker for participants who listened to music compared to those who did not. This finding indicates that although some participants may have been aroused by the exposure to music, it did not lead to pleasure, suggesting that the level of music-induced arousal may not always lead to pleasure. Indeed, some studies indicate that music-induced arousal does not amplify pleasure. Instead, soothing music (low or moderately arousing music) was found more favourable and pleasurable compared to when exposed to arousing music or no music

at all in an in-store retail environment (Stratton and Zalalowski, 1984; Chebat *et al.*, 2001).

Finally, although not the focus of the study, the additional SEM direct path analysis result confirmed the direct effect of shoppers' state of *flow* on purchase intentions as well as the indirect effect of pleasure on purchase intentions through product attitudes (see Figure 7.1). This result accentuates the moderating effect of music found in this study being valuable, because the presence of music did not interfere with the relationship between *flow* and purchase intentions, and purchase intentions were confirmed to be the consequence of *flow*. The pathways from *flow* to purchase intentions, pleasure to purchase intentions through product attitudes are confirmed as significant in the proposed framework.

Based on the above findings, the conceptual framework was revised in Chapter Six, and illustrated below;

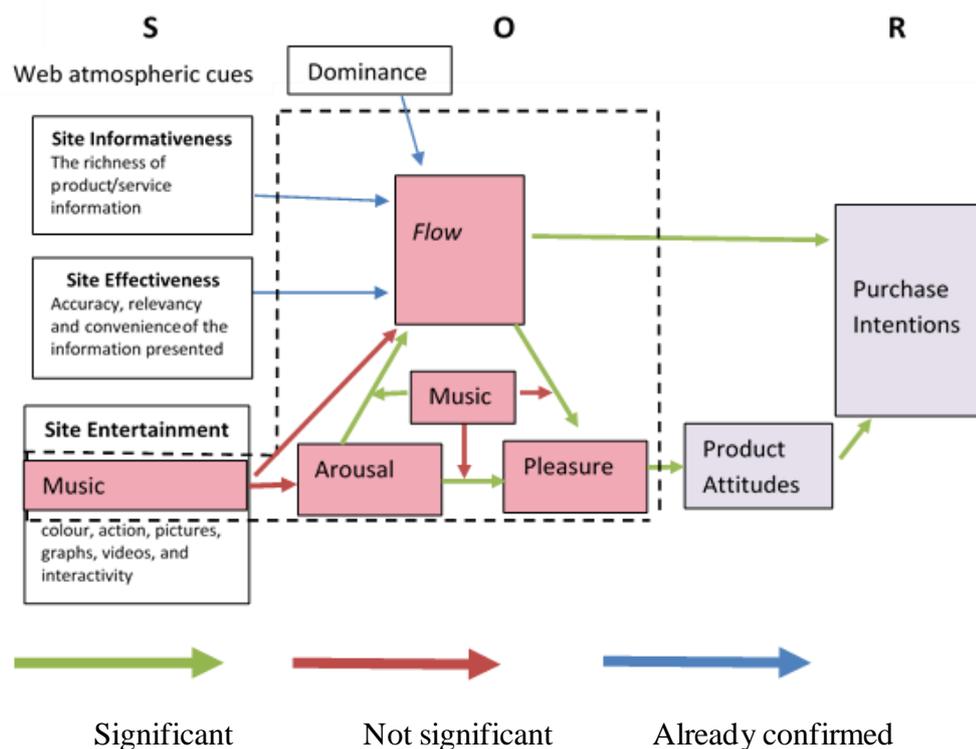


Figure 7.1 Revised conceptual framework with confirmed significant paths

To summarise the key findings, the study results revealed that **music did not directly affect shoppers' state of flow**. In addition, the result indicated that **music did not directly affect shoppers' arousal** either. Nonetheless, the result confirmed the

theoretical relationship between shoppers' state of *flow*, arousal and pleasure, which was hypothesised and was the core of the conceptual framework. **Shoppers' arousal directly affected *flow*, arousal directly affected pleasure, and *flow* directly affected pleasure for both who listened to music and for those who did not.** The results also suggested that **music moderated the relationship between shoppers' arousal and the state of *flow***, and has the tendency to enhance the effect of shoppers' arousal on the state of *flow*, although music does not heighten the effect of shoppers' arousal on pleasure, or *flow* on pleasure.

These results indicate that music alone may not directly affect the shoppers' state of *flow* in an online retail environment. Nonetheless, music as a web atmospheric has the potential to enhance the level of shoppers' enjoyment (measured by *flow*) in an online retail environment. This means that collaborating with other web store features such as colours (Wu *et al.*, 2008) or animation (Day *et al.*, 2006) that can facilitate a high arousal environment, music has the potential to enhance shopper enjoyment.

7.3 Contributions

This study has provided a number of original contributions to knowledge theoretically, methodologically and practically. Those contributions are discussed in detail in the following sections.

7.3.0 Contribution to the Theory

First and foremost, this research contributes to theory as it is the first study to investigate the impact of music as a web atmospheric on shoppers' state of *flow* (a measure of enjoyment) in an online retail environment. Measurement of an online shopping experience, to date, has mainly emphasised the utilitarian perspective, and therefore studies have predominantly focused on price, convenience and functionality (Cheung *et al.*, 2003; Park and Kim, 2003). The concept of shopping enjoyment measured by *flow* is widely examined in online retail studies, however, the characteristics of *flow* remain vague (Novak *et al.*, 2000; Koufaris, 2002; Hoffman and Novak, 2009). Little is known about what enhances *flow* (Gao and Bai, 2014). Furthermore, despite the increase in online shopping, there is only a limited number of studies exploring the influence of music as an atmospheric in an online retail environment (Kim *et al.*, 2009; Lai and Chiang, 2012; Wang *et al.*, 2017). This is

regardless of previous web atmospheric studies showing that there are positive relationships between web atmospherics, shoppers' emotions and cognitive evaluations, subsequently influencing shoppers' behavioural outcome (Eroglu *et al.*, 2001; Koo and Ju, 2010). By testing the relationship between music (as a web atmospheric), shoppers' state of *flow*, arousal and pleasure, the study has increased understanding of the specific role of music within an online retail environment. Music as a web atmospheric does not directly affect shoppers' state of *flow*, neither does it indirectly affect *flow* via arousal in an online retail environment.

Secondly, a key finding of this study is the moderating effect of music on the relationship between shoppers' arousal and *flow*. Although music has no direct effect on shoppers' state of *flow* or arousal, it strengthens the effect of shoppers' arousal on the state of *flow* suggesting that the presence of music increases the degree of association between shoppers' arousal and state of *flow*. This finding confirms that there is a relationship between shoppers' arousal and the state of *flow*, and this relationship is made stronger in the presence of music. This moderation effect of music on emotion is not something that has been widely researched. The finding from this study provides new insight and awareness for the moderating role of music in an online retail environment. Music is commonly treated as a single environmental parameter, and its effects are regarded as a predictor of shopper responses (i.e. emotional and cognitive responses). Nevertheless, Morin *et al.* (2007) propose that music and its effect should be considered more integral to the environment than a solitary atmospheric feature. The moderating role of music discovered in this study offers a new understanding of the potential of music as a web atmospheric. Music has the potential to enhance the effect of other web store environment features and website characteristics (i.e. Site Informativeness, Site Effectiveness and Site Entertainment) by changing the background or foreground interplay.

Thirdly, this study is one of few that caters for a hedonic perspective of the role of web atmospherics, shoppers' emotions and enjoyment (measured by *flow*) within an online shopping experience. This study has contributed to bridging this gap by providing a structured proposal for the relationship between the web atmospherics, shoppers' state of *flow*, arousal and pleasure. More specifically, this study contributes to the theoretical understandings of *flow* by presenting an empirically tested comprehensive framework based on the SOR framework. Dailey (2004) and Lee and Jeong (2012) both attempted

to conceptualise the impact of web atmospherics on shoppers' state of *flow* in a SOR based model, however, neither models have been tested empirically. Both Gao and Bai's (2014) and Cuny *et al.*'s (2015) models propose *flow* or immersion as another dimension as an Organism element within the SOR framework, however, those models do not include shoppers' emotional and cognitive responses. Richard and Chebat (2016) have based their *flow* model on the SOR framework; however, there was no consideration of web atmospherics as a Stimulus element. By evaluating the direct and indirect path relationships, this study provides empirical evidence, which illustrates the clear positioning of *flow* within the organism element of the SOR based framework.

7.3.1 Methodological contributions

Several studies, identified in the literature review, have separately investigated the role of atmospherics, shoppers' emotions and state of *flow* in an online retail environment. Nonetheless, there are methodological difficulties in capturing empirical data, namely being able to replicate a real-time online shopping experience. There are studies which have been conducted on artificial websites designed especially for the experiment (Kim *et al.*, 2009; Ding and Lin, 2012; Lai and Chiang, 2012; Kim and Lennon, 2012) while other studies have taken place in a laboratory setting (Chung *et al.*, 2009; Gao and Bai, 2014; Richard and Chebat, 2016). In general, there have been weaknesses in research design in overcoming the challenges to replicate an authentic online shopping experience effectively. This study used a live fashion website, which enabled respondents to access the website in their own time and convenience thus replicate a real-time shopping experience. The methodology of this study enabled a more authentic shopping experience as opposed to a laboratory, however, simulating a more authentic shopping experience meant that there was some sacrifice had to be made with controllability, namely the volume of the music played. Nonetheless, as online shopping is more personal experience, as opposed to a public in-store shopping experience, it would be totally unrealistic if the shoppers did not have any volume control.

This study has adopted a control and intervention approach by using music as a treatment for the intervention group. Although different technical musical variables and characteristics, such as tempi, timbre and volume have been evidenced to affect shoppers in different ways, a mere presence of music has a positive effect on shoppers (Garlin and Owen, 2006). Furthermore, the simplicity of presence versus absence is

more practical and easier to implement for the marketers than looking at different variance of musical characteristics. This was also the first study to test the relationship between music as a web atmospheric and *flow*, and therefore testing presence/absence of music was considered to be the starting point. This reasoning justified why this study focused on the presence/absence of music rather than comparing different technical musical variables and characteristics. Nevertheless, the lack of variety in the musical variables is acknowledged as a limitation of this study.

In addition, the way in which music was played in the background was an important aspect in the method. This study has adopted the telepresence design since it enables the study to replicate a more holistic virtual shopping experience (Kim *et al.*, 2009). A telepresence design is where music is played on the same device as the one used to shop with, merging music into one virtual shopping experience. Telepresence design was achieved by embedding the link to the YouTube playlist into the questionnaire, which ensured the music to be played on the same device as the participants shopped with.

Overall, the innovative data collection method used in this study has attempted to maximise the authenticity of the real-time online shopping experience.

