Impact of Online Music on Brand Website Visitors’ Intentions: Moderating Role of Optimal Stimulation Level

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Abstract
This research focuses on the effects of online music on the purchase intention and on the intention of revisiting the site. It also focuses on the moderator role of optimal stimulation level. The data collection is carried out by a laboratory experiment in which subjects sail on one of the two versions (with music and silent version) of a brand website designed principally for the purposes of the study. Analysis of the data showed that music has no effect on the purchase intention but it has an influence on the intention to revisit the site. In addition, the results lead to the fact that the optimal stimulation level is a moderator of the relationship between music and website visitors’ intentions.

Keywords: Brand website, Intention to revisit the site, Online music, Optimal stimulation level, Purchase intention.

Introduction
Since the 1970s, academic research has paid particular attention to the atmosphere of sale. Kotler (1974) is one of the first to have advanced the idea that in-store atmosphere could be a marketing tool able to influence emotional, cognitive and behavioral customer responses. On their part, practitioners give a great interest at this subject, and we observed that a great number of stores started to deal with their atmosphere of sale in order to make it attractive by using a piped music, eye-catching colors, original decor, or even specific scents (Allagui, 2003).

Applied to the electronic commerce framework, increasingly more companies integrate such elements (colors, pictures, animations, sound, and music) in their websites in order to attract the attention of Internet users, stimulate their senses and to induce affective, cognitive, and behavioral reactions. Thus, among our five senses, only the view is stimulated by several elements such as colors, image, videos,... while the hearing was took into consideration only with technological development. This sense is sought through the integration of sound and music on
websites. Thus, the music became an element of the "webmospherics" in the same way as images, videos, animations, etc. However, the effect of online music on the intentions of a brand site visitor has been little studied. Therefore, it is necessary to conduct a theoretical reflection on the influence of music on the intentions of the website user in order to provide a frame of reference for researchers and practitioners that have few clues to make decisions concerning the introduction of music on a website of brand. This research proposes then to study the impact of music on purchase intention and website revisit intention. It proposes also to test the moderating role of the optimal stimulation level.

1. Area descriptions

1.1. Brand website
A brand website is used to present information about the products or services of the company and their uses or consumption (Gribbins et al., 2002). It provides website users with services and advices in the field of company activity. The brand website is also a sale support which presents signs or stores that sell the product/service. It also offers animations (ex: contests) to entertain the website visitor. This type of site can be either single-brand (the content concerns only one brand) or multi-brand (the content is related to several brands) (Agrebi and Chandon, 2009).

1.2. Website visitor intentions and music
Fishbein and Ajzen (1975) define intention as a component that lies between attitude and behavior. It evokes notions of desire, determination or wish to issue a behavior. The more the intention is strong, the more the probability to generate an effective behavior is great. It raises ideas as "I must do..." or "I will do... ". Intention is a very important concept that represents, for researchers in marketing, a good estimator of the consumers future behavior (Kalwani and Silk, 1982).
Social psychology researches emphasize that intention is the best preacher of customers’ behavior, because it enabled him to incorporate individually all the important factors that might influence his real behavior (Fishbein and Ajzen, 1975).

1.2.1. Purchase intention and music
Purchase intention is defined as an "individual’s readiness and willingness to purchase a certain product or service". For Fishbein, Ajzen (1975), purchase intention is considered as a subjective inclination towards a product or a brand and can be a significant clue to predict customer behavior.
A number of studies suggest that music has the potential to influence purchase intention (Alpert and Alpert, 1990; Broekemier, 1993; Spangenberg et al., 1996).
Alpert and Alpert (1990) have shown that purchase intention of postcard for a distant friend is higher when the music broadcast is a sad music (vs. happy), while Broekemier (1993) showed that clothing purchase intention is lower with sad music. This leads to suggest that perceived congruence between musical stimulus and products category can be an important variable of the link between music and customer behavior in-store.

El Sayed, Farrag, and Belk (2003) tested the effect of fast and slow music in an Egyptian mall and demonstrated that slow tempo music leads to higher levels of purchase intention compared to fast tempo music. The study of Broekemier et al. (2008) tried to determine which of the two dimensions of music, happy/sad had significant impact on purchase intention. The research showed that respondents had the greatest purchase intentions when exposed to happy music that they liked compared to other affects and liking combinations.

