Emerald Insight

Internet Research

Web-surfers' conative reactions to the website's dominant hue: mental imagery's role

Lilia Khrouf Azza Frikha

Article information:

To cite this document:
Lilia Khrouf Azza Frikha , (2016),"Web-surfers' conative reactions to the website's dominant hue: mental imagery's role", Internet Research, Vol. 26 Iss 5 pp. 1249 - 1268
Permanent link to this document:
http://dx.doi.org/10.1108/IntR-01-2014-0015

Downloaded on: 09 November 2016, At: 20:22 (PT)
References: this document contains references to 58 other documents.
To copy this document: permissions@emeraldinsight.com
The fulltext of this document has been downloaded 40 times since 2016*

Users who downloaded this article also downloaded:

(2016),"Antecedents of attitudes toward eWOM communication: differences across channels", Internet Research, Vol. 26 Iss 5 pp. 1030-1051 http://dx.doi.org/10.1108/IntR-08-2014-0201

(2016),"Multichannel integration quality, online perceived value and online purchase intention: A perspective of land-based retailers", Internet Research, Vol. 26 Iss 5 pp. 1228-1248 http://dx.doi.org/10.1108/IntR-04-2014-0111

Access to this document was granted through an Emerald subscription provided by emerald-srm:563821 []

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

The current issue and full text archive of this journal is available on Emerald Insight at:
www.emeraldinsight.com/1066-2243.htm

Web-surfers' conative reactions to the website's dominant hue: mental imagery's role

Lilia Khrouf and Azza Frikha
School of Business, ESC Tunis, Tunis, Tunisia

Received 16 January 2014
Revised 12 February 2014
9 June 2014
1 August 2014
16 February 2015
30 March 2015
27 June 2015
18 December 2015
Accepted 18 December 2015

Abstract

Purpose – The purpose of this paper is to contribute to a better understanding of web-surfers' conative reactions to websites' dominant hue by taking into account mental imagery's role.

Design/methodology/approach – A conceptual model considering mental imagery as a mediator of web-surfers conative reactions to websites' dominant hue was tested. It also supposes that mental imagery promoted by websites' dominant hue is moderated by web-surfers' involvement towards the product sold. To validate this model, an online experiment was conducted with a sample of 400 web-surfers.

Findings – Results reflect the importance of "vividness/clarity" and "valence" dimensions of mental imagery. In fact, hues congruent with the website's content seem to be more able to generate vivid and positive mental images which affect positively web-surfers' conative reactions. However, this relationship is reversed when web-surfers are strongly involved with the product sold.

Research limitations/implications – Although this study focused on a particular product category, the obtained results can help the research community to understand better conative reactions of web-surfers to websites' dominant hue through the consideration of mental imagery's role.

Practical implications – Findings can help managers to better the performance of their commercial websites through the choice of the adequate background hue.

Originality/value – This study highlights the importance of mental imagery prompted by dominant website's hue taking into account its congruence degree with the website's content. It provides empirical evidence about its mediating role.

Keywords Mental imagery, Atmospherics, Hue, Colour, Commercial websites, Conative reactions

Paper type Research paper

1. Introduction

The increasing enthusiasm of web-surfers for commercial websites, also called online stores, no doubt contributed to e-commerce development. Understanding web-surfers' exposure is then a major challenge for researchers and marketing practitioners. The ability of a commercial website to stimulate internet senses may gear their behaviour while surfing. It seems to be accepted that atmospheric elements of a website, defined as "various stimuli, such as colour, sound, scent, taste, layout and space, which are important clues for buyers" (Oh *et al.*, 2008), considerably affect web-surfers' behaviour (Manganari *et al.*, 2011), especially those enhancing its vividness (Wu *et al.*, 2008; Ching and Tong, 2013). Among the first atmospheric elements noticed by web-surfers is the dominant colour of the website, in particular its background colour (Gorn *et al.*, 2004). This latter significantly contributes to its vividness (Ettis, 2008) and seems to affect web-surfers' responses, especially conative ones (Gorn *et al.*, 2004).

Note that among the different variants of colour, the hue dimension is often chosen by researchers because of its broad managerial interest (Bellizzi *et al.*, 1983; Gorn *et al.*, 2004; Cheng *et al.*, 2009). However, studies of web-surfers' conative reactions to colour, or even to commercial websites' dominant colour, are rare and they report mixed results. The observed differences could be explained by presence of mediators

Internet Research
Vol. 26 No. 5, 2016
pp. 1249-1268
© Emerald Group Publishing Limited
1066-2243
DOI 10.1108/IntR-01-2014-0015

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

not taken into account in previous research. In this regard, some researchers have noted that the dominant colour of online stores affects web-surfers' conative reactions through affecting their internal states (Ettis, 2008; Wu *et al.*, 2008). Among these potentially important internal states to consider, mental imagery appears to play a central role in articulating the influence of websites' vividness on web-surfers' conative responses (Kiss and Esch, 2006; Argyriou, 2012).

Websites' atmosphere seems to be a fertile ground for the activation of mental imagery (Volle, 2000). The latter has the capacity of inciting the individual into action thanks to the concrete aspect of imagined scenarios (MacInnis and Price, 1987). Moreover, Bolls and Muehling (2007) believe that mental imagery has the specificity of being fully triggered when a limited number of sensory modalities is activated. According to the authors, simultaneous arousal of several senses causes interaction between them compromising thus clarity of formed mental images. Compared to a physical store that can stimulate the five senses all together, it is easy to notice that a website can stimulate only two (vision and hearing). This reduced number of senses likely to be activated potentially promotes formation of mental images.

In this paper, we examine the following research problem: what role does mental imagery play in affecting the impact of dominant commercial websites' hue on web-surfers' conative reactions? To this end, we start by a review of the literature on the role of mental imagery in affecting the relationship between dominant websites' hue and web-surfers' conative reactions. We focus in particular on research of different disciplines (psychology, persuasion advertisement, web, etc.) to finally formulate our research hypotheses. Then, we present our methodology in terms of the administration of an online experiment conducted over 400 web-surfers. Finally, we discuss the results and the main conclusions.

2. Related literature

During a shopping experience (physical or online), consumers often use mental imagery, particularly to choose a desired product (MacInnis and Price, 1987). Mental imagery is defined as "a mental event involving the visualization of a concept or relationship" (Lutz and Lutz, 1978). One of the most important characteristics of mental imagery is that it is multisensory involving smell, taste, sight, hearing and touching (MacInnis and Price, 1987). However, visual mental imagery is probably the most interesting since it is directly linked to marketing stimuli (Gavard-Perret and Helme-Guizon, 2003). Particularly, commercial websites seem to be very likely to stimulate mental imagery (Volle, 2000). In fact, vision is the primary sense stimulated during surfing (Oh *et al.*, 2008) and seems to be the most likely modality to stimulate mental imagery (Baker *et al.*, 2002). Thus, in this paper, we are specifically interested in visual mental imagery.