7.3.2 Practical contributions

As there is only little known about the role of music as a web atmospheric, there is uncertainty and potential risk for retailers incorporating music into their websites. Furthermore, web designers are advising against the use of music on a retail website, and this may play a part in explaining why music is not currently integrated into most retailers' websites. This study offers an empirical reason why music may not be perceived favourably for integration into the website design, which was that music did not directly affect the shoppers' enjoyment (measured by *flow*). Nevertheless, the study also revealed that music can enhance the relationship between shoppers' arousal and the state of *flow*. As shoppers' state of *flow* is one of the key factors to directly influence purchase intentions, music as a web atmospheric has the potential to provide an opportunity for retailers to distinguish themselves in an increasingly competitive online retail market. With caution, music can and help to transform online retail transactions into an enjoyable hedonic experience.

7.4 Managerial implications

As the move to online shopping continues, now estimated as growing at a rate of approximately around 15-22% per year to 2023 (eMarketer, 2019), it is increasingly seen as a critical 'context' both for retail research and practice. There has been a shift in the nature of the online retail environment to become a shopping platform that offers enjoyable and entertaining experiences that satisfy shoppers' aesthetic and experimental desires as well as fulfilling utilitarian needs (Childers *et al.*, 2001). At the same time, the impact of technological advancement on consumer behaviour and the digital transformation of music consumption means incorporation of music in any retail platform has become possible (The Guardian, 2018). As a result, background music has become big business. Current music consumption is increasingly relying on streaming services (the recent statistics show that the music streaming revenue accounted for almost half (47%) of global recorded music industry revenue) (IFPI, 2019). For retailers, this provides an opportunity to use music to underpin and promote their brand identity as music has become accessible for anyone, at any time, and from anywhere. Already adopted within a store environment by some retailers such as Abercrombie and Fitch, the ability to create in-store playlists, which can be downloaded for personal consumer consumption, demonstrates the potential for music to both create and extend the shopping experience.

However, despite the growth of the background music business, the ease of access to digital music and to online music streaming, all of which provide opportunities for the integration of music into online retailing, the researcher could not locate a single retail website that uses music as a web atmospheric. The retailers may have been reluctant to use music as a web atmospheric as there has been no empirical evidence to date, which examines how music as a web atmospheric can improve an online retail environment. The findings from this study therefore offers both retailers and background music licensors some understanding on how music as a web atmospheric relates to shoppers' state of *flow*, and its possibility of becoming a website feature that enhances holistic shopping experience.

Retailers may want to generate consumer's state of *flow* (as a measure of enjoyment) in an online shopping environment as *flow* is related to purchase intention. Although the findings indicate that music alone may not directly affect the shoppers' state of *flow*,

shoppers' arousal was found to directly affect the state of *flow* and music can enhance the relationship between arousal and *flow*. Adding music to other web site features such as colours (Wu *et al.*, 2008) or animation (Day *et al.*, 2006) could facilitate a high arousal environment and maximise the potential to enhance shoppers' state of *flow*. In other words, music as a web atmospheric therefore has the potential to enhance the level of shoppers' enjoyment (measured by *flow*) in an online retail environment.

Looking to the future, developments in music technology such as streaming and music sharing platforms, and advances in consumer data analytics, especially in personalisation of data, provides potential for the development of music as a retail web atmospheric. Consumer online shopping personalisation is growing as it can lead to customer loyalty and sales (Business Insider, 2017). Retailers are now able to deliver tailored searches based on browsing and click behaviour. Personalised integration of music, which could match online consumer shopping profiles and buying patterns, is a possible way forward. In addition, if the shoppers can choose the way they want to listen to the playlist (i.e. shuffle, repeat, skip), this offers the shoppers choice and control. This feature could facilitate a better shopping experience as liking of the music is related to positive effect on shoppers (Garlin and Owen, 2006), and it would also offer shoppers higher interactivity and a sense of control, which are evidenced to contribute to the shoppers' state of *flow* (Csikszentmihalyi, 1990; Skadberg and Kimmel, 2004; Noort *et al.*, 2012).

However, a key management implication is that for retailers, the addition of music as a website atmospheric should be currently treated with caution until further research can establish a better understanding of the cognitive and emotional relationships, and the processes, involved in online shopping. Technological changes coupled with the transformation in consumer behaviour suggests that further research is required in this field.

This is the first study to empirically examine the relationship between music and shoppers' state of *flow* in an online retail environment and there are some methodological and contextual limitations identified due to the nature of the study, which are listed in the next section.

7.5 Limitations of the study

Although every care was taken in designing this research to ensure that limitations would not significantly affect its contribution, the study was subject to certain restrictions.

7.5.0 Limitation of the research methodology

Methodologically, this study has adopted a positivist deductive approach using a quantitative online surveying method to collect data. This means that the study outcome achieved higher objectivity compared to using an interpretivist approach. Nevertheless, this study used a self-administrative verbal questionnaire to measure constructs such as shoppers' state of *flow* and emotions, which are perception measures. In other words, the measurements taken are still subjective to shoppers' perception of the understanding of the terms of item scales. Therefore, the objectivity and authenticity of the responses may have contained an element of bias. Furthermore, using a positivist approach could not provide an in-depth explanation of why music moderated and enhanced the relationship between arousal and *flow*, nor why it did not directly affect *flow*. The changing nature of consumer behaviour with advancement of technology and web interface, and the change in music consumption suggest that we need to explore this topic in detail in a more interpretive and exploratory approach. Hence, further research could adopt a qualitative approach and interpretive methodology using a data collection method of in-depth interviews or focus groups to explore this phenomenon further.

7.5.1 Limitations of the research design

To achieve the aim and objective of the research, this study adopted a deductive single cross-sectional research design to test the hypotheses drawn from the conceptual framework. Furthermore, the study was experimental in design utilising a between-subjects control and intervention approach to determine whether there are relationships between music as a web atmospheric and shoppers' state of *flow*, and other constructs such as shoppers' arousal and pleasure, as well as determining the impact of music as an independent variable. A major weakness of a cross-sectional design lies in the difficulty in establishing time order, which is an important preconditioning for deducing causality between variables (Bollen, 1989). Cross-sectional designs are carried out at one point in time. As such, they may be limited in their ability to explain

the direction of associations from the survey. In other words, the cross-sectional design cannot explain the causality of effects.

To overcome this weakness, a within-subject longitudinal research may be preferred as it has the ability to collect repeated measures to provide an in-depth view of the situation and detect the changes that take place over time.

7.5.2 Limitations of the data collection and research instrument

A major limitation lies in the sampling method of the study. The respondents were recruited in the non-probability random snowballing manner. Although it enabled large data collection in the most convenient way, it could be argued that this approach may be prone to bias and the sampling frame may not have captured a generalisable sample.

As this study focused on imitating an authentic online shopping experience, the control which researcher had on the research environment also caused some limitations. For example, the researcher did not have a control on the volume of the music played by the participants. If the music was played too quietly through the participants' choice, it would be less likely to lead to arousal (Guéguen *et al.*, 2008), and it must be acknowledged that having no control over the volume at which the music was played may have influenced the result. Furthermore, the researcher would not know where or when the participants have visited the website and completed the questionnaire. Other environmental factors such as additional background noise, simultaneous browsing of other websites, and other distractions could potentially have also influenced the result. Krause *et al.* (2014) concluded that control (dominance) factor is increasingly becoming a more important contextual factor for listening to music in everyday life. This is due to the development of digital devices that allow individuals to have different degrees of control over music listening in different environmental contexts. For example, individuals can choose and create playlists, skip, repeat and shuffle instead of being obliged to follow the track orders in most situations (i.e., while cooking, during a commute etc.), whereas sometimes listeners have no control over music in a situation (i.e., at cinema, in a shopping mall etc.). This means that consideration of control may be crucial when evaluating the impact of music in an online shopping context.

It must be also considered as to why music did not directly influence arousal in this study. It could be argued that the tempo of music may not have been fast enough to

stimulate a level of arousal. A faster tempo of the music is demonstrated to lead to a higher level of arousal (Garlin and Owen, 2006; Kämpfe *et al.*, 2010; Ding and Lin, 2012), and the tempo of music played while participants browsed the website may not have reached the threshold to induce arousal. Nonetheless, the YouTube playlist used for this study consisted of nineteen songs, of which, sixteen songs were classified as 'fast' with over 94 beats-per-minute (BPM). Only one of the nineteen songs was less than 72 BPM, which is considered slow (Milliman, 1982; Wu *et al.*, 2008; Ding and Lin, 2012). This indicates that although the tempo of the music was generally fast, it did not lead to higher arousal which is contrary to previous studies. This result raises the question that the relationship between the level of arousal and the tempo of the music played may not be directly related in an online retail setting. Although within physical retail studies, it has been evidenced that the speed of music is highly related to the level of shoppers' arousal (Chebat *et al.* 2001; Husain *et al.* 2002; Garlin and Owen, 2005; Knoferle *et al.*, 2012), there are insufficient numbers of studies with empirical evidence to support this to be true in an online retail environment.

Cheng *et al.*'s (2009) study indicated that the combination of warm colour (i.e. red, orange) and fast-tempo music-induced arousal on an online retail environment, which suggests that music alone may not induce arousal. The dominant colour used on the retail website for this study, at the time of the data collection, were mainly cool colours (blue, purple) and this may have affected the arousal level of participants. This suggests that music alone may not be sufficient enough to induce arousal.

Furthermore, although the choice of music was consistent with the genre and style of the music played in the physical store of the retailer, it may not be suited to the products offered. Therefore, it may not have resulted in product congruency, which would lead to a higher level of shopper arousal.

7.5.2 Limitation of the contextual setting

Although fashion is one of the main categories of the online market, there are many other products and services, which can be purchased online. Shopper enjoyment (measured by *flow*) may be more relevant to certain types of products or services than others (i.e. utilitarian versus hedonic), and therefore the product category may have impacted the outcome of the result. Furthermore, the live retail website used to achieve authenticity of the shopping experience is small with limited product selection compared to larger well-known high-street fashion retailers. As the retailer only offers

vintage clothing, the website may not have been of interest for some participants in terms of the products offered.

Despite the caveats, this study is one among the very few that addresses the measurement of the online shopping experience from a hedonic perspective and goes beyond the emphasis on the utilitarian technological functionality. The study validated its proposed model through the use of a large and diversified sample. However, other essential perspectives such as shoppers' gender, age, musical experience, internet familiarity, and geographical location were not addressed in this study in terms of their impact on the proposed model. Therefore, these aspects require further exploration.

7.6 Suggestions for future research

From the study, although music did not appear to directly affect shoppers' *flow* nor arousal, this needs to be explored in more depth. Furthermore, there are areas in which future research is required to further expand the findings from this study.

For example, the changing nature of consumer behaviour with advancement of technology and web interface, and the change in music consumption suggest that we need to explore the underlying this mechanism and understand the shoppers' experience in order to provide more conclusive explanation to the phenomenon. Hence, future studies could adopt a qualitative data collection method using in-depth interviews or focus groups to explore this phenomenon further.

Secondly, further empirical testing and refining of the proposed conceptual model exploring relationships with other external variables such as Site Informativeness, Site Effectiveness and dominance will be necessary for future research. In order to ascertain the generalisability of the findings, the study needs to be repeated for further empirical testing purposes, and data may be collected from a larger and more structured sampling frame.

Thirdly, this study should also be repeated for different types of products which are frequently purchased online, such as commodities, electronics or grocery or even services such as travel, insurance and banking. Findings related to each product or service category may differ from the findings from this study.

