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# A THEORETICAL FRAMEWORK FOR UNDERSTANDING AESTHETIC EXPERIENCES IN RELATION TO WEBSITE DESIGN AND UTILITARIAN OUTCOMES

[ Research-in-Progress ]

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## Abstract

*Online affective experiences and their relationships to utilitarian and non-utilitarian outcomes are of growing interest. This study investigates one affective experience – aesthetics – and its impact on online utilitarian values. As the concept of web aesthetic experience has not been well studied or understood, this study proposes a novel theoretical model connecting web aesthetic experiences to online utilitarian values. Based on the prior literature from other disciplines, the study treats the aesthetic experience as a complex and multi-dimensional construct, which contains three distinct sub-dimensions: aesthetic appraisal, aesthetic judgment, and aesthetic emotion. The research process will include making the selection of diverse level of aesthetic websites and a cross-over design experiment. The structural equation modelling technique will be employed to evaluate the relationships between the web aesthetic experience and utilitarian outcome. The expected contributions of this study are: (i) to construct a novel theoretical model based on the psychological and philosophical concepts of aesthetic experience and utilitarian value; (ii) to identify the multi-dimensional evidence of web aesthetic experiences; (iii) to provide theoretical and practical knowledge for predicting the utilitarian outcomes through online users' aesthetic experiences. The study also points to the need for more research in this complex area.*

*Keywords: Aesthetic Experience, Aesthetic Appraisal, Aesthetic Judgment, Aesthetic Emotion, Utilitarian Outcomes, Website Design.*

## 1 INTRODUCTION

Functionality and usability design has been one of the main foci in the research of human-computer interaction (HCI) for decades. Studies for developing functional and useful websites, especially based on users' cognition and perception, have been progressed enormously. Recently online users' subjective experiences with the interface interactions have become an important research issue. A new HCI research perspective – designing online affective experiences – has received increasing attention (Cyr et al., 2009; Deng & Poole, 2010). Online affective experiences are attracting not only global interest but are also the target of considerable amounts of research funding. The European Union launched a 6 million Euro (over 8.5 million U.S. Dollar) project, HUMAINE, to investigate the influences of affective computing (HUMAINE, 2010). One online affective experience, namely *aesthetics*, has been noted having influential effects for online interactions. A sensation of web aesthetic experiences has been linked to diverse issues, including online loyalty (Mithas et al., 2007), online trust (Cyr et al., 2009), and users perceptions of visual complexity (Deng & Poole, 2010).

Aesthetics is also an important factor in online utilitarian outcomes (Oates, 2006), which present a key challenge for designers and managers who would like to satisfy users' needs. As visual and textual product information affects online users' recognition about a specific product, it is vital to examine whether web aesthetic experiences would enhance users' perceptions of the electronic products' information. As noted in prior studies of consumer perceptions and willingness for online content consumers would like to focus on some aesthetic components when evaluating online services (Lopes & Galletta, 2006; Hightower et al., 2002). Furthermore, the factors of "perceived visual attractiveness" have also been shown to influence the web usage (Van der Heijden, 2003).

Besides, while a number of studies have investigated the web aesthetic experiences (Lavie & Tractinsky, 2004; Moshagen & Thielsch, 2010; Van Schaik & Ling, 2005), there is little research on examining the relationship between web aesthetic experiences and it leverages (e.g., utilitarian value) and testing their relative effects on economic and behavioral outcomes. There is also little research on understanding the true nature of web aesthetic experiences based on the psychological and philosophical notions. This study, thus, aims to reveal the characteristics, dimensionality, and effects of the web aesthetic experiences and seeks to answer the following two questions based on the knowledge of psychological and philosophical studies about aesthetics:

**RQ1:** *What does an aesthetic experience reside in the website design?*

**RQ2:** *Can web aesthetic experiences influence online utilitarian values?*

This study will provide new contributions to the literature in three major ways. First, it identified the multi-dimensional evidence of aesthetic experiences and sheds light on its nature and relationships to website design. Second, it sheds light on the web aesthetic experiences by integrating psychological and philosophical literature in a new theoretical model. Third, based on the theoretical model, the utilitarian outcomes associated with online users' aesthetics experiences can better predict.