Mental imagery has often been considered as a multidimensional concept despite disagreements of researchers on its different facets (Burns *et al.*, 1993; Frikha and Khrouf, 2013). For instance, some dimensions as clarity and vividness or quantity and ease, initially considered as separate (Burns *et al.*, 1993; Roy and Tai, 2003), were proved to be empirically combined (Lee and Gretzel, 2012; Frikha and Khrouf, 2013). Nevertheless, there is consensus on its main dimensions. In line with other advertisement-adapted conceptualizations, Frikha and Khrouf (2013) conceptualised mental imagery in terms of four dimensions in a context of websites ("vividness/clarity", "valence", "ease/quantity" and "links") which seems appropriate to the present study given the similarity of contexts and the existing consensus on its dimensions

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

(Table AI). Indeed, this conceptualization has the particularity to capture web sensorial simulations generating mental imagery which are different from those existing in other contexts (Frikha and Khrouf, 2013).

In different contexts, mainly in persuasion advertisement (Childers and Houston, 1983; Burns *et al.*, 1993; Roy and Tai, 2003) or physical shopping (MacInnis and Price, 1987; Roy and Tai, 2003), mental imagery seems to play a pivotal role in influencing individuals' reactions to a particular environment. As mentioned above, despite the potential importance of studying mental imagery during a web surfing experience, few studies paid attention to the topic. However, some authors have evoked the potential mediating role of mental imagery in the influence of commercial websites' vividness on surfers' conative responses (Lao, 2011; Khrouf *et al.*, 2012; Argyriou, 2012) or on their attitudes (Lee and Gretzel, 2012). Other researchers assumed that dominant colour of commercial websites, by contributing to its vividness or "sensorial richness" (Coyle and Thorson, 2001), influences web-surfers' states which in turn reacts on their conative responses (Ettis, 2008; Wu *et al.*, 2008).

Furthermore, it seems that the impact of dominant website's colour on web-surfers' states is affected by some individual factors, notably involvement with the product sold (Ettis, 2008; Khrouf *et al.*, 2012). However, even if some researchers evoked presence of some links, no study, to our knowledge, has conceptualised the central role of mental imagery in the influence of a dominant colour of online stores on surfers' conative responses. To better understand the issue, we focus first on the literature considering websites' dominant hue as an antecedent of mental imagery. Second, we move to consider web-surfers' conative reactions towards mental imagery. Finally, we examine the impact of web-surfers' involvement with the product sold on the relationship between colour and mental imagery.

2.1 Dominant hue as an antecedent of mental imagery

Colour was often defined through its three dimensions: hue (the pigment), value (darkness vs lightness of the colour) and chroma (colour saturation). In the context of internet, Schenkman and Jönsson (2000) argue that colour could considerably affect surfers' preferences. Several researches proved that websites' background colour has an influence on web-surfers reactions especially elicited emotions (Gorn *et al.*, 2004; Wu *et al.*, 2008; Cheng *et al.*, 2009). It was also found that warm colours and cold colours for websites' backgrounds have opposite effects on web-surfers' behaviour (Wu *et al.*, 2008). It has for instance been shown that a warm colour is more stimulating and pleasant than a cold colour (Gorn *et al.*, 2004; Cheng *et al.*, 2009). Nevertheless, no study, to our knowledge, has measured the influence of websites' dominant hue on mental imagery, though the results of an exploratory study seem to suggest that website colour may be the source of mental imagery formed in virtual retailing environments (Khrouf *et al.*, 2012). Giving the lack of studies dealing with websites dominant hue on mental imagery, we referred to the concept of a website's hue congruence with its content which could make this relationship plausible. Lichtlé (2002) defines congruence as stimulus ability to strengthen the meaning of the message to which it is associated. Among the rare studies dealing with websites' content-hue congruence, Alberts and Van Der Geest (2011) proved that effects of their backgrounds' hue on web-surfers' cognitive reactions depend on the product category sold. Houston *et al.* (1987) indicate that incongruence between two stimuli generates more elaborate mental images than when these latter are congruent to each other. Then, incongruence leads individuals to make an additional mental effort and elaborate numerous mental images

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

("ease/quantity" dimension) in order to understand the incongruence. They also use past events to find a suitable explanation. Accordingly, these individuals form mental images particularly linked to them ("links" dimension). Therefore, in presence of incongruence, "links", defined as "association of information in working memory with another in long-term memory" (Frikha and Khrouf, 2013), are stimulated. Incongruence between stimuli also leads to difficulties to understand the information and then generates less clear mental images (Houston *et al.*, 1987). Then, mental images' "Vividness/clarity", or their intensity, quality and distinctiveness (Frikha and Khrouf, 2013) decreases when stimuli are incongruent. Moreover, Helme-Guizon (2000) has proven that individuals prefer congruent stimuli to incongruent ones. According to her, incongruence enhances generation of negative mental images whereas congruence leads to positive ones ("valence" dimension). She also found that colours congruent with the stimuli presented (paintings) generate fewer and less elaborate mental images than less congruent colours do. Adopting Frikha and Khrouf (2013) conceptualization, we may formulate the following hypotheses:

H1. A commercial website which content is strongly congruent (vs weakly congruent) with its dominant hue background generates:

H1a. More mental images' "vividness/clarity".

H1b. More the appearance of positive mental images.

H1c. Less mental images' "ease/quantity".

H1d. Less the appearance of self-linked mental images.

2.2 Web-surfers' behavioural responses to mental imagery generated by commercial websites

Behavioural intentions are one of the most studied conative responses to mental imagery. Among web-surfers' behavioural intentions, the intentions to purchase from the website (Animesh *et al.*, 2011; Huang, 2012) and the intention to revisit it received a great deal of attention (Wu *et al.*, 2008; Yoo and Donthu, 2001). The positive impact of mental imagery on intention to purchase from an online store (Schlosser, 2003; Kiss and Esch, 2006; Lao, 2013) and intention to revisit it has been proved (Kiss and Esch, 2006). Then, web-surfers who imagine themselves in a situation of using the product tend to like purchasing it in view of making the imagined mental images real, in particular when some information about the product is unavailable (MacInnis and Price, 1987). Mental images allow as well for web-surfers to like revisiting the website in order to examine in depth some details left unclear in their minds and reward their curiosity. Mental imagery, through its facets (Frikha and Khrouf, 2013), may then mediate the influence of websites' dominant hue on intentions to behave. Accordingly, we propose the following hypotheses:

H2. Dominant website's hue impact on buying intention is mediated by:

H2a. Mental images' " vividness/clarity".

H2b. Mental images' "valence".

H2c. Mental images' "ease/quantity".

H2d. Mental images' "links".

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

H3. Dominant website's hue impact on intention to revisit it is mediated by:

H3a. Mental images' "vividness/clarity".

H3b. Mental images' "valence".

H3c. Mental images' "ease/quantity".

H3d. Mental images' "links".

Behavioural reactions, other than intentions, have also been focus of web researchers' attention. Stickiness of a website or "its capacity to retain web-surfers' as long as possible on the site" (Bucklin and Sismeiro, 2003) seems to be promoted by mental imagery generated during surfing (Kiss and Esch, 2006; Khrouf *et al.*, 2012). More specifically, the hedonic nature of mental imagery may lead web-surfers to like to stay longer on the website in order to maintain the felt pleasure, especially when the possibility to purchase the product is unavailable (MacInnis and Price, 1987). Staying longer on the site would probably imply increasing the number of visited web pages. Referring to Frikha and Khrouf's (2013) conceptualization of mental imagery, we stipulate that:

H4. The impact of dominant website's hue on time spent on it is mediated by:

H4a. Mental images' "vividness/clarity".