Andrade and Barbosa (2009) conducted an experiment in a women's clothing store and found a positive relationship between music and items related to purchase intention and intention to return to the store. Alpert, Alpert, and Maltz (2005) tested a factorial experiment crossing affective quality of a purchase occasion and music affective quality. They failed to find a relationship between mood (caused by music mode) and purchase intention. However they found an interaction between mood and purchase occasion: sad music and a sad buying occasion augmented purchase intention and happy music and a happy buying occasion increased purchase intention compared to other combinations.

Ganguly et al. (2009) studied effects of website characteristics (brand strength, browser operation, security, designs) on purchase intention and found that atmosphere with pleasant music increased customers’ purchase intention.

Coyle and Thorson (2001), Li et al. (2001) and Jee and Lee (2002) demonstrated that website richness had a positive influence on online buying intentions. Blanc (2005) tested effects of online music and information on purchase intention and shows significant relationship between slow music and buying intention. Then, it is possible to formulate the following hypothesis:

\[ H1. \text{The dissemination of musical background has a positive effect on brand purchase intention.} \]

1.2.2. Revisit intention and music
North and Hargreaves (1996) demonstrated that ‘liked’ music was positively correlated with patrons’ willingness to return to a dining area, and their willingness to interact with others. Similarly, Vaccaro et al. (2011) found that liked music was positively related to musical dimension happy. They also found that liked music conditions increase probability of return shopping intentions compared to not liked music conditions.

The study of Kulkarni (2012) tested the effects of music on retail shoppers and found that pleasant shopping experience due to music increased customers’ revisit intention. Coyle and Thorson (2001) showed that multimedia richness of the site affects website return intentions. Rosen and Purinton (2004) found the same result and argued that the characteristics of website design generate high probabilities of website revisits.

Pelet (2008) adds that merchants are inspired by the sensory marketing practices to retain customers and increase the number of their visits to the site. Thus, we suggest the following hypothesis:

\[ H2. \text{The dissemination of musical background has a positive effect on website revisit intention} \]

1.3. Optimal stimulation level (OSL)
To test the influence of music on the intentions of the branded website visitor, it might be necessary to explore the moderating effect of the optimal stimulation level (OSL).

The concept of OSL was first enhanced by Berlyne in 1960. It suggests that any novelty, because it is surprising and different, draws attention and has a stimulating effect. This level of
stimulation is called optimal because it is an intermediate level of stimulation which gives rise to a feeling of comfort and well-being. Some researchers (Baumgartner and Steenkamp, 1992) compare the OSL to a personality trait, because it is specific to each individual and remains stable whatever the contexts and time. The OSL is a property that characterizes an individual in terms of general response to environmental stimuli. Thus, individuals with a high OSL are looking for strong feeling (Zuckerman, 1979).

Research studies conducted in psychology have concluded that persons with a high level of optimal stimulation have more intense positive responses with the musical atmosphere (Konecni, 1982; Furnham and Bradley, 1997). In sum, it appears that individuals with a high optimal stimulation level will have more positive reactions to the presence of music than those that have a low optimal stimulation level (Rieunier, 2000).

Thus, we propose the following hypothesis:

H3a. The optimal stimulation level positively moderates the relationship between music and purchase intention
H3b. The optimal stimulation level positively moderates the relationship between music and revisit intention

From these different assumptions, it is possible to present the conceptual model for this research. This model reflected schematically the main objectives of this study which are: the study of the direct effect of the music on the website user intentions and the test of the moderating role of the optimal stimulation level (figure 1).