The paper proceeds as follows. First, the nature of web aesthetic experiences is explored in some depth. The justification for relating the web aesthetic experiences to online utilitarian value is then provided. The research model and propositions for the study are then proffered. An empirical study with cross-over experimental design is proposed. Subsequently, the expected contributions are noted.

## 2 CONCEPTUAL BACKGROUND

This study concentrates on two focal phenomena, namely the notion of aesthetics and online utilitarian outcomes, and the connections between these two phenomena. Further details are expressed as follows.

## 2.1 Aesthetics

A number of studies in information systems (IS) have devoted attention to the notion of aesthetics. By understanding the concepts of aesthetics, IS researchers would facilitate web designers and managers to develop more influential and pleasurable web systems (Oates, 2006). HCI studies have noted that the design of aesthetic experiences on a website can influence e-loyalty (Mithas et al., 2007), online trust (Cyr et al., 2009), consumer perceptions and willingness for retrieving online content (Lopes & Galletta, 2006), users perceptions of visual complexity and order (Deng & Poole, 2010), and online auction issues (Gregg & Walczak 2008). One of the HCI studies distinguished users' perceptions of website aesthetics into two main dimensions (Lavie & Tractinsky, 2004): *classic aesthetics*, which is emphasized on orderly, clear, clean, and symmetrical design of a website; and *expressive aesthetics*, namely to reflect to visual richness, diversity, and complexity of a website. Both aspects were found "to positively influence the feeling of pleasure and usability" (Deng & Poole, 2010, p.714).

However, aesthetics was only viewed as a visual element referring to visual qualities that connect a sense of attractiveness or pleasant appearance to a website (Cyr et al., 2009). Most of the aesthetics instrument developed by the IS sphere are encapsulated by codes like pretty, colourful, and bright, and even layout style (Oates, 2006). The aesthetics constructs advanced by human-computer interaction experts are still broad and focused on web functionality. "Aesthetics" was regarded as a uni-dimensional concept. Yet, readers of human-computer interaction textbooks can hardly find any reference to aesthetic considerations in designing a website for the utilitarian purpose.

As such, this study turns to other disciplines to reveal the true nature of aesthetics, including arts, psychology, and contemporary philosophy (Hopkins, 2005; Osborne, 1973; Snoeyenbos, 1982). The seminal study by Leder et al. (2004) has enhanced and enriched our understanding of aesthetic experiences in the HCI realm. The psychological and philosophical arguments are synthesised to present aesthetics in terms of three necessary sub-constructs: *Aesthetic appraisal*, *Aesthetics judgment*, and *Aesthetic emotion*.

- (1) **Aesthetic appraisal:** this dimension includes the processes of perceptual analyses, implicit memory integration, explicit classification, and cognitive mastering and evaluation (Leder et al., 2004, pp.494-501).
- (2) **Aesthetic judgment:** this dimension is reflected on the specific subject presented and is relevant to the object-related cognitive part of aesthetic processing. The result will be based on "the success and evaluation in the cognitive mastering stage" (Leder et al., 2004, p.503).
- (3) **Aesthetic emotion:** this dimension is depended on the subjective success of the information processing and is described as enjoyment, pleasure, or happiness. The emotion results from affective effects and cognitive appraisal (Leder et al., 2004; Scherer, 2005).

There is a lack of in-depth investigation on online perceptions and needs for aesthetics, which contain a number of distinct dimensions and must be treated as a complex phenomenon, as suggested in other disciplines (e.g., Leder et al., 2004; Scherer, 2005). This study tackles the challenges.