H4b. Mental images' "valence".

H4c. Mental images' "ease/quantity".

H4d. Mental images' "links".

H5. The impact of dominant website's hue on number of pages visited is mediated by:

H5a. Mental images' "vividness/clarity".

H5b. Mental images' "valence".

H5c. Mental images' "ease/quantity".

H5d. Mental images' "links".

2.3 Web-surfers' involvement with the product sold and mental imagery prompted by the website's dominant hue

Researchers seem to agree on the existence of individual factors influencing the relationship between vividness-contributing environmental stimuli (descriptions, images, colours, etc.) and mental imagery (MacInnis and Price, 1987; Burns *et al.*, 1993). Individuals' information processing style was often proven to be a moderator of this relationship in both advertising literature (Burns *et al.*, 1993) and consumer offline behaviour context (MacInnis and Price, 1987). However, it is the involvement with the product sold that received most interest in web and mental imagery literature. Particularly, it has been established that surfer's involvement with the product sold moderates the impact of the dominant colour on cognitive responses (Ettis, 2008). An exploratory study has revealed that it is specifically the relationship between dominant colour and generated imagery that could be affected most by web-surfers' involvement with the product (Khrouf *et al.*, 2012). In this regard, according to the

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

elaboration likelihood model, when highly involved individuals follow a central information processing path, they give less attention to low-relevant stimuli, which negatively affects their responses. However, poorly involved individuals follow a peripheral path that promotes processing of low-relevant elements and their responses are improved (Petty *et al.*, 1983). Moreover, dominant colour seems to be a low-relevant element (Eroglu *et al.*, 2001). Then, we postulate:

H6. For web-surfers highly involved (vs lowly involved) with the product, a website which content is strongly congruent (vs weakly congruent) with its dominant hue background generates:

H6a. Less mental images' "vividness/clarity".

H6b. Less the apparition of positive mental images.

H6c. More the mental images' "ease/quantity".

H6d. More the apparition of self-linked mental images.

Against this literature, the set of formulated hypotheses allows us to propose a model, presented in a simplified way in Figure 1.

3. Research method

To validate our model, we have conducted an online experiment knowing that mental imagery is best approached in a real context in which the phenomenon under investigation takes place (Yuille, 1985). Websites' atmosphere is also best studied under real navigation conditions (Ettis, 2008). Laboratory research may compromise the experiment by leading subjects to behave less naturally while online experiment permits to simulate real navigational conditions (Dreze and Zufryden, 1997; Ettis, 2008). Conducting an experiment implies a number of methodological choices that we present in what follows. Our choices relate essentially to experimental design and measures to be adopted.

3.1 Experimental design

The manipulated variable is the website's background hue: strongly congruent vs weakly congruent. Thus, we created a commercial website in two versions (strongly congruent and weakly congruent hue) corresponding to the factorial design. Note that use of a fictitious website is frequent in this kind of research (Manganari *et al.*, 2011; Lee and Gretzel, 2012) and allowed us to avoid mental images that could be generated before the experiment. Names of hotels, their images and description were also fictitious. The experiment was conducted on 400 web-surfers (200 for the strongly

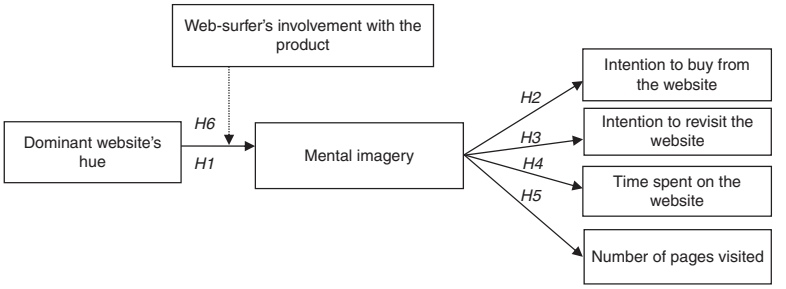

Figure 1.
Simplified conceptual model

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

congruent hue version and 200 for the weakly congruent hue version) with different characteristics (Table AII). The retained sample size was set as recommended by Hair *et al.* (1998) who prefer to opt for average sample sizes (between 50 and 1,000 subjects).

3.1.1 Product selection. Only one product category was tested in this study giving that its manipulation (testing other products) would have involved many other changes (product pictures, price, descriptions, etc.) in the website used in the experiment making them incontrollable. Specifically, the product chosen was staying in hotel services. In spite of the little research emphasis given to online tourism products (Manganari *et al.*, 2011), these services are often purchased online and seem particularly fit to promote mental imagery during a surfing experience (Khrouf *et al.*, 2012; Lee and Gretzel, 2012). Furthermore, when buying a tourism product, a web-surfer often has only the mental images formed as source of information. Thus, he takes his buying decision on the basis of these mental images (Lee and Gretzel, 2012). Therefore, for websites selling staying in hotel services, the relationship between mental imagery and web-surfers' conative reactions can be boosted.

3.1.2 Colour selection. We chose to manipulate two hues in order to compare a cold to a warm one as it is often done in prior studies (Bellizzi *et al.*, 1983; Gorn *et al.*, 2004; Wu *et al.*, 2008; Cheng *et al.*, 2009). Indeed, warm and cold hues affect individuals' reactions differently (Lichtlé, 2002). Blue was the strongly congruent hue chosen and red was the weakly congruent one selected. In fact, blue is supposed to fit more with touristic products (sold by the website's experiment) because it is often associated with security (Cyr *et al.*, 2010), peace, tranquillity (Gnambs *et al.*, 2010) and beach (Ettis, 2008). Red is generally linked to danger and mistake (Gnambs *et al.*, 2010). Moreover, results of Lichtlé's (2002) study seem to show that blue could be more congruent with commercial stimuli than red. In web literature, Galitz (1997) claimed that blue fits more with websites' backgrounds than red. According to him, cold hues like blue are suited for status information and backgrounds whereas warm hues like red fit for active situations. Using the hue, brightness and saturation model, blue 240 was the cold colour chosen while red 340 was the hot one. They were selected because they are opposite on the colour spectrum (Cheng *et al.*, 2009): blue is the coldest hue and red is considered as the hottest (Wu *et al.*, 2008). They are not mixed with other hues (Gorn *et al.*, 2004), often studied (Pearson and Van Schaik, 2003; Cheng *et al.*, 2009) and have opposite effects on subjects (Bellizzi *et al.*, 1983). These hues have the particularity to reach equivalent levels of brightness and saturation (Ettis, 2008). They also are frequently chosen for commercial environments (Bellizzi *et al.*, 1983), especially for touristic online stores. Note that brightness and saturation have been set at their maximum level to facilitate recognition of the dominant hue (Gorn *et al.*, 2004).