From the research limitations stated above, it must be acknowledged that if this study was to be repeated, the data collection method could be considered and refined. For example, due to the design of the study, which focused on the authenticity of the

shopping experience, it was not possible to control the environmental conditions as the survey was completed entirely under respondents' control. In future research, other musical variables such as volume and speed of the music played should also be taken into consideration as they are variables that may affect shoppers' emotions and cognitive states in an online shopping environment (Cheng *et al.*, 2009; Ding and Lin, 2012). Furthermore, an environmental control should also be considered. For example, utilizing a laboratory experiment, or at least the study to be conducted in the same environment for the entire sample population to eliminate any environmental variables affecting the result. Nonetheless, this needs to be offset against the benefits of replicating a real-time online shopping experience.

In addition, participants having more control in what music they listen to while they shop may impact the outcome. As Krause and North (2014) acknowledge, the technological advancement and digitalization of music allow people to listen to music with a greater control with features such as shuffling, skipping and playlist creation. These features allow the listeners more interactivity with the music they chose to listen to leading to a variety of musical preference that fits different mood or situational context.

Furthermore, although music used in the study was consistent with the music played in the physical shop, which was essential to maintain the store atmosphere as a whole, the music may not have achieved congruity with the other web atmospherics and the products offered. Therefore, a future study should also look at the combination and congruity with other elements of the web store, such as products offered, and other web atmospheric stimuli, and music. To determine the congruity of the music, a pre-test should be conducted in which shoppers indicate which music is more congruent with the rest of the website environment and the product offering.

To conclude, this study offers original contributions to the knowledge by fulfilling the research objectives and providing key findings, as well as providing new opportunities for further exploration. To reiterate, the key finding of this study is that music as a web atmospheric did not directly affect shoppers' state of *flow* or arousal. This indicates that music as a web atmospheric is not a predictor of *flow* or arousal in an online retail environment. In addition, music as a web atmospheric, in fact, moderates and enhances the relationships between shoppers' arousal and *flow* in an online retail environment. This finding has a significant implication, as music as a web atmospheric, to date, is

not widely considered as a moderating variable between shoppers' enjoyment (measured by *flow*), arousal and pleasure within online retail studies.

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Appendix 1 Table of the key literature

| Author/ Year / Title | Area of research | Empirical /conceptual | Methodology | Context | Findings and Conclusion | Further research suggestion |
|---|--|-------------------------------|--|----------------------------------|--|--|
| | Instore atmospherics and consumer behaviour | | | | | |
| Russell and Mehrabian (1978) <i>Approach-Avoidance and Affiliation as Functions of the Emotion-Eliciting Quality of an Environment</i> | Environmental psychology Emotions | Empirical Quantitative | Study 1 –200 university students. Factorial design. Showing colour photographic slides with various physical setting. Subjects were asked to imagine how they would feel in that setting. Then asked to rate their emotional reaction using the PAD scale provided, Questions on the approach-avoidance and desire to affiliate. Study 2 – regression design. 2 independent variables by dominant-eliciting quality was controlled. | Laboratory experiment in the USA | Both studies confirmed the forecast of a direct relationship between the pleasantness of the environment and approach towards the setting. Pleasure is a major determinant of approach behaviour. Both studies supported pleasure-arousal interaction. Higher arousal is preferred in pleasant settings, but lower arousal was preferred in unpleasant settings confirming the fundamental of the SOR model. | Due to the methodology, the generalisability is questionable. Replication with different methodology is recommended. |

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| | | | Same procedure as the study 1. 310 subjects who did not take part in study 1 | | | |
| Mehrabian (1996) <i>Pleasure-Arousal-Dominance: A General Framework for Describing and Measuring Individual Differences in Temperament</i> | Environmental psychology Emotions | Conceptual | Review of conceptual system and scales for measuring basic dimensions of emotional trait and emotional states using PAD | | The PAD provides a convenient way of visualizing, comparing, and contrasting personality measures. This means PAD scale can describe emotional personality traits. | With a further research, the PAD can be used to identify shared and individual temperament components for various classifications of psychopathology. This should help in the search for appropriate psychotropic drugs to treat disorders that share comparable temperament components. |
| Bitner (1992) <i>Servicescapes: the impact of physical surroundings on</i> | Servicescape/atmospherics | Conceptual | Review of literature for forming a theoretical grounding framework | Service organisations (hotels, restaurants, offices, banks, retail stores and hospitals) | Servicescape framework explores physical environment affecting both customers and employees cognitively, emotionally and physically. Subsequently | Research using extensive methods to measure the impact of environmental stimuli. I.e. observations, and |

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| <i>customers and employees</i> | | | | | the environmental factors influence the behaviour. | experimental surveys. |
| Tai and Fung (1997) Application of an environmental psychology model to in-store buying behaviour | Consumer behaviour and atmospherics | Empirical Quantitative | Questionnaire | 2 types of physical CD shops in Hong Kong | In-store environment stimuli are positively related to the level of pleasure experienced in the store. Shoppers' emotional states in the store are positively related to in-store shopping behaviour. | Focus on determining which environmental elements produce positive and negative responses. Then retailers can obtain some guidance in implementing pleasant and arousing environment. |
| Turley and Milliman (2000) <i>Atmospheric effects on shopping behaviour: A review of the experimental evidence</i> | Atmospherics and consumer behaviour | Conceptual | Review of literature. Tabling the literature by their research design, independent/dependent variables and findings to highlight a gap in literature suggesting the areas of future research. | Store atmospherics affecting shopper behaviour | Music has a significant impact on consumer behaviours such as sales, arousal, perception and actual spending of time, in-store traffic and perception of virtual stimuli. This influence on behaviour happens when the consumers are not consciously aware of it. | Additional theory development in the area as there is not enough research to explain, predict and control the behaviour. Are there theories beyond S-O-R? How can the retail environment be used as a segmentation tool? Age of the samples may affected the |

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| | | | | | | impact of background music and their behaviour. |
| Mohan, Sivakumaran and Sharma (2013) <i>Impact of store environment on impulse buying behaviour</i> | Atmospherics and consumer behaviour | Empirical Quantitative | Structured questionnaire on grocery shopping. 733 subjects in South India. | Supermarket in India | Store atmosphere and personality variables impact on impulse buying through positive affect and urge, however, store atmosphere has higher impact on impulse buying than personality variables. | Experimental design rather than structured questionnaire manipulating situational variables. Other retail categories should be explored. |
| | Music and consumer behaviour instore | | | | | |
| North, Shilcock and Hargreaves (2003) <i>The effect of musical style on restaurant customers' spending</i> | Music and consumer behaviour | Empirical Quantitative | Mean spend per head for each table were calculated in a British restaurant over 18 evenings where classical, pop and no music were played. | British restaurant in the evening | Playing background classical music led to people reporting they were prepared to spend more. Customers in the classical music condition decided to treat themselves by spending more on starters and coffee. | More robust experimental design should be tested. |
| Morrison and Beverland (2003) | Music and brand perception | Conceptual | Supporting some literatures by exemplifying and observing the practical | | Some retailers already implement (A&F, Prada, Olive Garden, Red Lobster etc.) background | Research on multi-layered fit between in-store music, |

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| <i>In search of the right in-store music</i> | | | use of background music in retail stores. | | music as a tool to enhance their brand positioning, store and brand image, sales strategy and customer experience. | strategic approach and environment. |
| Garlin and Owen (2006) <i>Setting the tone with the tune: A meta-analytic review of the effects of background music in retail settings</i> | Music and consumer behaviour | Conceptual | A review of experimental evidence. Synthesising and integrating results to identify common results and circumstances under which they differ | | Familiarity and liking of the music has a positive effect. The mere presence of music in the background has a positive effect on pleasure. Slower tempo, lower volume and familiar music made customers stay at the venue longer. Higher volume, higher tempo and less liked music has longer time perception. Tempo has greater effect on arousal. | Replicational studies overcoming some limitations from the previous studies. Research examining music, intermediating cognitive and affective processes and consequent behaviour. Examining the effect of context, types and nature of factors influencing variables of interest. |
| Beverland, Lim, Morrison and Terzioski (2006) <i>In-store music and consumer-brand relationships: Relational</i> | Music and brand perception | Empirical Qualitative | Background interview -> observational research -> 20 in-depth interviews. | In-store experience in retail stores in Australia and US | “Fit” in-store music reinforces pre-perception of the brand. It signals important cues such as brand positioning, target market and quality of the store. “Misfit” in-store | Examine the effect of music on brand image using experiments or quasi-experimental research designs. Examine ‘zone of tolerance’ for the |

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| <i>transformation following experiences of (mis)fit</i> | | | | | music can potentially damage brand image. Too less music in store can result in uneasy and uncomfortable feeling whereas too loud music can distract and disturb shopping experience. | volume of in-store music. |
| Oaks (2000) <i>The influence of the musicscape within service environments</i> | Music scape | Conceptual | Literature review on each individual musical variable to build theoretical framework | | Generation of Music scape model that draws from Bitner's Servicescape model. This model provides a visual interaction of different musical variables affecting customer responses and attraction. | More research on individual musical variables and their interactions within different service environments |
| Chebat, Chebat and Vaillant (2001) | Music scape on cognitive (rather than emotional) processes | Empirical Quantitative | Three variables manipulated in a 4x2x2 factorial experimental design. 536 undergraduate business students from Eastern Canadian university. 16 experimental conditions were used and a questionnaire was used. | Laboratory experience in Canada. Video of travel agency. | Slow tempo stimulates cognitive activity. Soothing music leads to optimal level of arousal and triggers cognitive activity. Cognitive effect of music - music attract attention but too much will attracts attention to itself rather than the product/sales person. | The effect of atmospherics on cognitive evaluation of the environment should be examined rather than just focusing on arousal and pleasure. |

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| | | | | | The key effect of store music is its evocative power and memories related to music. It highlights the importance of segmentation and appropriate use of music. Fittingness of music would change the perception of the store image. | |
| Oaks and North (2008) <i>Reviewing congruity effects in the service environment musicscape</i> | Musicscape | Conceptual | Review of literature. | Congruity theory between musical variables and customer response | “Fittingness” between the music played and the product and atmosphere lead to a positive evaluation of the environment, which subsequently increase customer spending. Arousal may be caused by a moderate level of incongruity. More liked music tends to increase the purchase level. | Music’s interaction with other environmental variables. Testing other theoretical explanation other than congruity theory. |
| Oakes, Oakes and Patterson (2013) | Musicscape | Empirical Qualitative | Subjective rather than objective responses in interpretive nature. | UK department store | Underlines the importance of perceived congruity between music and other servicescape features. Personal relevance of the music | Using non-student and diverse age sample. |