## 2.2 Utilitarian Value

The literature has indicated that utilitarian experience is "goal-oriented and emphasizes the functional performance of technology for goal/task-fulfillment" (Deng et al., 2010, p.62). Utilitarian online behaviour (e.g., willingness to pay) has been regarded as task-related and rational activities (Lopes & Galletta, 2006). Perceived online utilitarian value would rely on whether the particular consumption need was achieved soundly, namely a product is purchased in an efficient process with a deliberative service (Mathwick et al., 2001). An online user's reaction to "service excellence" has also been noted as the extrinsic source of reactive value, which is reflected to "the appreciation of delivered promises and performed functions" (Mathwick et al., 2002, p.53).

Based on the prior research evidences above, this study follows Wetzels et al.'s (2009) study, which was based on the studies of Mathwick et al. (2001, 2002), and regards the utilitarian value containing three major sub-constructs: *Service excellence*, *Efficiency*, and *Economic Value*.

- (1) **Service excellence:** this dimension represents the value of operating an ultimate ideal. It is reflected to an online customer's perception when encountering a service which can "deliver on its promises through demonstrated expertise and task-related performance" (Mathwick et al., 2002, p.42).
- (2) **Efficiency:** as "time, effort, and ease with which a product can be purchased is likely to be psychologically salient and particularly memorable among goal-oriented shoppers" (Mathwick et al., 2002, p.54), *manage time, makes life easier, and fits schedule* were proposed to assess the efficient aspect of utilitarian value.
- (3) **Economic value:** the concept of this dimension contains acquisition and transaction value. The acquisition value means having a good economic value and a reasonable and acceptable price of a product. The transaction value signifies the psychological pleasure of a purchase experience.

### 2.3 Aesthetic Experiences and Utilitarian Outcomes

The question remains: *Is aesthetic experience theoretically associated with utilitarian outcomes?* To answer this question, it is essential to go back to the nature of aesthetics. Aesthetics can bring positive emotions, such as pleasure and happiness (Leder et al., 2004; Scherer, 2005). The literature has noted that "the pleasure that comes with beautiful things may change the way we process information" (Tractinsky & Hassenzahl, 2005, p.67) and positive emotions have their certain value in themselves and also have their consequences (Scherer, 2005).

The utilitarian value is considered as a consequence which aesthetic experiences and arousal can be positively related to it (Oates, 2006). Positive experiences can be associated with consumer activities and provide utilitarian value (Babin et al., 1994). Visual appeal and the positive emotional dimension of the aesthetic experiences offer direct pleasure for its own sake. Therefore, when designing a digital artefact (such as an utilitarian-oriented website), it is necessary to connect the aesthetic concepts because it might create a new crowded market-place based on generating positive experiences in users or facilitating to satisfy a number of human needs (Lopes & Galletta, 2006).

The idea of meeting needs leads to the theories of human motivation. The current study makes use of a later work by Ford (1992), which integrates a number of other theories. Ford (1992) categorized human goals as: (i) affective goals; (ii) cognitive goals; (iii) subjective organization goals; (iv) self-assertive social relationship goals; (v) integrative social relationship goals; and (vi) task goals. The connections between aesthetic experiences and human utilitarian goals can be established from the cognitive goals and task goals, associated with the affective goals by the third dimension of aesthetic experience – *aesthetic emotion*. The affective goals include the notions of contentment, gladness, and good feelings. When positive aesthetic emotions are getting higher, it is believed an online user's perceived utilitarian value would also be higher.

In sum, aesthetics is associated with utilitarian outcomes because utilitarian value satisfies a number of human needs. However, the effect of online users' aesthetic experiences on utilitarian value is less clear and is needed for thorough research.