![Figure 1. Conceptual Model](image)

2. Method

2.1. Procedure

To test our research hypotheses, a laboratory experiment was conducted in February 2015 with 80 participants. Our experimental approach is to ask 40 volunteers (invited one by one) to navigate on a clothing brand website, with background music. This website has been created especially for this research, in order to avoid any bias related to the reputation of a site or a brand. In addition, a group of control, composed of 40 participants, is exposed at the same website but without any musical atmosphere. Once the navigation task is complete, these participants fill out a questionnaire that illustrates the measuring instruments of our interested variables.
2.2. Measures
To measure the purchase intention, we based on the scale of Xia and Bechwati (2008). This scale presents a satisfactory internal coherence (α = 0.892).
Intention to revisit the website is assessed using a scale of attitude with single item. To implement the concept of optimal stimulation level, we will use the CSI scale (Change Seeker Index II) revisited by Steenkamp and Baumgartner (1995). This scale has a good reliability as its Cronbach's alpha is in the order of 0.81.
All these variables are measured by a five-point Likert-type scale ranging from 1=strongly disagree to 5=strongly agree.
Measurement scales of purchase intention, revisit intention and optimal stimulation level are contained in appendix 1.

3. Results
3.1. Reliability of measurement scales
In order to ensure the reliability of the instruments used in this research, exploratory factor analysis is established. This analysis has, as main objective, the purification of measuring instruments. In other words, it is alleviating measurement scales by elimination of the items that reduce the metric quality (PCA) and verify the internal consistency of each measuring instrument (Cronbach's alpha). The results of this analysis are found in appendix 2.

3.2 Verification of Hypothesis
3.2.1. Verification of the hypothesis relating to the impact of music
The first and second assumptions made in this research postulate that the music has a positive effect on the purchase intention and revisit intention. Given that the independent variable is a dummy variable and dependent variables are metric, it’s recommended to carry out a comparison of means tests. Table 1 summarizes the results of comparisons of average t tests:

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Music</th>
<th>No music</th>
<th>T-value</th>
<th>Df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase intention</td>
<td>4.16</td>
<td>3.9</td>
<td>-1.424</td>
<td>78</td>
<td>0.158</td>
</tr>
<tr>
<td>Intention to revisit the website</td>
<td>4.28</td>
<td>3.20</td>
<td>-4.325</td>
<td>78</td>
<td>0.000</td>
</tr>
</tbody>
</table>

A paired-samples t-test was performed on mean music and no music conditions. The results highlight that the presence of music on a brand website has no influence on the purchase intention (t (78) = -1.424; p < 0.158), even though it has a clearly significant effect on intention to revisit the site (t (78) = -4.325; p < 0.158). So, we can set aside the H1 hypothesis and confirm the hypothesis H2.

3.2.2. Verification of the assumption relating to optimal stimulation level moderating role
The third assumption in this research is that the optimal stimulation level is a moderator of the relationships between music and intentions of website user. This hypothesis is intended to verify that the intentions of brand website visitors may be different according to their optimal stimulation level.
Based on the recommendations of Baron and Kenny (1986), this assumption of moderation will be verified by the study of the effect of interaction between the moderator (OSL) and the
independent variable (music). So that, the OSL has been re-coded into two groups: participants with low optimal stimulation level and participants with high optimal stimulation level. Table 2 summarizes the analyses of variance (ANCOVA) necessary for the study of these links.

Table 2. Results of moderating role of OSL

<table>
<thead>
<tr>
<th>Subgroups</th>
<th>Purchase intention</th>
<th>Revisit intention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R² ajusté</td>
<td>F</td>
</tr>
<tr>
<td>High OSL</td>
<td>0.414</td>
<td>3.047</td>
</tr>
<tr>
<td>Low OSL</td>
<td>0.617</td>
<td>0.025</td>
</tr>
</tbody>
</table>

Table 2 suggests that music influences the website users who have a high optimal stimulation level in term of purchase intention (F (8) = 3,047, p < 0.009) and website revisit intention (F (8) = 2.269, p < 0.041). Moreover, the analysis of adjusted R square of purchase intention shows that the percentage of the variance is higher for participants with a high OSL (R2 = 16.2%) than those with a low OSL (R2 = 13.9%). It is the same for the intention of revisiting the website: the percentage of variance is greater for participants with high OSL (R2 = 53.8%) than those with low OSL (R2 = 38.8%).

In other words, individuals who are varieties, changes or risk researchers will have more desire to buy the brand and to revisit the website when the latter broadcast musical background. From these results, assumptions H3a and H3b can be confirmed.

4. Discussion

The purpose of this research is to understand if the dissemination of musical background has effect on the purchase intention and the website revisit intention. For this, direct relationships have been established and a moderating relationship, taking into account the optimal stimulation level of website users, was introduced.