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| Shopping soundtracks: evaluating the musicscape using introspective data | | | Auto ethnographic data from 232 students in the UK (age 18-20) | | can impact on approach/avoid behaviour by eliciting memories. Musical stimuli are subject to response moderators before impacting upon emotional, cognitive and behavioural responses. | |
| Oakes and North (2013) Dance to the music! How Musical Genres in Advertisements can Sway Perceptions of Image | Music and advertising | Empirical Quantitative | Study 1: 135 mixed gender student sample. Television advertisement as stimulus. 1 with dance music, 1 with classical music, 1 without any music. Questionnaire after watching the clip Study 2: 231 mixed gender university student samples. Listening to advertisement on radio. 1 with dance music, 1 with classical music, 1 without any music. Questionnaire after listening to the advert. | UK Universities | Both experiments evidenced that different genre of music created different image of the university. Dance music enhanced the image of university being modern, exciting and trendy. Classical music enhanced the image of it being sophisticated and expensive. Music genres may influence perceived image and purchase behaviour. | Alternative music genre for the stimuli. Examine emotional responses. Measuring brain activity to examine the relationship between musical genre and consumer response. Using more diverse sample. |

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| Eckhardt and Bradshaw (2014) The erasure of antagonisms between popular music and advertising | Music and advertising | Empirical Qualitative | Interviews with open-ended questions | Interviews with major players in advertising. Experts' experiences in using music in advertising | Music in advertising is used as it can stylistically capture and represent brand image, identity and attitude. Pop music and advertising have no friction between, and this might be the enactment of industrialisation of culture. | |
| | Online consumer behaviour | | | | | |
| Koufaris (2002) <i>Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behaviour</i> | Online consumer behaviour | Empirical | 2-part questionnaire based. 280 completed samples. | Online book store. Sample selected randomly on online database. | Enjoyment of the shopping experience and perceived usefulness of the website are important for a new customers' return intentions. Online consumers are not purely utilitarian and could be similar to offline shoppers. Perceived web skills and positive challenges are positively related with shopping enjoyment. Online stores should provide both utilitarian and hedonic value to their customers. | Study on planned purchases of first-time customers. |

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| <p>Cheung, Zhu Kwong, Chan and Limayem (2003)</p> <p><i>Online Consumer Behaviour: A review and agenda for future research</i></p> | <p>Online consumer behaviour</p> | <p>Conceptual</p> | <p>Analysis of literature</p> | | <p>Intention (online purchase intentions), Adoption (online purchase) and Continuance (online repurchase) model using 5 major domain variables (individual/consumer characteristics, environmental influences, product/service characteristics, medium characteristics, online merchants and intermediaries' characteristics)</p> | <p>Research into five variables affecting intention, adoption and continuance. Research on unplanned purchases induced by web stimuli.</p> |
| <p>Constantinides (2004)</p> <p><i>Influencing the online consumer's behaviour: the Web experience</i></p> | <p>Online consumer behaviour</p> | <p>Conceptual</p> | <p>Review of papers</p> | | <p>Online retailers can influence decision making process by a combination of online functionality, information, emotions, cues, stimuli and products/services. Persuasion elements are more important than the website just being a catalogue.</p> | <p>Examining what is the role and weight of the experience elements as influencers of the buying behaviour and for different decision making stages. What web experience elements are important for different industries and retailers?</p> |

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| <p>Cheung, Chan and Lausanne (2005)</p> <p>A Critical review of online consumer behaviour: Empirical Research</p> | <p>Online Consumer Behaviour</p> | <p>Conceptual</p> | <p>Review and analysis of literature</p> | | <p>Intention, adoption and continuance are the key foundation of online consumer behaviour framework. 5 domains (Individual characteristics, environmental influences, product/service characteristics. Medium characteristics, merchants and intermediary characteristics) that influences the key concepts.</p> | <p>Explore other disciplines such as concept of flow and holistic experience. Look at each of 5 domains that influence the intention and adoption, and examine how it influences them. Look at unplanned purchase as it is stimuli-driven.</p> |
| <p>Richard and Chebat (2015)</p> <p><i>Modelling online consumer behaviour</i></p> | <p>Online Consumer behaviour</p> | <p>Empirical Quantitative</p> | <p>Questionnaire 1443 student samples</p> <p>Participants were randomly assigned to visit one of the 29 chosen websites in a lab condition, then asked to take a questionnaire</p> | <p>Lab experiment</p> | <p>Higher level of arousal leads to better judgement of informativeness. There is a positive relationship between arousal and pleasure. Higher level of arousal and dominance directly affect the flow state. Pleasure and flow lead to website entertainment. Then it leads to positive website attitudes and positive product attitudes, which subsequently leads to</p> | <p>Wider sample. Adding other variables (tangibility, perceived risk, product/website involvement, trust, gender). Using other types of websites such as services.</p> |

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| | | | | | greater purchase intentions. Flow has a direct effect on purchase intentions. | |
| | Web atmospherics and consumer behaviour | | | | | |
| Eroglu, Machleit and Davis (2001) <i>Atmospheric qualities of online retailing: A conceptual model and implications</i> | Atmospherics and online consumer behaviour | Conceptual | Review of literature. | Online retail based on S-O-R framework | High involvement online shoppers who are exposed to low task-relevant online information (music, animation, colours etc.) will experience negative affect and negative attitude towards the online shopping process – leading to negative states of the shoppers and avoidance behaviours. | Experimental research design manipulating various atmospheric cues. |
| Eroglu, Machleit and Davis (2003) <i>Empirical Testing of a Model of Online Store Atmospherics</i> | Atmospherics and online consumer behaviour | Empirical Quantitative | Experimental. Questionnaire. 128 student participants. Manipulating involvement levels. | 2 Fictional apparel websites 1. only high task relevant cues | Web atmospherics affects the level of pleasure, which leads to satisfaction and approach/avoidance behaviour. The affective and cognitive states mediate the relationship | Using measurements other than PAD scheme. Examine how specific atmospheric cues affect the cognitive & behavioural experience. |

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| <i>and Shopper Responses</i> | | | | 2. both high and low task relevant cues | between the atmospherics and shopping outcomes. The effect of the web atmospherics on pleasure is significant only in the low-involvement task (browsing). The effect of web atmospherics on pleasure is significant for those high in atmospheric responsiveness. | |
| Yoon (2010) <i>Antecedents and consequences of in-store experiences based on an experiential typology</i> | Online Atmospherics and consumer behaviour | Empirical Quantitative | 3 experiential components (sensory, affective and rational) to uncover roles of antecedent (shopping motives) and consequence (impulse buying). Survey with 302 responses | Three types of shopping environment (department store, discount store, online store) for 2 types of products (perfume and detergent) in Korea. | Product-base motive and experience-based motive influence on shopping experiences. Product type was a significant moderator between shopping and sensory experience. Online retailers should design their stores through pop-ups or advertisement to highlight the specific promotions as online shoppers preferred rational shopping experience. It should also focus on product specific benefits and advantages | Wider sample demographics. Further research into in-store experience to brand liking. Another study to investigate the difference between online only stores and offline stores to reflect operational aspect. |

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| | | | | | of buying products online. | |
| Koo and Ju (2010) <i>The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention</i> | Atmospherics and online consumer emotion | Empirical Quantitative | Quantitative survey in Korea. Mixed gender samples who were in their 20s and 30s. Majority were university students less than \$2000 monthly income – common online shopping population in Korea | Korea | Testing the SOR framework. Online atmospherics have an impact on consumer emotions such as arousal and pleasure which subsequently have effect on shopper intention. | Test more diverse demographics and bigger sample. The study does not include audio cues as tested atmospherics. Investigation of personal characteristic traits affecting online shopping intentions. |
| | Music as a web atmospheric stimulus | | | | | |
| Fiore and Kelly (2007) <i>Surveying the use of sound in online stores</i> | Sound and online retail | Empirical Quantitative | Exploratory survey on 70 online retail stores regarding their use of sound. | UK websites (manufacturers sites, representational only sites, online stores) | Not many websites use sound but the ones who uses the sound are mostly large corporations to enhance the display of products. Sound could be used to overcome the barriers between shoppers, products and retail environment and optimising the shopping experiences. | Qualitative research into why/how sound is integrated to those websites. Look at ways of enriching the websites with sound to represent the products more completely. |

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| <p>Kim, Kim and Lennon (2009)</p> <p><i>Effects of web site atmospherics on consumer responses: music and product presentation</i></p> | <p>Music, product presentation and online consumer emotion, cognitive and conative responses</p> | <p>Empirical</p> <p>Quantitative</p> | <p>Experimental.</p> <p>2 (flat vs model presentation) x 2 (music present vs absent) between-subject factorial design.</p> <p>272 college women.</p> <p>Using PAD emotional dimension measures</p> | <p>Using mock apparel website. Lab setting.</p> | <p>No significant effect for music on emotion. Participants who experienced higher level of pleasure and arousal showed greater purchase intentions. Dominance was not related to attitude toward the website or purchase intent (but maybe indirectly? See Richard and Chebat, 2015)</p> | <p>More genre of music to be tested. Musical fit was not considered Further research should use the telepresence design which music is merged as one virtual shopping experience.</p> |
| <p>Cheng, Wu and Yen (2009)</p> <p><i>The effect of online store atmosphere on consumer's emotional responses – an experimental study of music and colour</i></p> | <p>Online atmospherics</p> <p>Music and Colour</p> | <p>Empirical</p> <p>Quantitative</p> | <p>Experimental. 2 (music tempo, fast/slow) x 2 (colour warm/cool) factorial design on gift shop online. 128 subjects were put into one of the 4 groups randomly.</p> <p>Measures were taken in 6 dimensions of arousal and 6 dimensions of pleasure.</p> | <p>Laboratory experiment with personal computers.</p> | <p>Both music and colour influenced the subjects' perception emotional responses. Participants felt more aroused and pleasant with faster music and warmer colour. The congruency of the two atmospheric factors enhances the emotional responses.</p> | <p>Different types of stores. Testing other factors such as other musical valuables and colour structures. Testing emotional responses influencing shoppers' attitudes, satisfaction, buying behaviour</p> |

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| <p>Lai and Chiang (2012)</p> <p><i>Effects of placement point of background music on shopping website</i></p> | <p>Music and online consumer emotion</p> | <p>Empirical</p> <p>Quantitative</p> | <p>Experimental. 30 participants' emotional state, approach-avoidance behaviour intention and action to adjust music volume were measured while browsing with/without music. (7-point Likert scale)</p> | <p>Online book store (designed for the experiment)</p> | <p>Participants had a higher level of pleasure, arousal and approach behaviour for the three placement points than for no music or full music. Playing background music after the start of browsing is beneficial for the online shopping experience. It appears that it is inappropriate to place background music at the start of browsing shopping website.</p> | <p>Very limited number of participants and no demographics were explained. Only one type of music was used and controlled variable was the volume. Testing and controlling other musical variables.</p> |
| <p>Kim and Lennon (2012)</p> <p><i>Music and amount of information: do they matter in an online apparel setting?</i></p> | <p>Music and online on consumer affection (pleasure/arousal)</p> | <p>Empirical</p> <p>Quantitative</p> | <p>Experimental. Online survey using fictitious website. 1 group with music, the other without music. Participants were instructed to explore the website (low involvement condition) or to identify items to purchase with a \$100 gift certificate (high involvement condition). After</p> | <p>Online apparel website (designed for the experiment)</p> | <p>Online shopping involvement did not moderate the effect of music on consumers' affective states. Novelty may have had an effect. Music on apparel websites is a way to decrease risk, enhance attitude towards the site, and consequently influence a positive shopping outcome.</p> | <p>Wider sample demographics. Other industries should be tested.</p> <p>Music with other tempo.</p> |