3.1.3 The website used in the experiment. The website created includes 105 web pages and offers services in the Mediterranean countries (Spain, Italy, France, Greece and Morocco). Once the website is designed (Figure A1), we conducted a laboratory-based pre-test on 40 surfers (20 on each version). This latter allowed us to ensure of the credibility of the website, as it allows for a smooth navigation and surfers were able to identify its dominant colour (blue vs red). Moreover, at the level of this pre-test, as recommended by Lichtlé (2002), we asked participants, through a five-point Likert scale, if the website background colour is congruent with hotel accommodation. The results indicated that the blue version is more congruent with this category of services than the red version.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

3.1.4 Procedure. We invited web-surfers through e-mails and messages posted on discussion forums (dealing with general topics) and on different groups of a popular social network including various web-surfers profiles. We asked them navigate the website by themselves and not to do something else during the visit. Subjects were free to navigate on the pages they chose without a limit of time as suggested by Ettis (2008) and Fortin and Dholakia (2005). We did not give them particular directives (buy an item or visit a page, etc.) in order to simulate a real navigation experience and to avoid influencing their behaviour. When they finished, they had to click on a link that directs them to the questionnaire. We varied the link to the website in order to test the two experimental conditions. The participants were asked to focus on navigating on the website and never come back once they worked on the questionnaire. Using the "Sitemeter" software, 20 web-surfers who consulted less than three pages and who spent more than 30 minutes on the website were eliminated, as it highly likely that they interrupted their visit to do something else (Bucklin and Sismeiro, 2003).

3.2 Choice of measures

We have selected four measurement scales with good psychometric quality. Mental imagery was measured using Frikha and Khrouf's (2013) scale, which consists of 13 items grouped into four dimensions, specifically designed to measure mental imagery generated by commercial websites. To measure purchase intention, we have used the four-item scale of Yoo and Donthu (2001). Intention to revisit the website was measured by the five-item scale of Demangeot and Broderick (2007). Finally, the fourth scale was that of Mittal (1990) which measures involvement with the proposed product using a four-item scale. All of these scales use a five-point Likert scale. Note that these scales have been tested on a sample of 220 web-surfers. The exploratory factor analysis helped eliminate an item from the mental imagery scale and another from the revisit intention scale. After this first purification, we obtained an internal coherence coefficient superior to 0.8 for all the generated dimensions.

4. Results

Data analysis is done using a partial least square (PLS) estimation on the SmartPLS 2 software, rather than through a structural equation modelling technique which rests on estimating covariance, because of the presence of a nominal variable (Vinzi *et al.*, 2010), absence of data multinormality (Hair *et al.*, 1998) and the complexity of the model (a large number of variables > 25) (Kohler *et al.*, 2011).

Nevertheless, before proceeding with the PLS technique, we conducted exploratory factor analyses. The obtained results, in addition to those issued from the PLS technique (Table I), indicate good psychometric qualities. Exploratory factor analyses indicated also, as supposed by the literature, that among the retained scales, the only multidimensional scale is that of mental imagery ("vividness/clarity", "valence", "ease/quantity" and "links").

The PLS-based estimation of the structural model yields to one fit index: the goodness of fit index (GoF). For our model, we obtained a value of 0.49, which indicates a good fit quality. Wetzels *et al.* (2009) argue that a GoF superior than 0.36 indicates a good adjustment. Likewise, explained variance of exogenous latent variables (Table I) indicates that all obtained values exceed the average level of 0.13 (Wetzels *et al.*, 2009). Several values are also superior to the upper level (0.26). The set of these coefficients ensures us of the good fit quality of the structural model.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Constructs	Dimensions	Principal components analysis KMO	Principal components analysis Cronbach's α	Evaluation of measure and structural models' results by PLS AVE	Composite reliability (CR)	Cronbach's α	R^2
Involvement (4 items)	–	0.868	0.961	0.895	0.971	0.961	–
Buying intention (4 items)	–	0.868	0.954	0.878	0.966	0.953	0.19
Intention to revisit the website (4 items)	–	0.853	0.960	0.894	0.971	0.960	0.35
Mental imagery	"Vividness/clarity" (3 items)	0.739	0.960	0.925	0.973	0.959	0.28
	"Valence" (2 items)		0.840	0.862	0.925	0.840	0.26
	"Ease/quantity" (3 items)		0.941	0.894	0.962	0.941	0.32
	"Links" (3 items)		0.935	0.886	0.959	0.935	0.26

Table I. Exploratory and confirmatory analyses of measure and structural models' results

Before moving to validating our hypotheses, we checked independence of the experimental groups through different socio-demographic indicators (age, gender, activity, education level and income) using a contingency test (χ^2). We found that participants belonging to the two experimental groups are homogenous. Therefore, the potentially observed variations can be, most probably, due to change in experimental condition.

To validate our hypotheses, we run a bootstrap procedure with 500 replications (Kohler *et al.*, 2011). The hypotheses assuming a direct effect (Table II) have been examined using a *t*-student test associated to a standardized multiple regression coefficient β. Note that we accepted a 5 per cent significance level for the *t*-values obtained through the student test and rarely tolerated (for one hypothesis) a level of 10 per cent giving that mental imagery is a psychological construct which is abstract and difficult to assess (Gavard-Perret and Helme-Guizon, 2003).

To analyse the direct effect of the dominant website's hue on mental imagery, colour was considered as a dummy variable. As previously mentioned, website's dominant hue was studied through the website hue-content congruency as the hue's effect on mental imagery depends on the context in which it occurs. Results indicated that blue websites (strongly congruent with website's content) promote more than red ones (weakly congruent with website's content) generation of vivid and positive mental images (*H1a* and *H1b* validated). However, red websites (weakly congruent with website's content) promote more than blue ones (strongly congruent with website's content) the generation of numerous and self-linked mental images (*H1c* and *H1d* validated). Consistently with our expectations, unlike incongruence, congruence

Hypotheses	Tested relationships	β	*t*-value[a]	Acceptance/rejection of hypotheses
H1a	Hue → "vividness/clarity"	0.62	2.39	Accepted
H1b	Hue → "valence"	0.48	2.07	Accepted
H1c	Hue → "ease/quantity"	−0.71	3.41	Accepted
H1d	Hue → "links"	−0.74	3.05	Accepted

Note: [a]The critical *t*-value is 1.96 for a 5 per cent significance level

Table II. Dominant website's hue impact on mental imagery

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

induces web-surfers to generate more vivid and positive mental images, but fewer in number and less self-linked (Houston *et al.*, 1987; Helme-Guizon, 2000).

Testing the hypothesis targeting a mediation effect is done through a study of the mediation conditions proposed by Baron and Kenny (1986). However, we eliminated the first condition often considered as unnecessary (Zhao *et al.*, 2010). To examine the last three conditions, we tested two models (Liang *et al.,* 2007). The first takes into account indirect effects of colour on conative responses, while the second simultaneously considers its direct and indirect effects. As suggested by Baron and Kenny (1986), we tested the last condition through Sobel test, as the SmartPLS 2 software does not provide indirect effects. The use of Sobel test seems to be suitable given that our sample is very large (400 web-surfers). Several authors indicate that the Sobel test has limitations only for small samples (Shrout and Bolger, 2002; Schluchter, 2008). Specifically, Bollen and Stine (1990) found that a sample of 173 is sufficient to perform it.