The study of the results obtained during this research shows that the musical atmosphere has no effect on the intention to purchase the brand. These results are consistent with those found in previous research (Rieunier, 2000; Galan, 2003; Eroglu et al., 2005).

Gorn et al. (1993) explained that purchase intention is low when persons have a strong sense of music. Thus, according to these authors, consumers who give great attention to musical background, allocate their positive effects to the latter, and consequently, neutralize the halo effect of this affect on purchase intention. Therefore, this leads to think that it is better to broadcast a music that pleases people without insofar as it attracts too much their attention.

For Rieunier (2000), the absence of significant relationship between music and purchase intention can be explained by the lack of congruence between the musical stimulus and the brand or the product category. So, it seems important to introduce the congruence perceived as mediator variable in the relationship between music and purchase intention.

On the other side, the results of this research show that the dissemination of musical background has a positive effect on return intention to the brand website. This is supported by North and Hargreaves (1996), who emphasized that musical background, creates a desire among consumers...
to return to the store. This feeling stems from the fact that music acts positively on the degree of pleasure felt by shoppers during their visit.

In addition, it appears from the data analysis, that the optimal stimulation level is a moderator of relationship between music and purchase intention, music and website revisit intention. These results support well the results of research in psychology which showed that people with high optimal stimulation level are more positively influenced by musical background (Konecni, 1982; Furnham and Bradley, 1997). Besides, website users with a low optimal stimulation level have no specific behavior. Similarly, Rieunier (2000) showed that people with strong OSL prefer strong and exciting stimulus while customers with low OSL prefer slow and known music.

Conclusion
The main objective of this research is to determine if the use of music on a brand website could be considered as a marketing tool capable of having an effect on intention to buy the brand and intention to revisit the website. To answer this question, an empirical study was conducted in laboratory with 40 participants who were asked to navigate on a brand website disseminating musical background. Similarly, we asked 40 other individuals to navigate on the same site but without musical background.

The results of the research show that the introduction of music on a website makes the user want to renew his visit to the website but it is without effect on intention to buy the brand. In addition, data analysis emphasizes that the optimal stimulation level can play the role of moderator in the relationship between music and purchase intention, music and intention to revisit the website.

This study presents theoretical and managerial contributions. From a theoretical point of view, this research presents a double contribution: on the one hand, it allows to increase the knowledge and the very limited results in the study of musical effects on the intentions of the users websites. In fact, “despite the numerous studies conducted on the effects of music and scent in the conventional store, there are no published empirical studies that investigate their impact on consumers’ responses online”².

On the other hand, it allows to explore new avenues and to present a new integrative conceptual framework. Indeed, no research, to our knowledge, looked to the study of the intentions of the visitors for a brand website disseminating musical background and the moderating effect of the optimal stimulation level. In addition, taking account of a variable of personality (OSL) in the conceptual framework of this study responds to suggestions made by many researchers in consumer behavior that emphasize the need to take into account variables of personalities to try to better understand the reactions of customers to a stimulus (Bitner, 1992; Filser, 1996; Pinson and Jolibert, 1997).

On the practical level, the results of this research invite companies to be interested in the virtual atmosphere of their brand website and incorporate musical background to multiply the number of visits of Internet users while taking into account the optimal stimulation level of their target. It should be noted that, about the question of the dissemination of music on website, problems as lassitude, discomfort of the surfer or diversion of this last of the main information do not arise. Indeed, on the one hand, the user can choose the volume of his computer's speakers. On the other hand, the computer is usually equipped with a CD player or music software which allows the user to listen to a different music from that broadcasted by the site.

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However, all research suffers from certain limitations owing to the fact that we cannot explore everything at once. A first limit of this research work concerns the choice of the brand on which we conducted the investigation. In fact, choosing a single specific brand limits the generalization of the results and reduces the external validity of the research. Similarly, the small size of the sample does not allow generalizing the results.

In drawing the boundaries of this research, a number of future avenues are possible. Thus, it is interesting to carry out other complementary work on other brands or another type of site (information/introduction, community and interactive, merchant...). Theses researches will have the advantage to enrich knowledge in this purview, to allow a better understanding of the process of online music influence and to facilitate comparisons between the results. Convergent results can then increase the generalization of the conclusions obtained on the subject of the musical influence on the Internet. Divergent results may open new avenues of research.

