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## ***Understanding User's Intention to the Continued Use of Digital Library: What Are the Roles of Aesthetics and Information Quality?***

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### ABSTRACT

*Digital library has been developed by many institutions around the world. The digital library can be considered as a new information system which brings many benefits to the users. The investigation towards the digital library is important and crucial to understand the reason why users accept and continue to use digital library. Users can search the information and available resources through the digital library website. It is important to know user's perception towards the aesthetics of the digital library. Apart from that, because digital library provides information to users, researchers also need to investigate the quality of information in digital library. This study has used Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2) in order to know user's intention to continue using the digital library.*

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## **1. Introduction**

Digital library can be considered as a new information system. Digital library provides information and resources to the user that includes online databases, e-journals, e-books, in-house databases and so forth. Digital library brings much significances and benefits to the users such as providing access at anytime and anywhere, searching the digital information, downloading as well as lending the resources.

There are many researchers from different fields that have investigated the acceptance and continued usage of the digital library. Previous researchers investigated digital library based on models such as Technology Acceptance Model (TAM) developed by Davis (1989) as well as Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh, Morris, Davis, & Davis (2003). It is important to investigate the factors that can influence users to the continued use of the digital library. Huge funds are needed in order to develop a digital library and it is a waste if the users do not use the digital library when seeking or finding information needed.

### ***1.1 Definitions of key terms***

Below are the definitions of the key terms used in this study:

### 1.1.1 Digital library

Digital library has been defined by Rowlands & Bowden (1999) as a library that can be accessed virtually. It is because; digital library provides information in digital form. While Hong (2002) defined digital library as a library that users can gain information or resources via the digital library website. Digital library can facilitate users in gaining information and information resources needed in a single second. Abdul Latif, Adnan, & Zamaliah (2011) defined digital library as a library that include all types of digital collections where users of the digital library can search as well as access the resources via the library website with the purposes of viewing, downloading, printing and lending reading materials. For this study, the digital library can be defined as a library where users can access the digital library via library website and users can search, retrieve as well as download the digital library resources for their own collections. The digital library concerns with all types of digital collections where usually digital library resources include online databases, e-journals, e-books, as well as in-house databases.

### 1.1.2 Aesthetics

Aesthetics have been defined by Lavie & Tractinsky (2004) as the presence of something that have values in terms of pleasant and beauty either to the sense, imagination or understanding of people towards something. While Chen (2009), described aesthetics as one's perception of beauty and ugliness usually applied to the fine arts.

In the context of this study, aesthetics is defined as the quality of beauty of digital library interface, the clean and orderly of the design used for digital library as well as the originality and creativity of the digital library design. Besides that, aesthetics also include the color of the background used by the library, font style as well as navigation used by the digital library.

### 1.1.3 Information quality

Information quality has been used and defined widely by previous researchers. Miller (2014) defined information quality as user's perception of the attributes of information and their usage by the users. Abdul Latif et al. (2011) defined the information quality as the usability of the digital information resources retrieved by the users from the digital library. For this study, information quality can be defined as the information provided by the digital library that has the characteristics such as usability, accessibility, accuracy and relevancy. The information in the digital library can be retrieved by users without any restriction and the information also conforms to their needs.

## 2. Problem Statements

Many of the studies mentioned that, aesthetics is one of the factors that can attract users to use a website (Heijden, 2003)]. They also mentioned that, aesthetics can influence users to decide either they want to use the website or not. In studies conducted by Lavie & Tractinsky (2004), Norman

(2004), and Sonderegger & Sauer (2010), they mentioned that, aesthetics can influence users to adopt or buy information system and because of the aesthetics also, they continued to use the information system. Theng (1997) mentioned that, it is important to design a good digital library. If designers have the problem in designing the website interface, they also have problems in designing a good website for digital library. Before this study, Dix (1995) said that, if a good designer used the best theory or model when designing a website, but it is not tested at all by users, then it will be deemed useless because it is not known whether users accept their design or not. So, it is important to investigate the user's perception towards aesthetics aspect of the digital library in Malaysia.