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| | | | viewing the website, participants were asked to answer an online survey. In music conditions, music played automatically as the participants moved through the website, but stopped when they arrived at the questionnaire page. 701 participants. | | Music did not affect arousal; however, this could be because the study used a slow music | |
| Ding and Lin (2012) <i>How does background music tempo work for online shopping?</i> | Music and online emotion | Empirical Quantitative | Participants were asked to shop in a fictitious website. 4 websites with 4 combinations of background music tempo (slow/fast) and product category (hedonic/utilitarian) 75 undergraduate students for Study 1, 87 students for Study 2. 7-point semantic scale questionnaires | Online shops (designed for the experiment) | Fast tempo music leads to higher arousal than slow tempo music. Music affects consumers' emotional responses in the online environment. Product category moderates the effect of arousal on pleasure. It effects on hedonic products only. Music creates a high-arousal environment to enhance pleasure and then purchase intentions. Again, the effect is recorded for hedonic | Only 2 product categories were used for each hedonic/utilitarian category. Using real online stores will increase validity. |

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| | | | | | products only. Nevertheless, the categorization of hedonic/utilitarian is slightly vague | |
| Cuny, Fornerino and Helme-Guizon (2015) <i>Can music improve e-behavioral intentions by enhancing consumers' immersion and experience?</i> | Music and online consumer behaviour | Empirical Quantitative | 2 virtual art galleries. 5-point Likert scale questionnaire. 250 participants. | Online art galleries | Immersion and esthetic experience mediated the relationship between music and behavioural intentions. Music encouraged immersion. More intense the esthetic experience is, the stronger behavioural intentions are. | Wider variety of musical genre to be tested. The model assumes mediating roles of immersion and experience. It might be that in other environments, in which control or skills/abilities are required rather than sensitivity to aesthetics or flow, might be more relevant. |
| Krauce and North (2014) <i>Contexturised music listening: playlists and the Mehrabian and Russell model</i> | Everyday use of music | Empirical Quantitative | Survey. 344 participants. Playlist creation for given situations. Playlist questions (7-point Likert scale) | Hypothetical playlist creation | PAD is a useful framework when considering relationship between music and the environmental context. Arousal and aesthetic seem to represent the dimensions along which music can be characterised as | Trails of individual listeners for certain situations could be different. There are more objective measures for arousal evoking factors instead of BPM which was |

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| | | | | | “appropriate”. Music chosen for situation is subject to the perception of what music ought to be present in a certain situation and the function it should fulfil. | considered for this study. Control is an important element of contextualised listening. |
| Wang <i>et al.</i> (2017) <i>Is Background Music Effective On Retail Websites?</i> | Music and online consumer shopping enjoyment | Empirical Quantitative | Questionnaire. 169 participants for drinks website, 121 participants for the hotel website. Using websites that were currently playing music on their homepages Manipulation check to determine one subject group turned on the sound where the other subject turned it off. Post and under graduates from three universities. Between-subjects design in which subjects were randomly assigned to one of the two websites. | Online service and goods | Online consumers react with positive affect to congruent background music used on a website. Compared to identical websites without music, the website with music produced significant affective responses. Subsequently it increased shoppers’ enjoyment level and favorable website behavior (returning to the website or recommending it to others). Enjoyment did not directly influence behavioral intentions, although there was a positive relationship between enjoyment and behavioral intentions. Background music also | Investigating the relationship between music and online enjoyment by examining background music in website intention models. Testing other musical variables such as tempi. Testing other product categories and age groups. The scenario that the participants “won” the prize to purchase drinks/hotel stay may have affected the consumer emotion, enjoyment and attitude. |

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| | | | | | led to positive website usefulness compared to no music. | |
| | Flow | | | | | |
| Csikszentmihalyi (1990) <i>Flow: The Psychology of Optimal Experience</i> | Flow | Conceptual | | Introduction of flow and optimal experience | Definition of flow as an “Optimal experience”. Flow experience usually involves a sense of exercising control of the situation. Person’s attention is completely absorbed by the activity – as a result, optimal experience takes place: people become so involved in what they are doing, the activity becomes spontaneous, almost automatic. | |
| Nel et al. (1999) <i>Going with the Flow: Web sites and Customer Involvement</i> | Web users and flow | Empirical Quantitative | 36 students in 3 groups of 12. Questionnaires after evaluating a website. Each was given 20sites to evaluate. 659 evaluation forms for analysis. Self-report scale adopted | Controlled experiment in a lab | Significant correlation between flow and site return intentions. Lower flow on transaction sites be because these sites have the intention of getting the shoppers to purchase fast. Where shoppers have low purchase intentions, they | Similar studies on different demographic and psychographic characteristics may possibly generate different results. A future study should give choices regarding the site |

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| | | | from Webster et al. (1993). | | lose flow, and may just move on. If the website wishes to achieve sales at a later stage, they may want to give attention to flow, or shoppers may not return. Not facilitating flow may contribute to a lower Attention Focus. | evaluations across a bigger list. |
| Novak, Hoffman and Duhachek (2003) <i>The Influence of Goal-Directed and Experimental Activities on Online Flow Experiences</i> | Flow online | Empirical | Online survey. 588 respondents. Open ended questions, categorised verbatim coding as well as a survey with 17-items measuring flow and related constructs 9-point scales | | There was evidence of flow occurring during task-oriented activities than experimental activities although flow occurs for both types of activities. | Future research should have respondents describe a wider range of flow experiences under a variety of conditions. Continued evaluation of the contrast between goal-directed and experiential activities is likely to further enhance the understanding of the fundamentals of compelling online experiences. |
| Pace (2004) | Flow online | Empirical Qualitative | Grounded theory – inductive investigative process. Semi- | | Many of concepts and relationships are identical to dimensions of flow | More study using grounded theory to provide a better |

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| <p><i>A grounded theory of the flow experiences of Web users</i></p> | | | <p>structured interview. 22 participants. Analysis of data: constant comparative method Open coding -> theoretical coding -> selective coding -> verification</p> | | <p>proposed by Csikszentmihalyi</p> | <p>understanding of the flow experiences of web users which may contribute to the development of multidimensional design principles.</p> |
| <p>Skadberg and Kimmel (2004)</p> <p><i>Visitors' flow experience while browsing a Web site: its measurement, contributing factors and consequences</i></p> | <p>Flow online</p> | <p>Empirical</p> <p>Quantitative</p> | <p>Survey to test the hypothesis using structural equation modelling method. A fictional website. 5-point Likert scale. 272 samples.</p> | <p>Fictional website</p> | <p>Distortion of time, telepresence and enjoyment as 3 indicators of flow in hypermedia experience. Processing speed has a strong impact on the web site's attractiveness. Evaluation of the website as being attractive has a strong impact on flow. Attractiveness of the web site and interactivity contribute to flow experience. Challenge and skill had no impact on flow. Flow had positive impact on learning</p> | <p>Future research should cross-validate the final flow model with new data. Cross validation could help to avoid problems with significance levels when hypothesis are formulated and tested using the same data.</p> |

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| <p>Siepkke (2005)</p> <p><i>An examination of the multidimensionality of flow construct in a computer-mediated environment</i></p> | <p>Flow on online shopping</p> | <p>Empirical</p> <p>Quantitative</p> | <p>Online questionnaire. 281 respondents. Participants were asked to visit a web site of their choice and simulate a purchase for a laptop.</p> <p>2 step data analysis: Confirmatory factor analysis then measurement model is modified to represent the theoretical models of interest.</p> | <p>Websites for purchasing a laptop</p> | <p>Challenge, control curiosity and concentration are better formulated as reflective dimensions of the flow construct rather than antecedent dimensions. The reflective conceptualisation of flow with respect to the dimensions of challenge, concentration, control, curiosity outperform the formative model in data fit and explanation of behavioural intentions.</p> | <p>The model must be re-tested and fine-tuned with a series of activities including shopping offline, sports and learning.</p> |
| <p>Hoffman and Novak (2009)</p> <p><i>Flow Online: Lessons Learned and Future Prospects</i></p> | <p>Flow in online shopping</p> | <p>Conceptual</p> | <p>Review of literature</p> | <p>Flow in an online shopping</p> | <p>Multidimensional measures of flow allow statistical tests of whether the component constructs should be viewed as part of higher-order factor measuring flow, or as antecedents or consequences. Disadvantage of multidimensional measures of flow is increased complexity of</p> | <p>There is a lack of consistency in operational definitions of flow used by different researchers, and there are still many aspects of flow that are yet to be addressed and researched.</p> |

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| | | | | | <p>data collection. However, it is recommended that multiple measures of flow should be used whenever possible.</p> <p>Marketing outcomes of flow – flow impacts on both hedonic and utilitarian components of web site performance. Flow has been found to influence the hedonic value of online shopping experiences. Flow has been found to influence behavioural intentions.</p> | |
| <p>Nusair and Parsa (2011)</p> <p><i>Introducing Flow Theory to Explain the Interactive Online Shopping Experience in a Travel Context</i></p> | Flow in online shopping | Conceptual providing suggestion for methodology | <p>Suggested method - Questionnaire using flow theory constructs.</p> <p>Lab experiment.</p> <p>Confirmatory factor analysis to measure the adequacy of the measurement model. The structural equation model to</p> | Flow in online travel website | <p>If a consumer shops online with a clear goal, they are utilising internet skills to complete a task at hand, either for entertainment or product search and purchase. Most e-shoppers begin as e-browsers, but the conversion rate from e-browsers to e-buyers depends on the</p> | Empirical study with suggested method |

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| | | | evaluate the proposed model. | | attractiveness of the website. Control, attention focus, and cognitive enjoyment create a flow state (outcome of flow). | |
| Hsu, Chang and Chen (2012) <i>Flow Experience and Internet Shopping Behavior: Investigating the Moderating Effect of Consumer Characteristics</i> | Flow in online shopping | Empirical Quantitative | Questionnaire to convenience sample. 395 usable responses. 5-point scales based on previous literature. | Online shopping | Flow is positively related to the purchase intentions as well as continuance intention and impulse buy. | Future research should continue the search for antecedents that influence shopping behaviour. A future study to investigate the relationship between the flow experience and other individual and situational differences, for example the role of flow in special occasions involving gift giving. Future research should use probability sampling method to recruit the respondents. |
| Noort, Voorveld and Reijmersdal (2012) | Flow in online shopping | Empirical | STUDY 1: 66 participants snowball process. Fictional | Brand website | Higher level of interactivity led to intense flow. This also increased | Testing which circumstances this mediated relation of |