Test of mediating effects (Table III) indicated that the "vividness/clarity" dimension of mental imagery fully mediates the relationship between dominant website's hue and web-surfers' behavioural intentions (*H2a*, *H2b*, *H3a* and *H3b* validated). Moreover, "ease/quantity" mental imagery's dimension mediates (partially) the influence of dominant website's hue on intention to revisit the site (*H3c* validated) and not the influence of dominant website's hue on purchase intention (*H2c* rejected). Furthermore, the results indicated that "links" has no mediation effect on the relationship between dominant website's hue and web-surfers' intentions (*H2d* and *H3d* rejected).

Moreover, we focused on the mediating role of mental imagery in the influence of the dominant website's hue on stickiness (Table IV). The results show that mental imagery mediates (fully) through its different dimensions, except for "links", the

Hypotheses	Tested relationships	Condition 2: $X \rightarrow M$ (β; t^a)	Condition 3: $M \rightarrow Y$/ $X \rightarrow Y$ controlled (β; t^a)	Condition 4: $X \rightarrow Y$/ $M \rightarrow Y$ controlled (z; p)	Mediation
H2a (Accepted)	Hue → "vividness/ clarity" → buying intention	($\beta = 0.62$; $t = 2.39$)	($\beta = 0.30$; $t = 3.13$)	($z = 1.28$; $p = 0.19$)	Full mediation
H2b (Accepted)	Hue → "valence" → buying intention	($\beta = 0.48$; $t = 2.07$)	($\beta = 0.30$; $t = 2.96$)	($z = 1.45$; $p = 0.14$)	Full mediation
H2c (Rejected)	Hue → "ease/quantity" → buying intention	($\beta = -0.71$; $t = 3.47$)	($\beta = 0.12$; $t = 1.35$)	Not tested	No mediation
H2d (Rejected)	Hue → "links" → buying intention	($\beta = -0.74$; $t = 3.05$)	($\beta = 0.03$; $t = 0.35$)	Not tested	No mediation
H3a (Accepted)	Hue → "vividness/clarity" → intention to revisit the website	($\beta = 0.62$; $t = 2.39$)	($\beta = 0.30$; $t = 2.97$)	($z = 1.91$; $p = 0.05$)	Full mediation
H3b (Accepted)	Hue → "valence" → intention to revisit the website	($\beta = 0.48$; $t = 2.07$)	($\beta = 0.31$; $t = 3.26$)	($z = 1.73$; $p = 0.08$)	Full mediation
H3c (Accepted)	Hue → "ease/quantity" → intention to revisit the website	($\beta = -0.71$; $t = 3.47$)	($\beta = 0.20$; $t = 2.26$)	($z = 1.96$; $p = 0.04$)	Partial mediation
H3d (Rejected)	Hue → "links" → intention to revisit the website	($\beta = -0.74$; $t = 3.05$)	($\beta = 0.13$; $t = 1.46$)	Not tested	No mediation

Table III.
Mental imagery mediating role on the relationship between dominant website's hue and behavioural intentions

Notes: X, independent variable; Y, dependent variable; Z, mediating variable. [a]The critical t-value is 1.96 for a 5 per cent significance level

Hypotheses	Tested relationships	Condition 2: $X \rightarrow M$ (β; t^a)	Condition 3: $M \rightarrow Y$/ $X \rightarrow Y$ controlled (β; t^a)	Condition 4: $X \rightarrow Y$/ $M \rightarrow Y$ controlled (z; p)	Mediation
H4a (Accepted)	Hue → "vividness/clarity" → time spent on the website	($\beta = 0.62$; $t = 2.39$)	($\beta = 0.23$; $t = 2.76$)	($z = 1.90$; $p = 0.05$)	Full mediation
H4b (Accepted)	Hue → "valence" → time spent on the website	($\beta = 0.48$; $t = 2.07$)	($\beta = 0.23$; $t = 2.63$)	($z = 1.61$; $p = 0.10$)	Full mediation
H4c (Accepted)	Hue → "ease/quantity" → time spent on the website	($\beta = -0.71$; $t = 3.47$)	($\beta = 0.20$; $t = 2.10$)	($z = 1.77$; $p = 0.07$)	Full mediation
H4d (Rejected)	Hue → "links" → time spent on the website	($\beta = -0.74$; $t = 3.05$)	($\beta = -0.04$; $t = 0.55$)	Not tested	No mediation
H5a (Accepted)	Hue → "vividness/clarity" → number of pages visited	($\beta = 0.62$; $t = 2.39$)	($\beta = 0.24$; $t = 2.49$)	($z = 1.66$; $p = 0.09$)	Full mediation
H5b (Accepted)	Hue → "valence" → number of pages visited	($\beta = 0.48$; $t = 2.07$)	($\beta = 0.21$; $t = 2.28$)	($z = 1.53$; $p = 0.12$)	Full mediation
H5c (Accepted)	Hue → "ease/quantity" → number of pages visited	($\beta = -0.71$; $t = 3.47$)	($\beta = 0.19$; $t = 1.94$)	($z = 1.60$; $p = 0.10$)	Full mediation
H5d (Rejected)	Hue → "links" → number of pages visited	($\beta = -0.74$; $t = 3.05$)	($\beta = -0.01$; $t = 0.20$)	Not tested	No mediation

Notes: X, independent variable; Y, dependent variable; Z, mediating variable. [a]The critical t-value is 1.96 for a 5 per cent significance level

Table IV. Mental imagery mediating role on the relationship between dominant website's hue and stickiness

influence of dominant website's hue on stickiness (*H4a-H4c*, *H5a-H5c* validated while *H4d* and *H5d* rejected).

To test the examined moderating effect, we estimated explained variance jointly taking into account the interaction effect between dominant website's hue and web-surfers' involvement with the product and the main effect of web-surfers' involvement on mental imagery (Chin *et al.*, 2003). Then, we examined regression coefficients β of interactions. If the sign of the regression coefficient (β) is positive (vs negative), it means that involvement moderates the studied relationship positively (vs negatively). In other words, a positive regression coefficient means that direction of the established relationship between website hue and mental imagery is maintained while a negative coefficient reverses it. For each moderating effect, we compared also R^2 of the dependent variable of a model without the moderating variable with a model taking it into account (Chin *et al.*, 2003). Finally, we computed effect size f^2 which indicates the strength of the moderating effect (Wetzels *et al.*, 2009).

These tests allowed us to conclude that web-surfers' involvement moderates the relationship between dominant website's hue and mental imagery (Table V). More specifically, with a strong involvement (vs low involvement), the blue-dominated website (strongly congruent with website's content) promotes less (vs more) "vividness/clarity" of mental imagery than red-dominated (weakly congruent with website's content) website (*H6a* validated). Likewise, blue (strongly congruent with website's content) promotes more (vs less) than red (weakly congruent with website's content) generation of many and self-linked mental images when web-surfers are strongly (vs lowly) involved with the product (*H6c* and *H6d* validated). However, the moderating effect of web-surfers' involvement on the relationship between dominant website's hue and valence of generated mental images is not significant (*H6b* rejected).