### 2.4 Design Features with Aesthetics and Utilitarian

Prior studies have indicated that attractive human-computer interfaces would enhance online users' arousal and maintain their attention and willingness (Cyr et al., 2009; Deng & Poole, 2010; Gregg & Walczak, 2008). Researchers have devoted efforts to understand the role of aesthetics in online interface design and its influences on the users (Lavie & Tractinsky, 2004; Moshagen & Thielsch, 2010; Van Schaik & Ling, 2005). Issues of visual appeal and aesthetics have been increasingly important for the HCI design because human emotions and aesthetic experiences do play a vital role in many types of utilitarian and non-utilitarian activities.

The literature on the visual aesthetics of design has suggested that aesthetics is a crucial characteristic of hedonic experienced (Lavie & Tractinsky, 2004). Aesthetic design has strong connections with the perceived functionality and usability during the online interaction, as well as with user satisfaction (Moshagen & Thielsch, 2010). Visual appeal, which is driven by design features, attractiveness, and

beauty, has its powerful leverage to the retail setting (Wetzels et al., 2009). However, we do not yet know how the factors of aesthetic appraisal, aesthetic judgment, and aesthetic emotions can be embedded in utilitarian websites. The design concepts of aesthetic experience with respect to online user behaviour require further exploration.

### 3 RESEARCH MODEL AND PROPOSITIONS

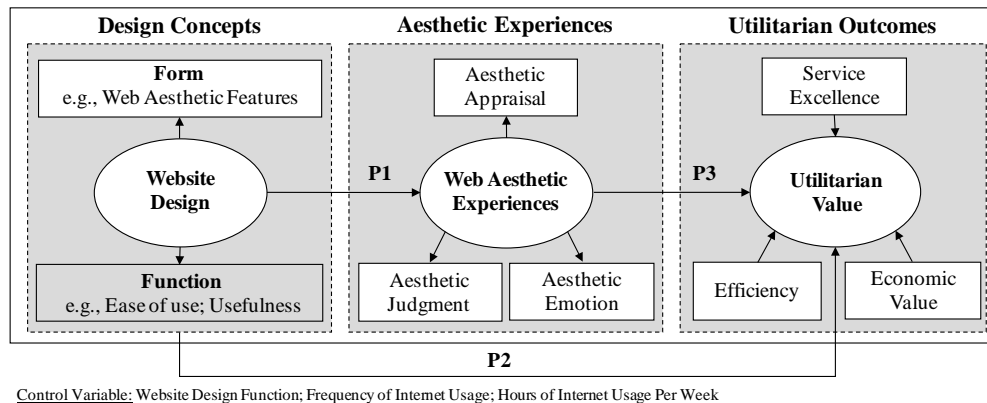


Figure 1. Research Model

Based on the conceptual context in the second section, the theoretical model and propositions of this study are formed and shown graphically in Figure 1. The proposed design rationales would be a highly aesthetic website, a moderately aesthetic website, and a minimally aesthetic website with equivalent website functionality, such as ease of use and usefulness. The first proposition (P1) is based on studies of website aesthetics design and development (see Section 2.4) and considers the effect of different website features on the online user's aesthetic experiences.

**P1:** *Online users obtain a higher aesthetic experience with a higher degree of aesthetic design website.*

The second proposition (P2) considers the effect of different website features on the online user's utilitarian values.

**P2:** *Online users achieve higher utilitarian outcomes with a higher degree of aesthetic design website.*

The third proposition (P3) relates web aesthetic experiences to utilitarian outcomes.

**P3:** *A higher level of web aesthetic experiences is linked to more online utilitarian values.*

### 4 RESEARCH METHOD AND PROCESS

Surprisingly, even though website design has been studied for decades, the goal of explicitly designing an aesthetic website for achieving utilitarian outcomes has been relatively unexplored. The challenge of the study was to design a study that could provide rich data on which the users' aesthetic experiences and utilitarian values could be collected. The research methods and processes will involve – selecting diverse level of aesthetic websites and revealing web engineering of aesthetics to the comparative impacts. These processes are summarised as followed.