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| <p><i>Interactivity in Brand Web Sites: Cognitive, Affective, and Behavioral Responses Explained by Consumers' Online Flow Experience</i></p> | | <p>Quantitative</p> | <p>brand website with high and low interactive features. Self-report multicomponent scale. 7 items 7-point scale</p> <p>STUDY 2: 103 participants Online questionnaire. Using different websites with high and low interactive features. Flow scale developed by Novak et al. (2000) is added.</p> | | <p>the magnitude of cognitive responses related to products. This led to favourable affective responses (attitude towards the site and brand) and subsequently led to favourable behavioural outcome.</p> | <p>flow with cognitive, affective and behavioural responses is stronger or weaker (moderated mediation).</p> <p>Incorporating other response variables such as brand and product recall (i.e., cognitive) and the valence of respondents' thoughts (i.e., affective).</p> |
| <p>Gao and Bai (2014)</p> <p><i>Online consumer behaviour and its relationship to website atmospheric induced flow: insights into online travel agencies in China</i></p> | <p>Flow in online shopping</p> | <p>Empirical</p> <p>Quantitative</p> | <p>A self-administered online survey. 2 real travel websites and 354 respondents are alternately assigned to 1 of 2. Asked to simulate a purchase of a holiday package. Once they completed the task, they were asked to write down</p> | <p>Travel website conducted in a lab</p> | <p>Site effectiveness, informativeness and entertainment influence flow experience. Flow is an important antecedent of purchase intention. Flow functions as a mediator between site atmospherics and behavioural outcomes</p> | <p>Further test to validate the findings in different cultural and industrial context (e.g. finance, property, music, sport). The flow experience may be restricted when respondents were required to complete</p> |

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| | | | the names of destination and the holiday package they intended to purchase, then they were asked to answer questions based on that particular website purchase simulation | | | the unwilling task. Therefore, use a sample of actual travellers. Longitudinal design to identify the changing roles of website atmospherics. Testing the effect that specific consumer-based variables such as innovativeness and involvement. |
| Richard and Chebat (2016) <i>Modeling online consumer behaviour: pre-eminence of emotions and moderating influences of need for cognition and optimal stimulation level</i> | Flow in online shopping | Empirical Quantitative | A questionnaire using scales for emotion (PAD), flow, entertainment, informativeness, effectiveness, product and website attitudes, and purchase intentions. 5-point Likert scale. Additional measures such as skills, challenge, knowledge, browsing behaviour | Goods and service websites conducted in a lab | Increased arousal leads to better judgements of informativeness. Direct positive relationship between arousal and pleasure. Higher arousal and dominance directly affects flow. Flow leads to higher pleasure. Attitude toward the website are positively influenced by emotions. Website entertainment results from pleasure and flow. Entertainment leads | Testing of the same model across other websites. Use a wider sample pool. Add other variables (e.g. tangibility, perceived risk, and gender), using other types of websites (e.g., services, hedonic versus utilitarian), and testing other moderators (e.g. culture) |

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| | | | <p>and the number of hours.</p> <p>Existing 15 brands for 5 types of services and 14 brands for 4 types of goods were selected</p> <p>1443 Student samples randomly assigned to one website in a lab setting</p> | | <p>to positive website attitudes. Flow has a direct effect on purchase intentions. Website attitudes positively influence product attitudes and leads to greater purchase intentions. Emotions precede cognitions. Visitors to a website initially develop arousal and dominance -> these 2 emotions bring them to experience flow -> once flow is achieved, pleasure is generated -> leading to positive attitudes toward the website directly and indirectly through entertainment.</p> | |
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Appendix 2 Description of the music in the playlist

Table Title of the songs, artist and the speed of the songs in order of appearance in the YouTube playlist

| Song title | Artist | Speed |
|---------------------|---------------------|--------------------|
| Sunlight | Cinema | BPM 113 Allegretto |
| Waters | Modern Me | BPM 120 Allegretto |
| Call Me Crazy | Wanderer | BPM 122 Allegro |
| Helium | Mikey Wax | BPM 124 Allegro |
| Overdose | Royal Tongues | BPM 112 Allegretto |
| Stay With Me | Traverse Town | BPM 109 Moderato |
| Bad Thing | The Mowgli's | BPM 96 Andante |
| Didn't Mean It | Jordan Gable | BPM 122 Allegro |
| Dive / Argentina | Gryff | BPM 126 Allegro |
| Parachute | Moose Light Kingdom | BPM 102 Andante |
| Bite My Tongue | Venus Demilo | BPM 133 Allegro |
| Making Up The Rules | Sleep State | BPM 133 Allegro |
| Young Kids Old Love | Otis English | BPM 89 Andante |
| As We Row | Kytes | BPM 100 Andante |
| Take What You Need | Steve Boller | BPM 100 Andante |
| Dream Girl | Stu Basham | BPM 110 Moderato |
| Painful To Watch | FOURS | BPM 113 Allegretto |
| Shadow Light | Ardyn | BPM 60 Larghetto |
| Marco Polo | China Lane | BPM 75 Adagio |

List of musical tempi

- *Largo* – broadly (40–60 bpm)
- *Lento*– slowly (45–60 bpm)
- *Larghetto*– broadly (60–66 bpm)
- *Adagio*– slowly with great expression (66–76 bpm)
- *Andante*– at a walking pace (76–108 bpm)
- *Moderato*– at a moderate speed (108–112 bpm)
- *Allegretto*– moderately fast (112–120 bpm)
- *Allegro*– fast, quickly, and bright (120–156 bpm)
- *Vivace*– lively and fast (156–176 bpm)
- *Presto*– very, very fast (168–200 bpm)

Appendix 3 Consent Form

Please read and confirm your consent to partake in the survey for this project by initialling the appropriate box(es)

1. I confirm that the purpose of the project has been explained to me, that I have been given information about it in writing, and that I have had the opportunity to ask questions about the research

2. I understand that my participation is voluntary, and that I am free to withdraw at any time without giving any reason and without any implications for my legal rights

3. I give permission for the responses to be collected and stored digitally by research staff, on the understanding that the data will be destroyed at the end of the project

4. I agree to take part in this project

Once you have agreed to the above statements and ticked the boxes to confirm, please click the “Next” button to proceed to the survey.

Appendix 4 Participant Information Sheet

Online Participant Information Sheet

Research Project Title: *Influence of music on shoppers' flow experience in an online fashion retail environment*

Invitation

Thank you very much for taking part in this survey. Before you decide to start the survey, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please do not hesitate to contact me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

This survey should take no longer than 20 minutes to complete and it will provide valuable data for research undertaken by Ayane Fujiwara (I can be contacted on ayane.fujiwara2013@my.ntu.ac.uk). My supervisor and the director of studies, Dr Sheilagh Resnick, Division of Marketing, can be contacted on sheilagh.resnick@ntu.ac.uk for further enquiries.

The data you will give here will be completely anonymous and strictly confidential, and taking part in the survey and this research is entirely voluntary. If you decide to withdraw your participation during the survey, you can do so by clicking "withdraw" button on any page, or by closing the web window.

The project's purpose:

This study is for the submission of my doctorate thesis on above title. The aim is to understand the influence of music on the flow experience while shopping in the online fashion retail environment. The flow experience refers to a feeling and experience of holistic involvement and enjoyment while being online.

Why have I been chosen?

You have been recruited as a UK resident who has access to the Internet and is capable to shop from an online retailer. If you do not have the access to the Internet or to the device to let you play an audio media file, please withdraw from the participation. Similarly, if you feel uncomfortable using such media or devices, please withdraw from the participation of this survey, please close the window to exit the process.

Do I have to take part?

Taking part in the survey and subsequently in the research is entirely voluntary. If you do decide to take part you can print this information sheet to keep (and be asked to complete the consent form in the next page) and you can still withdraw at any

time. If you decide to withdraw, you will not be asked to give any reasons for your withdrawal.

What will happen to me if I take part?

This survey should take no longer than 20 minutes. There are some questions which you can choose answer from the scale of 1 to 7 (i.e. 1 – strongly disagree, 7 – strongly agree). No other use will be made of the responses without your written permission, and no one outside the project will be allowed access to the original survey responses.

Will my taking part in this project be kept confidential?

All the information that I collect about you during the course of the research will be kept strictly confidential. At no point, you will be asked to provide your personal details during the survey. The data will also be codified to ensure the anonymity of the responses. You will not be able to be identified in any reports or publications.

What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?

Survey responses by online shoppers will provide me with quantitative data that can be analysed to test the relationship between presence of music and the flow experience in online fashion retail environment.

What will happen to the results of the research project?

The survey responses will be quantitatively analysed to test my hypothesis to build an appropriate conclusion for my thesis.

Who has ethically reviewed the project?

This project has been carried out in line with the Social Research Association and it has been reviewed and ethically approved by the Nottingham Trent University College of Business, Law and Social Sciences.

Contacts for further information

Please feel welcome to contact the project office for further information, at the following address

c/o Imogen Edwards
Graduate School, College of Business, Law and Social Sciences,
Nottingham Trent University,
Burton Street,
Nottingham NG10 4JF
Email: Imogen.edwards@ntu.ac.uk

Telephone: 0115 84 8812

Thank you very much for your participation. Please click "Next" button to proceed to the consent form.

Appendix 5 Additional tables and figures from analyses which supports the findings

Tables from crosstab analysis of the pilot study:

Association of presence or absence of music with arousal indicators (Relaxed/Stimulated, Calm/Excited, Sleepy/Wide-awake)

| | | | Relaxed/Stimulated | | | | | Total |
|----------------|------------|-------------------------|--------------------|---------|---------|------------|-----------------|--------|
| | | | Very relaxed | Relaxed | Neutral | Stimulated | Very stimulated | |
| Music/No music | No-music | Count | 17 | 22 | 70 | 76 | 32 | 217 |
| | | % within Music/No music | 7.8% | 10.1% | 32.3% | 35.0% | 14.7% | 100.0% |
| | With music | Count | 19 | 42 | 53 | 88 | 43 | 245 |
| | | % within Music/No music | 7.8% | 17.1% | 21.6% | 35.9% | 17.6% | 100.0% |
| | | | Calm/Excited | | | | | Total |
| | | | Very calm | Calm | Neutral | Excited | Very excited | |
| Music/No music | No-music | Count | 11 | 46 | 58 | 68 | 34 | 217 |
| | | % within Music/No music | 5.1% | 21.2% | 26.7% | 31.3% | 15.7% | 100.0% |
| | With music | Count | 14 | 47 | 62 | 83 | 39 | 245 |
| | | % within Music/No music | 5.7% | 19.2% | 25.3% | 33.9% | 15.9% | 100.0% |
| | | | Sleepy/Wide-awake | | | | | Total |
| | | | Very sleepy | Sleepy | Neutral | Wide awake | Very wide-awake | |
| Music/No music | No-music | Count | 4 | 20 | 75 | 68 | 50 | 217 |
| | | % within Music/No music | 1.8% | 9.2% | 34.6% | 31.3% | 23.0% | 100.0% |
| | With music | Count | 3 | 21 | 74 | 96 | 51 | 245 |
| | | % within Music/No music | 1.2% | 8.6% | 30.2% | 39.2% | 20.8% | 100.0% |