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Table V.
Test of the moderator effect of web-surfers' involvement towards the product

Hypotheses	Tested relationships	β	t-value[a]	R^2 differences	f^2	Acceptance/ rejection of hypotheses
H6a	Hue × involvement → "vividness/ clarity"	−0.50	1.79	0.28 − 0.20 = 0.08	0.28	Accepted[c]
H6b	Hue × involvement → "valence"	−0.20	0.77	0.26 − 0.25 = 0.01	0.03	Rejected
H6c	Hue × involvement → "ease/ quantity"	0.62	2.80	0.32 − 0.17 = 0.15	0.46	Accepted[b]
H6d	Hue × involvement → "links"	0.57	2.27	0.26 − 0.15 = 0.11	0.42	Accepted[b]

Note: [a]The critical t-value is 1.96 for a 5 per cent significance level and 1.64 for a 10 per cent significance level; [b]accepted at a significance level of 5 per cent; [c]accepted at a significance level of 10 per cent

5. Conclusion

Web-surfers' behavioural responses to dominant websites' hues remain less understood. Studies on this issue are rare. This research brings some answers through introducing the pivotal role of mental imagery. Our results indicate that mental imagery mediates the influence of dominant website's hue on web-surfers' conative responses through its dimensions of "vividness/clarity", "valence" and less through "ease/quantity" dimension. Nevertheless, contrary to our expectations, it seems that this relationship is not influenced by the "links" dimension. This may be explained by the fact that the studies which proved this impact (Burns *et al.*, 1993) were mainly conducted in persuasion advertising field. The specific context of our study (the web) may not induce web-surfers into really evoking past experience while surfing the site. They may rather look for dreaming and forming mental images through their imagination. The "links" dimension of mental imagery has indeed been less taken into account by web-based researchers and its effects on individuals' behaviour are generally difficult to predict (Ellen and Bone, 1991), probably because of their individual differences. Generating self-linked mental images depends on the ability of web-surfers to activate their past experience and establish links between exposed stimuli and previously stored information (Childers and Houston, 1983). Regarding the other dimensions of mental imagery, we noticed some interesting results. We showed that blue-dominated websites (strongly congruent with website's content) promote more than red-dominated ones (weakly congruent with website's content) vivid and positive mental images, improving web-surfers' conative responses. Thus, activation of the different facets of mental imagery depends on congruence between stimuli (Houston *et al.*, 1987) and particularly website's hue-content congruence. Our findings proved that the most congruent hues with the website's content that are the most fit to generate vivid and positive mental images. However, quantity of mental images formed during navigation seems to increase with presence of a hue less congruent with the website's content. Nevertheless, it was the vivid, clear and positive mental images, promoted by hues congruent with the website content, that have the most effect on web-surfers' conative responses.

5.1 Theoretical implications

This research provided theoretical implications. First, it reflects the importance of mental imagery induced by dominant website's hue, not considered in anterior studies.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

This could explain the mixed results reported by literature. Moreover, contrary to previous ones (Gorn *et al.*, 2004; Wu *et al.*, 2008), our study focused on particular hues effects on web-surfers' reactions based on their congruence degree with the website's content. The influence of a colour should not be dissociated from the context in which it appears. Future studies should be interested in websites' background colour, its congruence degree with the kind of product sold and its effects on mental imagery dimensions. More generally, results of our study confirm the influence of websites' vividness on mental imagery demonstrated in previous studies. Indeed, Argyriou (2012) proved that websites' animation stimulates vivid mental imagery. Second, in line with prior works dealing with mental imagery (Burns *et al.*, 1993; Roy and Tai, 2003), this study allowed proving its mediating role in the web context. Future research of websites' hue and more generally their atmospherics should take into account the central role of mental imagery. This may lead to more consistent results and a better understanding of web-surfers' behaviour during navigation. Finally, the present research took into account involvement towards the product sold confirming its moderating effect on the relationship between dominant website's colour and mental imagery revealed in a recent exploratory study (Khrouf *et al.*, 2012).

5.2 Practical implications

This study provided several practical implications. First, it highlighted the importance of websites' background colour as it affects web-surfers' reactions. Therefore, the choice of this colour should not be fortuitous. Second, as mentioned above, compared to hues incongruent with the website's content, congruent ones could lead to better conative reactions thanks to the vivid and positive mental images formed. Thus, it would be probably interesting for managers of touristic products websites to use a background hue that fits the website's content and particularly its product category. In fact, colours convey meaning in the product and the website selling it (Cyr *et al.*, 2010). More specifically, it would be preferable for touristic products websites to use cold colours because of their comforting and appeasing nature (Pearson and Van Schaik, 2003; Cyr *et al.*, 2010). Third, managers should as well be aware of the influence of web-surfers' involvement with the proposed product. This latter, when it becomes strong, reverses the direction of the relationship between dominant website's hue and mental imagery. Then, a colour congruent with website's content could induce better behavioural responses of web-surfers who are poorly involved with the product more than those strongly involved. However, choice of a colour congruent with website's content may be particularly important for poorly involved web-surfers because it is often difficult to convince them and make them potential buyers. For strongly involved web-surfers, a hue congruent with website's content would promote less behavioural responses to mental imagery. Nevertheless, their interest for the product may compensate for this limitation.

5.3 Limitations and future research

This study, however, has some limitations which may provide an impetus for future research. First, only one product was tested in the website object of the experiment. Also, we compared only a cold hue to a hot one as they were supposed to have opposite effects (Bellizzi *et al.*, 1983). However, the choice of the dominant hue should depend on its congruence with the website's content since it determines generated mental imagery. Therefore, for other products, the use of different hues could be more adapted

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

(Lichtlé, 2002). Thus, we suggest for future research to compare other cold and hot hues for hotel services websites' backgrounds and to validate this study's findings on other product categories. Second, the experiment was conducted online. Even though we eliminated observations of web-surfers who were probably doing something else during the experiment (visits lasting more than 30 minutes and those who consulted less than three pages), we were not able to control perfectly all experimental conditions. Third, it would be interesting for future research to integrate web-surfers trust into the website as it has been proven that it is highly linked to websites colour appeal (Cyr *et al.*, 2010). Finally, future studies may take into account other moderating variables as web-surfers' ability to form self-linked mental images (Childers and Houston, 1983) or web-surfers' information processing style (MacInnis and Price, 1987).

References

Alberts, W. and Van Der Geest, M. (2011), "Color matters: color as trustworthiness cue in web sites", *Technical Communication*, Vol. 58 No. 2, pp. 149-160.

Animesh, A.P., Yang, S.B. and Oh, W. (2011), "An odyssey into virtual words: exploring the impacts of technological and spatial environments on intention to purchase virtual products", *MIS Quarterly*, Vol. 35 No. 3, pp. 780-810.

Argyriou, E. (2012), "Consumers intentions to revisit online retailers: a mental imagery account", *Psychology and Marketing*, Vol. 29 No. 1, pp. 25-35.

Baker, J., Parasuraman, A., Grewal, D. and Voss, G.B. (2002), "The influence of multiple store environment cues on perceived merchandise value and patronage intentions", *Journal of Marketing*, Vol. 66 No. 2, pp. 120-141.

Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Bellizzi, J.A., Crowley, A.E. and Hasty, R.W. (1983), "The effects of color in store design", *Journal of Retailing*, Vol. 59 No. 1, pp. 21-45.

Bollen, K.A. and Stine, R. (1990), "Direct and indirect effects: classical and bootstrap estimates of variability", *Sociological Methodology*, Vol. 20, pp. 115-140.

Bolls, P.D. and Muehling, D.D. (2007), "The effects of dual-task processing on consumer's responses to high-and-low imagery radio advertisements", *Journal of Advertising*, Vol. 36 No. 4, pp. 35-47.

Bucklin, R.E. and Sismeiro, C. (2003), "A model of web site browsing behavior estimated on clickstream data", *Journal of Marketing Research*, Vol. 40 No. 3, pp. 249-267.

Burns, A.C., Biswas, A. and Babin, L.A. (1993), "The operation of visual imagery as a mediator of advertising effects", *Journal of Advertising*, Vol. 22 No. 2, pp. 71-85.

Cheng, F.E., Wu, C.S. and Yen, D.C. (2009), "The effect of online store atmosphere on consumer's emotional responses-an experimental study of music and color", *Behaviour and Information Technology*, Vol. 28 No. 4, pp. 323-334.

Childers, T.L. and Houston, M.J. (1983), "Imagery paradigms for consumer research: alternative perspectives from cognitive psychology", in Bagozzi, R.P. and Tybout, A.M. (Eds), *Advances in Consumer Research*, Association for Consumer Research, Vol. 10, Ann Abor, MI, pp. 59-64.

Chin, W.W., Marcolin, B.L. and Newsted, P.R. (2003), "A partial least squares latent variable modeling approach for measuring interaction effects: results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study", *Information Systems Research*, Vol. 14 No. 2, pp. 189-217.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Ching, R.K.H. and Tong, P. (2013), "Narrative online advertising: identification and its effects on attitude toward a product", *Internet Research*, Vol. 23 No. 4, pp. 414-438.

Coyle, J.R. and Thorson, E. (2001), "The effect of progressive levels of interactivity and vividness in web marketing sites", *Journal of Advertising*, Vol. 30 No. 3, pp. 65-77.

Cyr, D., Head, M. and Larios, H. (2010), "Colour appeal in website design within and across cultures: a multi-method evaluation", *International Journal of Human-Computer Studies*, Vol. 68 Nos 1/2, pp. 1-21.

Demangeot, C. and Broderick, A. (2007), "Conceptualising consumer behaviour in online shopping environments", *International Journal of Retail & Distribution Management*, Vol. 35 No. 1, pp. 878-894.

Dreze, X. and Zufryden, F.S. (1997), "Testing web site design and promotional content", *Journal of Advertising Research*, Vol. 37 No. 2, pp. 77-91.

Ellen, P.S. and Bone, P.F. (1991), "Measuring communication-evoked imagery processing", in Holman, R.H. and Solomon, M.R. (Eds), *Advances in Consumer Research*, Association for Consumer Research, Vol. 18, Provo, UT, pp. 806-812.

Eroglu, S.A., Machleit, K.A. and Davis, L.M. (2001), "Atmospheric qualities of online retailing: a conceptual model and implications", *Journal of Business Research*, Vol. 54 No. 2, pp. 177-184.

Ettis, S. (2008), "L'atmosphère des sites web marchands et les réactions des consommateurs en ligne: impact de la couleur dominante, de la musique d'ambiance et de l'animation", PhD thesis, IAE de Nantes, Nantes.

Fortin, D.R. and Dholakia, R.R. (2005), "Interactivity and vividness effects on social presence and involvement with a web-based advertisement", *Journal of Business Research*, Vol. 58 No. 3, pp. 387-396.

Frikha, A. and Khrouf, L. (2013), "Scaling mental imagery: an application to commercial web sites", *International Journal of Consumer Studies*, Vol. 37 No. 4, pp. 401-413.

Galitz, W.O. (1997), *The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques*, Wiley, New York, NY.

Gavard-Perret, M.L. and Helme-Guizon, A. (2003), "L'imagerie mentale: un concept à redécouvrir pour ses apports en marketing", *Recherche et Applications en Marketing*, Vol. 18 No. 4, pp. 59-79.

Gnambs, T., Appel, M. and Batinic, B. (2010), "Color red in web-based knowledge testing", *Computers in Human Behavior*, Vol. 26 No. 6, pp. 1625-1631.

Gorn, G., Chattopadhyay, A., Sengupta, J. and Tripathi, S. (2004), "Waiting for the web: how sreen color affects time perception", *Journal of Marketing Research*, Vol. 41 No. 2, pp. 215-225.

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, Prentice-Hall, Incorporated, NJ.

Helme-Guizon, A. (2000), "Contribution à l'étude du rôle de l'imagerie dans la persuasion publicitaire: éléments en faveur de l'analyse du thème des images mentales", *Proceedings of the 16th French Marketing Association Conference, Montréal*, pp. 551-567.

Houston, M.J., Childers, T.L. and Heckler, S.E. (1987), "Picture word consistency and the elaborative processing of advertisements", *Journal of Marketing Research*, Vol. 24 No. 4, pp. 359-369.

Huang, E. (2012), "Online experiences and virtual goods purchase intention", *Internet Research*, Vol. 22 No. 3, pp. 252-274.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Khrouf, L., Frikha, A. and Lemoine, J.-F. (2012), "Le rôle de l'imagerie mentale dans la compréhension des réponses des internautes", *Proceedings of the 11th Marketing Trends Conference, Venice*.

Kiss, G. and Esch, F.R. (2006), "Effects of interactive and imagery strong web sites", in Diehl, S. and Terlutter, R. (Eds), *International Advertising and Communication*, Wissenschaft, Wiesbaden, pp. 361-377.

Kohler, C.F., Rohm, A.J., De Ruyter, K. and Wetzels, M. (2011), "Return on interactivity: the impact of online agents on newcomer adjustment", *Journal of Marketing*, Vol. 75 No. 2, pp. 93-108.

Lao, A. (2011), "Etude exploratoire des effets de l'imagerie mentale issue de la présentation des produits sur un site marchand: proposition d'un modèle conceptuel de recherche", *Management et Avenir*, No. 44, pp. 101-123.

Lao, A. (2013), "L'imagerie mentale et ses déterminants comme facteurs de réponses émotionnelles et comportementales du consommateur: une analyse en situation d'achat en ligne", *Recherche et Applications Marketing*, Vol. 28 No. 3, pp. 60-83.

Lee, W. and Gretzel, U. (2012), "Designing persuasive destination websites: a mental imagery processing perspective", *Tourism Management*, Vol. 33 No. 4, pp. 1270-1280.

Liang, H., Saraf, H., Hu, Q. and Xue, Y. (2007), "Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management", *MIS Quarterly*, Vol. 31 No. 1, pp. 59-87.

Lichtlé, M.-C. (2002), "Etude expérimentale de l'impact de la couleur d'une annonce publicitaire sur l'attitude envers l'annonce", *Recherche et Applications en Marketing*, Vol. 17 No. 2, pp. 23-39.

