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A Study of User Experience of Art Websites at Digital Archives Program in Taiwan

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Summary

For visible words and objects, or invisible languages and arts, digital preservation of data has become a critical development trend. However, most of the studies involving digital archive websites focus on issues related to database construction or technology development, with few addressing user experience or interface design. Recently studies focused on emotion and aesthetics issues of an interface, and the emotion have been verified as a key factor influencing users' judgment of a website. Many studies in the field of human-computer interaction (HCI), besides discussing usability, have also investigated the topics of user experience (Lindgaard & Dudek, 2003; Tractinsky, Katz & Ikar, 2000). Therefore, this research focuses on usability and affective factors of art websites in Taiwan national digital archive program from the perspective of user experience. The objectives of this paper are twofold: (1) to explore what the important factors influencing usability; (2) to analyze what the main dimensions influencing affective responses.

The term "National Digital Archives Program," also known as "digitalized archive" or "archive digitalization," refers to archiving of a collection of objects in the format of digitalization; its main purpose is to ensure the availability, durability and intelligent integration of digital data by long-term preservation, maintenance and search accessibility (Digital Library Federation, 1999). Archive digitalization is characterized as using computer as the main media for data storage so that users may share resources beyond time and space limitations. From the generation process, "digital archive" is demonstrated by digital processing (photography, data input, or scan, etc.), along with research and

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descriptions of the collection of objects by the archiving agent. Namely, a digital archive is created in the form of metabase and archived as a digital document. Xie (2003) suggests that the generation process of digital archive information services and products involves the following steps: (1) accumulation, (2) digitization, (3) authoring, (4) accessing, and (5) dissemination. Some collections of digital objects are born digital media; some are converted from non-digital data (Jiang, 2003). The National Digital Archives Program is a key development scheme in which Taiwan government has invested vast human and material resources. Unfortunately, ordinary users do not have a thorough understanding of these achievements.

The procedure of this research was divided into two main experiments. The first experiment was to invite users to evaluate the usability of websites. In second experiment, we used semantic differential scale methods and multidimensional scaling analysis (MSD) to discuss the affective issues of webpages. Before conducting two main experiments, this study invited five experts to select a representative sample of websites, usability criteria and affective adjective pairs. In the first experiment, 32 participants took part in the experiment. They were asked to evaluate 9 websites on a 7-level Likert scale according to the 16 usability criteria. The 16 usability criteria were analyzed using Factor Analysis to identify six major dimensions influencing the digital archive webpages design, which of them are: structure of website, identification, readability, ease of use, content, and visual effect.

In the second experiment, this study constructed the perceptual space of digital archive webpages by using MDS's MDFREF analysis. The result shows that perceptual space can be constructed by two dimensions, labeling the two axes Style and Content, and it indicates that two dimensions have significant meanings for users' first impression when viewing the webpages. The perceptual space of users' affective responses for webpages mainly consists of two dimensions: "poor-rich" and "official-private". We can identify the three major types of today's digital archive webpages in Taiwan from the 2-Dimension perceptual space. As different layouts and interfaces are demonstrated depending on the types of digital archive websites, there are significant differences in users' affective responses.

This study used MDS analysis to find and visualize the relationships between webpages and affective responses to digital archive webpages through the generation of a

perceptual space. The advantage of MDS is that it obtains potential dimensions and design features from participants' judgments about the similarity of webpages. Also, it produces a visualized form of the results which is much easier to observe and explain. In this study, the affective perceptual space allows 2D visualization of the distribution of the different webpages in relation to each adjective pair. For example, it is possible to see which webpage features are the most vivacious- or dull-feeling in the figure. From a designer's perspective, besides designing interfaces according to their intuition, the suggestions made in this paper enable a clearer understanding of the design features that influence affective responses. In addition to two affective adjective pairs that affect user impressions the most, the relation among the given adjectives in the 2D perceptual space also shows that five axes, "dull-vivacious", "standard-changeable", "normal-devised", "imitative-creative" and "boring-interesting", are very close to the users. Pearson product-moment correlation coefficient between these five axes are higher than 0.95, suggesting that these five pairs of adjectives represent closely relative meaning for the users.

There are some aspects not dealt with in this paper, such as considering and comparing differences in users' age, sex, and social grouping, which could form topics for future research. In conclusion, this study examines the advantages and disadvantages of the webpages and intends to serve as a reference source for interface design of future digital archive websites. The results of the study hope to provide the design guidelines for teaching students or creating interfaces.

Keywords: digital archives website, user experience, affective design, MDS analysis