IMPACT OF LEARNING STYLES ON WEB SHOPPERS' PREFERENCE FOR ELECTRONIC CATALOG FEATURES: AN IMPLICATION FOR DESIGNING CUSTOMIZED CATALOGS

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ABSTRACT

This study examines the impact of web shoppers' learning styles on their preference for different aspects of information presentation via electronic catalogs, and suggests that learning groups are significantly different based on their preference for text-oriented catalogs, visually-oriented catalogs, animated catalogs, customizable animated catalogs, and virtual trial. The study also found significant correlations between VARK (visual, auditory, read/write, kinesthetic) scores and preference for different features of electronic catalogs.

Keywords: Learning style, Electronic catalogs, Virtual trial.

INTRODUCTION

Internet Commerce has tremendous upside potential. Online retail sales are expected to grow from $172 billion in 2005 to $329 billion in 2010 [5]. Although the potential of online shopping is enormous, successful methods of attracting customers and providing them with adequate amount of information remain elusive. Online retailers use electronic catalogs to provide information about their products and services. However, most web-based electronic catalogs are static in nature and are not customizable to individual shoppers' knowledge, needs, abilities, or preference [10]. Such catalogs cause "information overload" and limit their usefulness to online shoppers. Due to information overload, online shoppers may get lost in hyperspace, may not understand how one particular product can meet their needs, or simply may not find what they are looking for [10]. The decisions consumers make to purchase products or services are based on the process of learning [13]. "Personalization" can play a very significant role in facilitating consumer learning, and hence, decision making. While considerable research has been conducted on website visualization, customization, aesthetics of websites, and ease-of-use [7] [6] and technicality associated with generating "personalized" or "customized" electronic catalogs, only few studies have focused on consumer preference factors, based on which effective "personalized" or "customized" catalogs can be generated. The purpose of this study is to examine whether learning styles influence individual preference for information presented via online catalogs, such as, preference for 3-D versus 2-D catalogs, text-oriented catalogs, visually-oriented catalogs, animated catalogs, audio enabled catalogs, and virtual trials of the cataloged products.

BACKGROUND LITERATURE

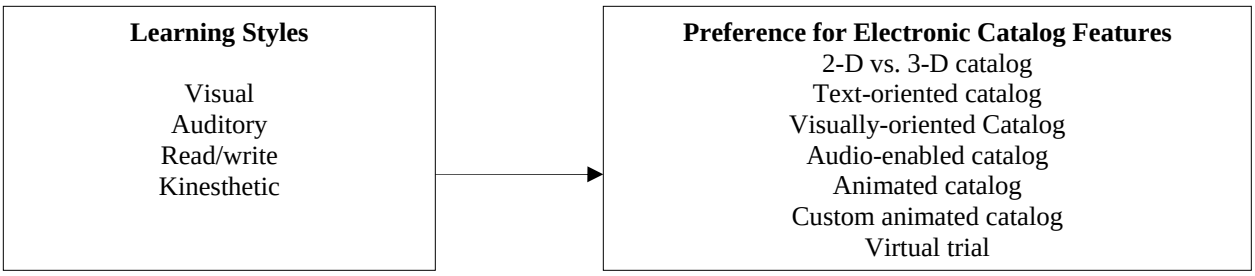
Shim et al. [12] indicate that searching the Internet for product information leads to an intention to purchase the product online. Describing products adequately through website may reinforce the

intention to search the web for product information and thus the corresponding intention to purchase online [9]. Therefore, the daunting task facing web retailers is not simply to present web shoppers with every piece of product information but rather to provide them with the information that is appropriate for their specific needs. The ability of websites to generate customized catalogs may fulfill web shoppers' information needs better, which, in turn, may lead to favorable buying behavior. The greatest problem associated with generating customized electronic catalogs is to decide the basis for customization. In order to solve this difficulty, web retailers can provide shoppers with customized electronic catalogs generated based on their learning styles that suit their individual needs and facilitate their buying decisions. Prior studies indicate that web shoppers' learning styles can be used as basis for determining their preference for different formats of information presentation [9].

CONCEPTUAL MODEL

A conceptual framework of relationships between web shoppers' learning styles and their preference for electronic catalog features is presented in Figure 1.