Lutz, K.A. and Lutz, R.J. (1978), "Imagery eliciting strategies: review and implications of research", in Hunt, H.K. (Ed.), *Advances in Consumer Research*, Association for Consumer Research, Vol. 5, Ann Arbor, MI, pp. 611-620.

MacInnis, D.J. and Price, L. (1987), "The role of imagery in information processing: review and extensions", *Journal of Consumer Research*, Vol. 13 No. 4, pp. 473-491.

Manganari, E.E., Siomkos, G.J., Rigopoulou, I. and Vrechopoulos, A.P. (2011), "Virtual store layout effects on consumer behaviour; applying an environmental psychology approach in the online travel industry", *Internet Research*, Vol. 21 No. 3, pp. 326-346.

Mittal, B. (1990), "The relative roles of brand beliefs and attitude toward the ad as mediators of brand attitude: a second look", *Journal of Marketing Research*, Vol. 27 No. 2, pp. 209-219.

Oh, J., Fiorito, S.S., Cho. H. and Hofacker, C.F. (2008), "Effects of design factors on store image and perceived merchandise quality in web based stores", *Journal of Retailing and Consumer Sciences*, Vol. 15 No. 4, pp. 237-249.

Pearson, R. and Van Schaik, P. (2003), "The effect of spatial layout and link colour in web pages on performance in a visual search task and an interactive search task", *International Journal of Human-Computer Studies*, Vol. 59 No. 3, pp. 327-353.

Petty, R.E., Cacioppo, J.T. and Schumann, D. (1983), "Central & peripheral routes to advertising effectiveness: the moderating role of involvement", *The Journal of Consumer Research*, Vol. 10 No. 2, pp. 135-146.

Roy, A. and Tai, S.C. (2003), "Store environment and shopping behavior: the role of imagery elaboration and shopping orientation", *Journal of International Consumer Marketing*, Vol. 15 No. 3, pp. 71-99.

Schenkman, B.N. and Jönsson, F.U. (2000), "Aesthetics and preferences of web pages", *Behaviour & Information Technology*, Vol. 19 No. 5, pp. 367-377.

Schlosser, A.E. (2003), "Experiencing products in the virtual world: the role of goal and imagery in influencing attitudes versus purchase intentions", *Journal of Consumer Research*, Vol. 30 No. 2, pp. 184-198.

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Schluchter, M.D. (2008), "Flexible approaches to computing mediated effects in generalized linear models: generalized estimating equations and bootstrapping", *Multivariate Behavioral Research*, Vol. 43 No. 2, pp. 268-288.

Shrout, P.E. and Bolger, N. (2002), "Mediation in experimental and non-experimental studies: new procedures and recommendations", *Psychological Methods*, Vol. 7 No. 4, pp. 422-445.

Vinzi, V.E., Chin, W.W., Henseler, J. and Wang, H. (2010), *Handbook of Partial Least Squares: Concepts, Methods and Applications*, Springer, Berlin.

Volle, P. (2000), "Du marketing des points de vente à celui des sites marchands: spécificités, opportunités et questions de recherche", *Revue Française du Marketing*, Nos 177/178, pp. 83-100.

Wetzels, M., Odekerken-Schröder, G. and Van Oppen, C. (2009), "Using PLS path modeling for assessing hierarchical construct models: guidelines and empirical illustration", *MIS Quarterly*, Vol. 33 No. 1, pp. 177-195.

Wu, C.S., Cheng, F.F. and Yen, D.C. (2008), "The atmospheric factors of online storefront environment design: an empirical experiment in Taiwan", *Information and Management*, Vol. 45 No. 7, pp. 493-498.

Yoo, B. and Donthu, N. (2001), "Developing a scale to measure the perceived quality of an internet shopping site (SITEQUAL)", *Quarterly Journal of Electronic Commerce*, Vol. 2 No. 1, pp. 31-46.

Yuille, J.C. (1985), "A laboratory-based experimental methodology is inappropriate for the study of mental imagery", *Journal of Mental Imagery*, Vol. 9 No. 2, pp. 137-150.

Zhao, X., Lynch, J.G. and Chen, Q. (2010), "Reconsidering Baron and Kenny: myths and truths about mediation analysis", *Journal of Consumer Research*, Vol. 37 No. 2, pp. 197-206.

Appendix 1

Dimensions	Items
"Ease/quantity"	1. Several images crossed my mind
	2. The images quickly came to my mind
	3. No image has crossed my mind
	4. The pictures I saw allowed me to easily generate mental images
"Links"	5. The experience I just lived reminded me of a particular situation
	6. The experience I just lived reminded me of a person I know
	7. What I just saw evoked images related to an experience I lived
	8. This experience triggered images related to a specific memory
"Vividness/Clarity"	9. The mental images I generated are precise
	10. The mental images which crossed my mind are well-defined
	11. The mental images which crossed my mind are clear
"Valence"	12. The mental images I generated are boring
	13. The mental images I generated are negative

Table AI. Frikha and Khrouf (2013) mental imagery's conceptualization

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Appendix 2

Characteristics	Frequencies
Age	Less than 18: 13.8
	Between 18 and 30: 53.5
	Between 31 and 40: 21.8
	Between 41 and 50: 7.3
	Between 51 and 60: 1.5
	More than 60: 2.3
Gender	Men: 52.8
	Women: 47.3
Socio-professional category	Student/pupil: 40.3
	Middle manager: 9
	Senior manager: 29.3
	Teacher: 4.3
	Worker: 1.5
	Liberal profession: 7
	No profession: 7.5
	Retired: 1.3
Education level	Primary: 1
	Secondary: 15
	University: 84
Monthly income	Less than 300dinars: 42.3
	Between 300 and 500dinars: 11.3
	Between 501 and 1,000dinars: 17
	Between 1,001 and 1,500dinars: 22.5
	More than 1,500dinars: 7
Average duration of using internet per week	Less than 10 hours: 19.5
	Between 10 and 20 hours: 20.5
	Between 20 and 40 hours: 49.3
	More than 40 hours: 10.8
Average frequency of using internet per week	Less than 3 times: 8.3
	Between 3 and 5 times: 26.8
	Between 5 and 7 times: 40.3
	More than 7 times: 24.8

Table AII.
Sample characteristics

Appendix 3

Figure A1.
The homepage of the experimental web site (blue version)

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

Downloaded by TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES At 20:22 09 November 2016 (PT)

About the authors

Lilia Khrouf is a Senior Lecturer of Marketing in the Marketing Department at the School of Business of Tunis (ESC Tunis). She received her PhD simultaneously from the University of Manouba (Tunisia) and the University of Nantes (France). Her current research interests include essentially web-surfers' behaviour, e-commerce, websites' atmosphere, etc. Lilia Khrouf is the corresponding author and can be contacted at: lilia.khrouf@yahoo.fr

Azza Frikha is a Professor of Marketing in the Department of Marketing at the School of Business of Tunis (ESC Tunis). She received her PhD from the University of Rennes (France). Her current research interests include consumer behaviour, family decision, websites' atmosphere, etc. She has published papers in journals as the *Journal of Islamic Marketing*, *International Journal of Consumer Studies*, *Gestion 2000*, etc.

For instructions on how to order reprints of this article, please visit our website:
www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: **permissions@emeraldinsight.com**