Association of presence or absence of music with pleasure indicators (Annoyed/Pleased, Dissatisfied/Satisfied, Unhappy/Happy)

| | | | Annoyed/pleased | | | | | Total |
|----------------|------------|-------------------------|-----------------|---------|---------|---------|--------------|--------|
| | | | Very annoyed | Annoyed | Neutral | Pleased | Very pleased | |
| Music/No music | No-music | Count | 7 | 25 | 54 | 83 | 48 | 217 |
| | | % within Music/No music | 3.2% | 11.5% | 24.9% | 38.2% | 22.1% | 100.0% |
| | With music | Count | 5 | 17 | 60 | 106 | 57 | 245 |
| | | % within Music/No music | 2.0% | 6.9% | 24.5% | 43.3% | 23.3% | 100.0% |

| | | | Dissatisfied/Satisfied | | | | | Total |
|----------------|------------|----------------------------------|------------------------|--------------|-------------|--------------|----------------|---------------|
| | | | Very dissatisfied | Dissatisfied | Neutral | Satisfied | Very satisfied | |
| Music/No music | No-music | Count % within Music/No music | 8 3.7% | 34 15.7% | 38 17.5% | 87 40.1% | 50 23.0% | 217 100.0% |
| | With music | Count % within Music/No music | 6 2.4% | 20 8.2% | 54 22.0% | 107 43.7% | 58 23.7% | 245 100.0% |
| | | | Unhappy/happy | | | | | Total |
| | | | Very unhappy | Unhappy | Neutral | Happy | Very happy | |
| Music/No music | No-music | Count % within Music/No music | 4 1.8% | 24 11.1% | 58 26.7% | 79 36.4% | 52 24.0% | 217 100.0% |
| | With music | Count % within Music/No music | 3 1.2% | 19 7.8% | 52 21.2% | 115 46.9% | 56 22.9% | 245 100.0% |

Association of presence or absence of music with *flow* indicators (Immediate surroundings, Focused, Time)

| | | | I forgot about immediate surroundings | | | | | Total |
|----------------|------------|----------------------------------|---------------------------------------|-------------|-------------|--------------|----------------|---------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No music | No-music | Count % within Music/No music | 20 9.2% | 32 14.7% | 54 24.9% | 64 29.5% | 47 21.7% | 217 100.0% |
| | With music | Count % within Music/No music | 15 6.1% | 28 11.4% | 60 24.5% | 98 40.0% | 44 18.0% | 245 100.0% |
| | | | My attention was focused | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No music | No-music | Count % within Music/No music | 6 2.8% | 18 8.3% | 41 18.9% | 94 43.3% | 58 26.7% | 217 100.0% |
| | With music | Count % within Music/No music | 1 0.4% | 14 5.7% | 49 20.0% | 110 44.9% | 71 29.0% | 245 100.0% |
| | | | I forgot about time | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No music | No-music | Count % within Music/No music | 24 11.1% | 30 13.8% | 47 21.7% | 62 28.6% | 54 24.9% | 217 100.0% |
| | Count | | 15 | 28 | 56 | 97 | 49 | 245 |

| | | | | | | | |
|------------|-------------------------|------|-------|-------|-------|-------|--------|
| With music | % within Music/No music | 6.1% | 11.4% | 22.9% | 39.6% | 20.0% | 100.0% |
|------------|-------------------------|------|-------|-------|-------|-------|--------|

Association of presence or absence of music with product attitudes indicators (Like/Positive/Attractive)

| | | | Like/dislike | | | | | Total |
|----------------|------------|-------------------------|-------------------------|--------------|---------|------------|-----------------|--------|
| | | | Strongly dislike | Dislike | Neutral | Like | Strongly like | |
| Music/No music | No music | Count | 6 | 19 | 21 | 17 | 1 | 64 |
| | | % within Music/No music | 9.4% | 29.7% | 32.8% | 26.6% | 1.6% | 100.0% |
| Music/No music | With music | Count | 3 | 15 | 23 | 19 | 2 | 62 |
| | | % within Music/No music | 4.8% | 24.2% | 37.1% | 30.6% | 3.2% | 100.0% |
| | | | Negative/Positive | | | | | Total |
| | | | Very negative | Negative | Neutral | Positive | Very positive | |
| Music/No music | No music | Count | 4 | 17 | 20 | 20 | 3 | 64 |
| | | % within Music/No music | 6.3% | 26.6% | 31.3% | 31.3% | 4.7% | 100.0% |
| Music/No music | With music | Count | 1 | 10 | 28 | 21 | 2 | 62 |
| | | % within Music/No music | 1.6% | 16.1% | 45.2% | 33.9% | 3.2% | 100.0% |
| | | | Unattractive/attractive | | | | | Total |
| | | | Very unattractive | Unattractive | Neutral | Attractive | Very attractive | |
| Music/No music | No music | Count | 4 | 15 | 20 | 23 | 2 | 64 |
| | | % within Music/No music | 6.3% | 23.4% | 31.3% | 35.9% | 3.1% | 100.0% |
| Music/No music | With music | Count | 1 | 15 | 16 | 28 | 2 | 62 |
| | | % within Music/No music | 1.6% | 24.2% | 25.8% | 45.2% | 3.2% | 100.0% |

Association of presence or absence of music with purchase intentions indicators (Likelihood of purchase, Willingness to purchase, Probability to purchase)

| | | | likelihood of purchasing products from this website is high | | | | | Total |
|----------------|------------|-------------------------|---|----------|---------|-------|---|--------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No music | No music | Count | 23 | 13 | 11 | 15 | 2 | 64 |
| | | % within Music/No music | 35.9% | 20.3% | 17.2% | 23.4% | 3.1% | 100.0% |
| Music/No music | With music | Count | 23 | 13 | 12 | 12 | 2 | 62 |
| | | % within Music/No music | 37.1% | 21.0% | 19.4% | 19.4% | 3.2% | 100.0% |
| | | | | | | | willingness to buy through this website is high | Total |

| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
|----------------|------------|-------------------------|---|----------|---------|-------|----------------|--------|
| Music/No music | No music | Count | 16 | 15 | 14 | 17 | 2 | 64 |
| | | % within Music/No music | 25.0% | 23.4% | 21.9% | 26.6% | 3.1% | 100.0% |
| | With music | Count | 21 | 13 | 10 | 17 | 1 | 62 |
| | | % within Music/No music | 33.9% | 21.0% | 16.1% | 27.4% | 1.6% | 100.0% |
| | | | The probability that I would consider buying through this website is high | | | | | |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | Total |
| Music/No music | No music | Count | 21 | 13 | 15 | 12 | 3 | 64 |
| | | % within Music/No music | 32.8% | 20.3% | 23.4% | 18.8% | 4.7% | 100.0% |
| | With music | Count | 22 | 12 | 11 | 16 | 1 | 62 |
| | | % within Music/No music | 35.5% | 19.4% | 17.7% | 25.8% | 1.6% | 100.0% |

Tables from crosstab analysis of the main analysis:

**Association of presence or absence of music with arousal indicators
(Relaxed/Stimulated, Calm/Excited, Sleepy/Wide-awake)**

| | | | Relaxed/Stimulated | | | | | Total |
|----------------|----------|----------------------------------|--------------------|-------------|-------------|-------------|-----------------|---------------|
| | | | Very relaxed | Relaxed | Neutral | Stimulated | Very stimulated | |
| Music/No-Music | No music | Count % within Music/No music | 17 7.8% | 22 10.1% | 70 32.3% | 76 35.0% | 32 14.7% | 217 100.0% |
| | Music | Count % within Music/No music | 19 7.8% | 42 17.1% | 53 21.6% | 88 35.9% | 43 17.6% | 245 100.0% |
| | | | Calm/Excited | | | | | Total |
| | | | Very calm | Calm | Neutral | Excited | Very excited | |
| Music/No-Music | No music | Count % within Music/No music | 11 5.1% | 46 21.2% | 58 26.7% | 68 31.3% | 34 15.7% | 217 100.0% |
| | Music | Count % within Music/No music | 14 5.7% | 47 19.2% | 62 25.3% | 83 33.9% | 39 15.9% | 245 100.0% |
| | | | Sleepy/wide-awake | | | | | Total |
| | | | Very sleepy | Sleepy | Neutral | Wide awake | Very wide-awake | |
| Music/No-Music | No music | Count % within Music/No music | 4 1.8% | 20 9.2% | 75 34.6% | 68 31.3% | 50 23.0% | 217 100.0% |

| | | | | | | | |
|-------|-------------------------|------|------|-------|-------|-------|--------|
| Music | Count | 3 | 21 | 74 | 96 | 51 | 245 |
| | % within Music/No music | 1.2% | 8.6% | 30.2% | 39.2% | 20.8% | 100.0% |

Association of presence or absence of music with pleasure indicators (Annoyed/Pleased, Dissatisfied/Satisfied, Unhappy/Happy)

| | | | Annoyed/Pleased | | | | | Total |
|----------------|----------|-------------------------------|------------------------|--------------|-------------|--------------|----------------|---------------|
| | | | Very annoyed | Annoyed | Neutral | Pleased | Very pleased | |
| Music/No-Music | No music | Count % within Music/No music | 7 3.2% | 25 11.5% | 54 24.9% | 83 38.2% | 48 22.1% | 217 100.0% |
| | Music | Count % within Music/No music | 5 2.0% | 17 6.9% | 60 24.5% | 106 43.3% | 57 23.3% | 245 100.0% |
| | | | Dissatisfied/Satisfied | | | | | Total |
| | | | Very dissatisfied | Dissatisfied | Neutral | Satisfied | Very satisfied | |
| Music/No-Music | No music | Count % within Music/No music | 8 3.7% | 34 15.7% | 38 17.5% | 87 40.1% | 50 23.0% | 217 100.0% |
| | Music | Count % within Music/No music | 6 2.4% | 20 8.2% | 54 22.0% | 107 43.7% | 58 23.7% | 245 100.0% |
| | | | Unhappy/Happy | | | | | Total |
| | | | Very unhappy | Unhappy | Neutral | Happy | Very happy | |
| Music/No-Music | No music | Count % within Music/No music | 4 1.8% | 24 11.1% | 58 26.7% | 79 36.4% | 52 24.0% | 217 100.0% |
| | Music | Count % within Music/No music | 3 1.2% | 19 7.8% | 52 21.2% | 115 46.9% | 56 22.9% | 245 100.0% |

Association of presence or absence of music with flow indicators (Immediate surroundings, Focused, Time)

| | | | I forgot about immediate surroundings | | | | | Total |
|----------------|----------|-------------------------------|---------------------------------------|-------------|-------------|-------------|----------------|---------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 20 9.2% | 32 14.7% | 54 24.9% | 64 29.5% | 47 21.7% | 217 100.0% |
| | Music | Count % within Music/No music | 15 6.1% | 28 11.4% | 60 24.5% | 98 40.0% | 44 18.0% | 245 100.0% |
| | | | My attention was focused | | | | | Total |

| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
|--------------------------------|-------------|--|----------------------|-------------|-------------|--------------|-------------------|-------------------|
| Musi c/No - Musi c | No music | Count % within Music/No music | 6 2.8% | 18 8.3% | 41 18.9% | 94 43.3% | 58 26.7% | 217 100.0 % |
| | Music | Count % within Music/No music | 1 0.4% | 14 5.7% | 49 20.0% | 110 44.9% | 71 29.0% | 245 100.0 % |
| | | | I forgot about time | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Musi c/No - Musi c | No music | Count % within Music/No music | 24 11.1% | 30 13.8% | 47 21.7% | 62 28.6% | 54 24.9% | 217 100.0 % |
| | Music | Count % within Music/No music | 15 6.1% | 28 11.4% | 56 22.9% | 97 39.6% | 49 20.0% | 245 100.0 % |