FIGURE 1
Conceptual Model



Learning Styles

Learning style refers to individual's habitual or typical way of perceiving, remembering, thinking, problem solving, and information processing [1]. Each learner has an individual learning style, which is thought to be an enduring, patterned, and preferred mode of learning [13]. Sproles and Sproles [13] argue that consumer's decision to purchase products and services is based on a process of learning. Thus the differences in consumer learning styles play significant roles in consumer decision making. Since electronic catalogs play the central role in consumer learning in web-based shopping, it is very likely that web shoppers want electronic catalogs be generated to serve their individual learning needs to facilitate their purchase decisions.

Electronic Catalogs and Consumer Decision Making

Electronic catalog (e-catalog) refers to an online display and descriptions of products and services. Electronic catalogs can be presented in many different formats (e.g. 2-D versus 3-D catalogs, text-oriented catalogs, visually-oriented catalogs, audio-enabled catalogs, animated catalogs, custom animated catalogs, and virtual trial). Presentation formats of the electronic

catalogs can play a significant role in inhibiting or facilitating web shoppers' decision making through virtual experience [8]. Virtual experience can lead to positive "consumption experience," which is the true value of a product for customers [8]. The bottom line is information provided by electronic catalogs needed to be varied (include various distinguishing features) according to web shoppers' preferred mental model/learning styles in order to encourage or facilitate their purchase decisions. Some distinguishing features of electronic catalogs are presented in Table 1.

TABLE 1
Description of E-Catalog Features

E-Catalog Feature	Description
3-D versus 2-D catalogs	3-D electronic catalogs portray three dimensional views of the products; 2-D catalogs portray two dimensional views of the products.
Text-oriented catalogs	At least 60% contents of the electronic catalogs are in the text form (textual description). Other contents are in picture, audio, video, etc. form.
Visually-oriented catalogs	At least 60% contents of the electronic catalogs are in the visual form (image/video). Other contents are in audio, text etc. form.
Audio-enabled catalogs	Audio descriptions of the attributes of the products are included in the catalogs.
Animated catalogs	Animations are included in the catalogs for facilitating the viewing of the products from different angles.
Custom animated catalogs	This feature allows the web shoppers to adjust the shape, size, and color of the cataloged products.
Virtual trial	Virtual trial enables web shoppers to have online trial of the product/s they will be buying.

RESEARCH QUESTION AND HYPOTHESES

In this study, we examine the research question "Is there a relationship between web shoppers' learning styles and their preference for different features of electronic catalogs?" and propose the following hypotheses.

3-D Versus 2-D Catalogs

Li et al. [8] indicate that consumers can learn better when utilizing interactive 3-D visualization than simply 2-D graphics or video for certain types of products. They also noticed that there were significantly more recorded cognitive activities in the 3-D visualization condition than in the 2-D graphics. Therefore, we propose the following hypothesis.

H1: Learning style has significant influence on web shoppers' preference for 3-D versus 2-D electronic catalogs.

Text-Oriented Catalogs

Visually-oriented people are better in performance than the verbalizers in text-plus-picture condition and the verbalizers than the visualizers/imagers in text-plus-text condition [11]. Therefore, the following hypothesis is proposed.

H2: Learning style has significant influence on web shoppers' preference for text-oriented electronic catalogs.

Visually-Oriented Catalogs

Electronic displays (e.g., electronic product catalogs) provide a strong visual connection between human and computer. One goal of display research is to match information output of the display to information capacity of the human visual system [2]. We propose the following hypothesis.

H3: Learning style has significant influence on web shoppers' preference for visually-oriented electronic catalogs.

Audio-Enabled Catalogs

Human cognitive styles (e.g., learning styles) play an important role in determining the amount of auditory information individuals can absorb and their preference for absorbing auditory information [3]. The following hypothesis is proposed to test individuals' preference for audio in electronic catalogs based on their cognitive orientation.

H4: Learning style has significant influence on web shoppers' preference for audio enabled electronic catalogs.