#### 4.1 Selecting Diverse Level of Aesthetic Websites

- **Aim:** Selecting appropriate experimental vehicles, namely diverse level of aesthetic websites for investigating the connections between web aesthetic experiences and online utilitarian outcomes.
- **Participants:** 200 students.
- **Data Collection Method:** Discovery mode questionnaire based on the instruments of Lavie and Tractinsky (2004), Moshagen and Thielsch (2010), and Van Schaik and Ling (2005).

- **Research Target:** Three websites with equivalent functionality but different aesthetic design.
- **Data Analysis Method:** Correlation, ANCOVA, Factor Analysis, and qualitative data analysis.
- **Expected Outcomes:** To identify three websites with diverse levels of aesthetic design which are suitable for carrying on the following cross-over design experiment.

#### 4.2 Investigating the Web Engineering of Aesthetics and Comparative Impacts

- **Aim:** Exploring the relationships between the web aesthetic experience and its impacts to the utilitarian values. This study will focus on the online shopping experiences.
- **Participants:** 180 students, excluding those who have participated in the aesthetic websites selection process.
- **Data Collection Method:** Experiment – full experimental mode and discovery mode with Task-driven cross-over design experiment (Pigeon & Raghavarao, 1987). It is acknowledged that when two or more treatments are applied into a research experiment, order effects would occur because some influences carry over from one treatment to the next (Pigeon & Raghavarao, 1987). This kind of order effects should be balanced for achieving reasonable research outcomes (Ratkowsky et al., 1993). This study will follow these suggestions to design rigorous research. Furthermore, a new aesthetic experience instrument based on the psychological and philosophical thoughts will be developed simultaneously.
- **Research Target:** Three web sections selected with diverse degrees of aesthetics.
- **Data Analysis Method:** ANCOVA, Structural Equation Modelling, and qualitative data analysis.
- **Expected Outcomes:** Prominent aesthetics experiences exhibited on the “preferred” site will be compared with the “not preferred” sites. Navigation through each site and design features encountered will be analysed to compare them with the utilitarian outcomes at different points.

## 5 EXPECTED CONTRIBUTIONS

This research is important theoretically because there are currently no widely-accepted theoretical models linking web design features and aesthetic experiences to online utilitarian outcomes. The studies by Lavie and Tractinsky (2004), Moshagen and Thielsch (2010), and Van Schaik and Ling (2005) did not approach the connections of online utilitarian usage. Furthermore, aesthetic experiences are investigated from the more sophisticated viewpoints based on psychological and philological literature. The research will also add knowledge by treating aesthetics as emerging from multi-level, appraisal driven response mechanisms in contrast to other earlier and simpler theoretical models, such as expressive aesthetics (Sanchez-Franco & Roldan, 2010), which was depicted as interrelated to cognitive processes and motivation, but not separate from them.

The work has significant implications for the firms which are dealing with their business in the online environment, because utilitarian outcomes are important. The growth in productivity has been driven by the ICT-intensive firms, especially those communication services, finance, and insurance companies (The Business Council of Australia, 2007). The Business Council of Australia has addressed that the innovative use of ICT, such as emotion-oriented computing, is a particularly significant issue. Further, Microsoft has indicated that experience computing “has broadened the opportunities for differentiation among technology offerings” (Allchin & Kano, 2005). Cognizance of aesthetics and emotions is reported to be driving the economic growth in several industries such as entertainment, shopping, and dining.

Outcomes from this study will include: (i) constructing a novel theoretical model based on the psychological and philosophical view of aesthetics; (ii) employing improved instruments for assessing online users’ web aesthetic experiences; and (iii) systematic testing methods for assessing web aesthetic experiences and its leverage to utilitarian outcomes. The study is in a field where innovation and advances in knowledge are occurring increasingly rapidly. The discovery mode experiments will allow researchers to reveal unhypothesised relationships and explore new conjectures.

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