**Association of presence or absence of music with product attitudes indicators
(Like/Positive/Attractive)**

| | | | Like | | | | | Total |
|------------------------|-------------|--|--------------------------|------------------|-------------|----------------|------------------------|-------------------|
| | | | Strongly dislike | Dislike | Neutral | Like | Strongly like | |
| Music /No- Music | No music | Count % within Music/No music | 19 8.8% | 28 12.9% | 46 21.2% | 71 32.7% | 53 24.4% | 217 100.0 % |
| | Music | Count % within Music/No music | 5 2.0% | 21 8.6% | 65 26.6% | 91 37.1% | 63 25.7% | 245 100.0 % |
| | | | Positive | | | | | Total |
| | | | Very negative | Negative | Neutral | Positiv e | Very positive | |
| Music/ No- Music | No music | Count % within Music/No music | 9 4.1% | 27 12.4% | 55 25.3% | 76 35.0% | 50 23.0% | 217 100.0 % |
| | Music | Count % within Music/No music | 7 2.9% | 17 6.9% | 55 22.4% | 111 45.3% | 55 22.4% | 245 100.0 % |
| | | | Attractive | | | | | Total |
| | | | Very unattrac tive | Unattrac tive | Neutral | Attract ive | Very attractiv e | |
| Music/ No- Music | No music | Count % within Music/No music | 9 4.1% | 29 13.4% | 43 19.8% | 88 40.6% | 48 22.1% | 217 100.0 % |

| | | | | | | | |
|-------|--|-----------|------------|-------------|-------------|-------------|-------------------|
| Music | Count % within Music/No music | 3 1.2% | 23 9.4% | 59 24.1% | 98 40.0% | 62 25.3% | 245 100.0 % |
|-------|--|-----------|------------|-------------|-------------|-------------|-------------------|

**Association of presence or absence of music with purchase intentions indicators
(Likelihood of purchase, Willingness to purchase, Probability to purchase)**

| | | | Likelihood of purchase | | | | | Total |
|----------------|----------|-------------------------------------|-------------------------|-------------|-------------|--------------|----------------|-------------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 30 13.8% | 31 14.3% | 37 17.1% | 79 36.4% | 40 18.4% | 217 100.0 % |
| | Music | Count % within Music/No music | 21 8.6% | 22 9.0% | 52 21.2% | 101 41.2% | 49 20.0% | 245 100.0 % |
| | | | Willingness to purchase | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 25 11.5% | 32 14.7% | 36 16.6% | 78 35.9% | 46 21.2% | 217 100.0 % |
| | Music | Count % within Music/No music | 17 6.9% | 26 10.6% | 47 19.2% | 106 43.3% | 49 20.0% | 245 100.0 % |
| | | | Probability to purchase | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 25 11.5% | 31 14.3% | 44 20.3% | 70 32.3% | 47 21.7% | 217 100.0 % |
| | Music | Count % within Music/No music | 21 8.6% | 15 6.1% | 54 22.0% | 101 41.2% | 54 22.0% | 245 100.0 % |

Association of presence or absence of music with dominance indicators

| | | | control over what I could do | | | | | Total |
|----------------|----------|-------------------------------------|------------------------------|------------|-------------|--------------|----------------|-------------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 0 0.0% | 19 8.8% | 37 17.1% | 93 42.9% | 68 31.3% | 217 100.0 % |
| | Music | Count % within Music | 5 2.0% | 21 8.6% | 39 15.9% | 106 43.3% | 74 30.2% | 245 100.0 % |

| | | | /No music | | | | | |
|----------------|----------|-------------------------------|---|------------|-------------|--------------|----------------|---------------|
| | | | I could choose freely what I wanted to see | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 4 1.8% | 14 6.6% | 32 14.7% | 90 41.5% | 77 35.5% | 217 100.0% |
| | Music | Count % within Music/No music | 3 1.2% | 5 2.0% | 41 16.7% | 115 46.9% | 81 33.1% | 245 100.0% |
| | | | I controlled what happened in my online information | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 3 1.4% | 17 7.8% | 43 19.8% | 87 40.1% | 67 30.9% | 217 100.0% |
| | Music | Count % within Music/No music | 6 2.4% | 10 4.1% | 55 22.4% | 109 44.5% | 65 26.6% | 245 100.0% |

Association of presence or absence of music with site entertainment indicators

| | | | Fun | | | | | Total |
|----------------|----------|-------------------------------|-------------------|-------------|-------------|-------------|----------------|---------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 10 4.6% | 30 13.8% | 57 26.3% | 71 32.7% | 49 22.6% | 217 100.0% |
| | Music | Count % within Music/No music | 5 2.0% | 23 9.4% | 58 23.7% | 96 39.2% | 63 25.7% | 245 100.0% |
| | | | Exciting | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count | 8 3.7% | 30 | 48 22.1% | 77 35.5% | 54 24.9% | 217 |

| | | | | | | | | |
|----------------|---|-------------------|-------------|-------------|-------------|----------------|-------|---------------|
| - Music | % within Music/No music | | 13.8% | | | | | 100.0% |
| Music | Count % within Music/No music | 9 3.7% | 22 9.0% | 68 27.8% | 90 36.7% | 56 22.9% | | 245 100.0% |
| | | Entertaining | | | | | Total | |
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | | |
| Music/No-Music | No music Count % within Music/No music | 9 4.1% | 30 13.8% | 48 22.1% | 84 38.7% | 46 21.2% | | 217 100.0% |
| | With music Count % within Music/No music | 9 3.7% | 25 10.2% | 65 26.6% | 83 33.9% | 63 25.7% | | 245 100.0% |

Association of presence or absence of music with site informativeness indicators

| | | | Useful | | | | | Total |
|----------------|----------|-------------------------------|-------------------|-------------|-------------|-------------|----------------|---------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 13 20.3% | 10 15.6% | 21 32.8% | 19 29.7% | 1 1.6% | 217 100.0% |
| | Music | Count % within Music/No music | 10 16.1% | 13 21.0% | 18 29.0% | 20 32.3% | 1 1.6% | 245 100.0% |
| | | | Resourceful | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/No-Music | No music | Count % within Music/No music | 19 8.8% | 31 14.3% | 40 18.4% | 75 34.6% | 52 24.0% | 217 100.0% |
| | Music | Count % within Music/No music | 11 4.5% | 26 10.6% | 47 19.2% | 99 40.4% | 62 25.3% | 245 100.0% |
| | | | Knowledgeable | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |

| | | | | | | | | |
|------------------------|-------------|---|------------|-------------|-------------|-----------------|-------------|---------------|
| Music/ No- Music | No music | Count % within Music/ No music | 16 7.4% | 37 17.1% | 41 18.9% | 72 33.2 % | 51 23.5% | 217 100.0% |
| | Musi c | Count % within Music/ No music | 10 4.1% | 25 10.2% | 60 24.5% | 98 40.0 % | 52 21.2% | 245 100.0% |

Association of presence or absence of music with site effectiveness indicators

| | | | Accurate | | | | | Total |
|------------------------|-------------|---|-------------------|-------------|-------------|------------------|----------------|-------------------|
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/ No- Music | No music | Count % within Music/ No music | 2 0.9% | 16 7.4% | 68 31.3% | 81 37.3 % | 50 23.0% | 217 100.0 % |
| | Musi c | Count % within Music/ No music | 2 0.8% | 10 4.1% | 67 27.3% | 112 45.7 % | 54 22.0% | 245 100.0 % |
| | | | Up to date | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/ No- Music | No music | Count % within Music/ No music | 5 2.3% | 11 5.1% | 51 23.5% | 93 42.9 % | 57 26.3% | 217 100.0 % |
| | Musi c | Count % within Music/ No music | 4 1.6% | 10 4.1% | 68 27.8% | 113 46.1 % | 50 20.4% | 245 100.0 % |
| | | | Relevant | | | | | Total |
| | | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Music/ No- Music | No music | Count % within Music/ No music | 2 0.9% | 25 11.5% | 46 21.2% | 97 44.7 % | 47 21.7% | 217 100.0 % |
| | Musi c | Count % within Music/ No music | 5 2.0% | 14 5.7% | 47 19.2% | 127 51.8 % | 52 21.2% | 245 100.0 % |

| | | | | | | |
|----------|--|--|--|--|--|--|
| No music | | | | | | |
|----------|--|--|--|--|--|--|

Correlation analysis between *flow* and product attitude

| | <i>Flow</i> | Product attitude | | |
|----------|--|------------------------|------------------------|------------------------|
| | | Like | Positive | Attractive |
| No-music | I forgot about immediate surroundings | $r = .42$ $p = .00$ | $r = .44$ $p = .00$ | $r = .41$ $p = .00$ |
| | My attention was focused on the activity | $r = .34$ $p = .00$ | $r = .28$ $p = .00$ | $r = .33$ $p = .00$ |
| | I was not conscious of how long I have been browsing | $r = .36$ $p = .00$ | $r = .40$ $p = .00$ | $r = .43$ $p = .00$ |
| Music | I forgot about immediate surroundings | $r = .32$ $p = .00$ | $r = .35$ $p = .00$ | $r = .31$ $p = .00$ |
| | My attention was focused on the activity | $r = .25$ $p = .00$ | $r = .29$ $p = .00$ | $r = .37$ $p = .00$ |
| | I was not conscious of how long I have been browsing | $r = .31$ $p = .00$ | $r = .36$ $p = .00$ | $r = .28$ $p = .00$ |

Correlation analysis between *flow* and purchase intentions

| | <i>Flow</i> | Purchase intentions | | |
|----------|--|------------------------|-------------------------|-------------------------|
| | | Likelihood of purchase | Willingness of purchase | Probability of purchase |
| No-music | I forgot about immediate surroundings | $r = .50$ $p = .00$ | $r = .53$ $p = .00$ | $r = .52$ $p = .00$ |
| | My attention was focused on the activity | $r = .29$ $p = .00$ | $r = .31$ $p = .00$ | $r = .30$ $p = .00$ |
| | I was not conscious of how long I have been browsing | $r = .46$ $p = .00$ | $r = .49$ $p = .00$ | $r = .51$ $p = .00$ |
| Music | I forgot about immediate surroundings | $r = .40$ $p = .00$ | $r = .44$ $p = .00$ | $r = .38$ $p = .00$ |
| | My attention was focused on the activity | $r = .24$ $p = .00$ | $r = .23$ $p = .00$ | $r = .26$ $p = .00$ |
| | I was not conscious of | $r = .40$ $p = .00$ | $r = .42$ $p = .00$ | $r = .43$ $p = .00$ |

| | | | | |
|--|----------------------------------|--|--|--|
| | how long I have been browsing | | | |
|--|----------------------------------|--|--|--|