During this research work, we studied the musical effects on the responses of the website user regardless of the other atmospheric variables such as color, animations, photos... Thus, a research studying the influence of music and its interaction with one or more variables of the atmosphere of a website could be interesting. In fact, Galan and Gonzalez (2001) emphasize that: "music, colors, typography... are elements from the palette which the web designer can use to give the site its final form. It is the organization of these elements which will introduce the consumer reactions".

References

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Appendix

Appendix 1. Measurement Scales

<table>
<thead>
<tr>
<th>Construct</th>
<th>Variable name</th>
<th>Variable description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Intention</td>
<td>Intention 1</td>
<td>It’s very likely that I will buy this brand</td>
<td>(Xia et Bechwati, 2008)</td>
</tr>
<tr>
<td></td>
<td>Intention 2</td>
<td>If I have to decide now, I probably will buy this brand.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intention 3</td>
<td>The likelihood that I will buy this brand is high</td>
<td></td>
</tr>
<tr>
<td>Intention to revisit website</td>
<td>Intention de revisite 1</td>
<td>I intend to come back to this website</td>
<td></td>
</tr>
<tr>
<td>Optimal Stimulation Level</td>
<td>OSL 1</td>
<td>I like to continue doing the same old things rather than trying new and different things. (R)</td>
<td>Steenkamp et Baumgartner en 1995</td>
</tr>
<tr>
<td></td>
<td>OSL 2</td>
<td>I like to experience novelty and change in my daily routine.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSL 3</td>
<td>I like a job that offers change, variety, and travel, even if it involves some danger.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSL 4</td>
<td>I am continually seeking new ideas and experiences.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSL 5</td>
<td>I like continually changing activities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSL 6</td>
<td>When things get boring, I like to find some new and unfamiliar experience.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSL 7</td>
<td>I prefer a routine way of life to an unpredictable one full of change. (R)</td>
<td></td>
</tr>
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</table>

Appendix 2. Psychometric properties of measurement scales used

<table>
<thead>
<tr>
<th>Construct</th>
<th>variable</th>
<th>Factor</th>
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</thead>
<tbody>
<tr>
<td>Purchase Intention</td>
<td>Intention 1</td>
<td>0.881</td>
</tr>
<tr>
<td></td>
<td>Intention 2</td>
<td>0.887</td>
</tr>
<tr>
<td></td>
<td>Intention 3</td>
<td>0.893</td>
</tr>
<tr>
<td></td>
<td>Eigen value</td>
<td>2.359</td>
</tr>
<tr>
<td></td>
<td>% of variance explained</td>
<td>78.645</td>
</tr>
<tr>
<td></td>
<td>Cronbach alpha coefficient</td>
<td>0.859</td>
</tr>
<tr>
<td></td>
<td>KMO</td>
<td>0.737</td>
</tr>
<tr>
<td></td>
<td>Barlett’s test of sphericity</td>
<td>Significant</td>
</tr>
<tr>
<td>Optimal Stimulation Level</td>
<td>OSL 1</td>
<td>0.756</td>
</tr>
<tr>
<td></td>
<td>OSL 2</td>
<td>0.832</td>
</tr>
<tr>
<td></td>
<td>OSL 3</td>
<td>0.741</td>
</tr>
<tr>
<td></td>
<td>OSL 4</td>
<td>0.866</td>
</tr>
<tr>
<td></td>
<td>OSL 5</td>
<td>0.742</td>
</tr>
<tr>
<td></td>
<td>OSL 6</td>
<td>0.817</td>
</tr>
<tr>
<td></td>
<td>OSL 7</td>
<td>0.823</td>
</tr>
<tr>
<td></td>
<td>Eigen value</td>
<td>4.459</td>
</tr>
<tr>
<td></td>
<td>% of variance explained</td>
<td>81.653</td>
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<tr>
<td></td>
<td>Cronbach alpha coefficient</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>KMO</td>
<td>0.809</td>
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<tr>
<td></td>
<td>Barlett’s test of sphericity</td>
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