Animated Catalogs

3D-enabling electronic catalogs are making the online shopping experience one step closer to reality by animating online products' color, depth and maneuverability. We propose the following hypothesis to test the effect of web shoppers' brain orientation and learning styles on their preference for animated electronic catalogs.

H5: Learning style has significant influence on web shoppers' preference for animated electronic catalogs.

Custom Animated Catalogs

The merger between 3D and web technologies promises to be a boon for all Internet retailers, allowing them to create custom animated electronic catalogs [14]. By marrying these technologies, Internet retailers can enable web shoppers to view and manipulate "real life" product models on the web from all possible angles and configure these models based on their specific needs [14]. Therefore, the following hypothesis is proposed.

H6: Learning style has significant influence on web shoppers' preference for custom animated electronic catalogs.

Virtual trial

Trialability of products and services plays an important role in consumer purchasing decisions [4]. Thus we propose the following hypothesis.

H7: Learning style has significant influence on web shoppers' preference for virtual trial of the cataloged product.

METHODOLOGY

The research methodology of this study involved a field survey using two different instruments, namely, the VARK (Visual, Aural, Read/Write, and Kinesthetic) questionnaire, and an e-catalog survey questionnaire. Data were collected from student subjects enrolled at a large Southwestern state university in the United States. The entire survey was conducted in one session of approximately 25 minutes duration. For the VARK questionnaire, data were collected using an interactive online program. The program to record participants VARK scores is available at the website http://iliad.cats.ohiou.edu/vark/questionnaire.htm. For e-catalog questionnaire, participants' responses were collected through paper and pencil means.

RESULTS AND CONCLUSION

ANOVA results (Table 2) show that learning groups are significantly different based on their preference for text-oriented catalogs (H1), visually-oriented catalogs (H2), animated catalogs (H4), customizable animated catalogs (H6), and virtual trial (H7), and that they cannot be significantly differentiated by their preference for 3-D versus 2-D catalogs (H3) and audio enabled catalogs (H5).

TABLE 2
ANOVA Results Summary

Dependent Variable	F-value	P-value	Conclusion
Text-oriented catalogs	2.464	0.048	H1 Supported
Visually-oriented catalogs	2.016	0.076	H2 Marginally supported
3-D versus 2-D catalogs	0.723	0.577	H3 Not supported
Animated catalogs	13.584	0	H4 Supported
Including audio description	1.121	0.349	H5 Not supported
Including custom animation	6.477	0	H6 Supported
Virtual trial	3.907	0.005	H7 Supported

For multiple regression analysis (results in Table 3), we considered VARK scores as independent variables and preference aspects (e.g., text-orientation, visual-orientation, animation, custom animation, audio, 3-D versus 2-D catalogs, and virtual trial) as dependent variables.

TABLE 3
Summary of the Regression Results

Model	Dependent Variable	F-value	Significant Coefficients (VARK)			
			V	A	R	K
1	Preference for text-oriented catalogs	1.294	-	-	-	0.085*
2	Preference for visually-oriented catalogs	5.494**	0.127*	0.153*	-	-
3	Preference for 2-D vs. 3-D catalogs	1.235	0.043*	-	-	-
4	Preference for animated catalogs	7.332**	-	0.275*	0.079*	-
5	Preference for audio enabled catalogs	1.556	-	-	-	-
6	Preference for customizable animation	7.092**	0.244*	-	-	0.188*
7	Preference for virtual trial	4.133**	-	- 0.130*	- 0.159*	-

** All F values are significant at the .05 level of significance.
* All coefficients are significant at the .05 level of significance.

It is evident from the findings of this study that web shoppers do differ in terms of their preference for different features of electronic catalogs based on their individual learning style; hence, catalog designers can use web shoppers learning styles as a basis for generating customized dynamic catalogs catered to serve individual web shopper's learning needs and to facilitate their purchase decisions.

LIMITATIONS AND FUTURE WORK

We haven't studied the possible relationship between web shoppers' preference for different features of electronic catalogs and their brain orientation/hemisphericity. A number of prior studies indicate that brain hemispehericity has a significant influence on verbal or visual orientation of the human beings. Identification of significant relationship between verbal and visual orientation will give the catalog designers another option to use web shoppers' brain hemishericity as a basis for designing electronic catalogs.

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