The responsibility of the digital librarian is to provide sufficient information and resources to the users to meet the user's requirements and needs. Therefore, it is crucial to investigate the quality of the information in digital library. Besides, in the study conducted by Hanho (2011) he mentioned that, it is important to investigate not only the acceptance of the digital library, but also the factors that may cause the user's intention towards the continued use of digital library. The study by Lagzian, et al. (2011) indicated that only few researchers investigated the user's intention to continue usage of digital library and it would be helpful to extend the investigation on the intention to continue using the digital library. Until this date, there are no researchers that investigates whether the roles of aesthetics and information quality within the context of Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2) developed by Venkatesh, Thong, & Xin (2012) can influence users to have the intention towards continued usage of the digital library. Because of that situation, this study needs to be conducted to know the reason for user's intention to continued use of digital library.

### **3. Purposes of the Study**

This study would like to investigate the roles of aesthetics and information quality within the possible variables from Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2). This study hopes that it could help librarians to attract users to continue using the digital library provided for them.

### **4. Significance of the Study**

The significance of the study is this study will adopt and modify the Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2) developed by Venkatesh, et al. (2012) as a new model namely as aesthetics and information quality on intention to continued use of digital library model. This study is parsimony where the other studies can use the theoretical framework for their field of study such as e-commerce as well as e-learning.

Besides that, this study also will show the reality of the digital library continued use by their users. The important factors (aesthetics, information quality and possible variables from UTAUT2) will show their effect on the user's intention to continued use of digital library.

Besides that, this study could provide librarian, information professional as well as designers of digital library some understanding on the reasons why users have the intention to continue their usage of digital library. Last but not least, this study could become a road map to help designers and librarians to design the digital library in effective ways and more importantly to meet user requirements.

## 5. Researches on Acceptance of Digital Library

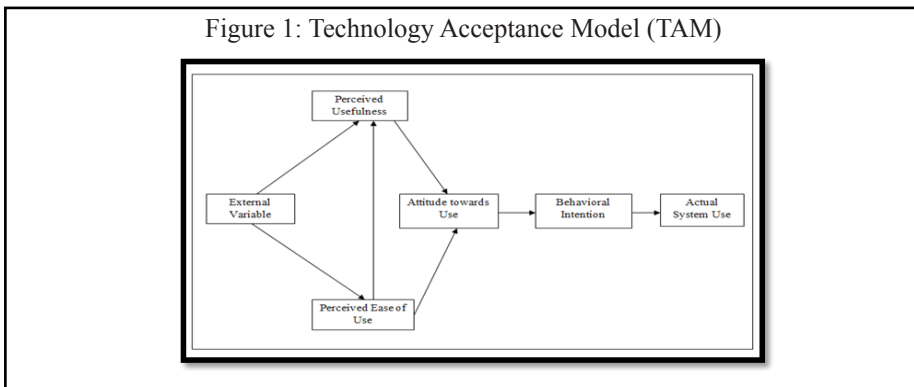
The digital library could be considered as new in this country and it is crucial to investigate the acceptance as well as the continued use of digital library. The acceptance of the digital library has been studied by many researchers in various field of studies. Models that have been used by the previous researchers include Technology Acceptance Model (TAM) developed by Davis (1989) as well as Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003).

## 6. Model/ Frameworks

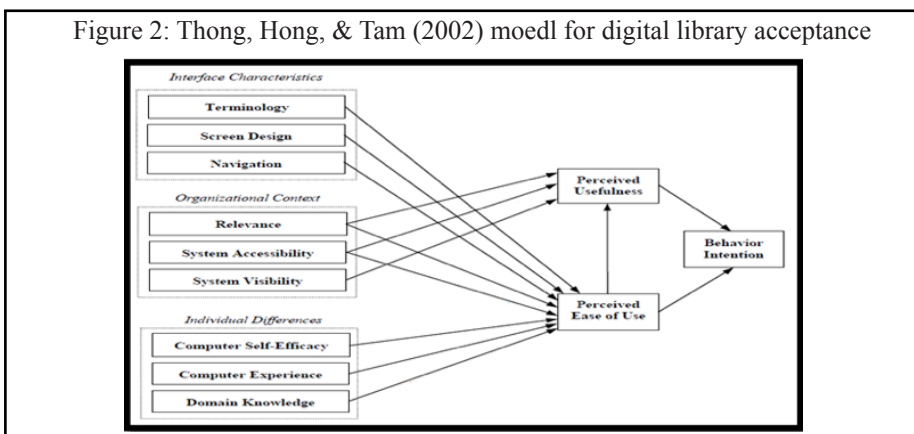
The models that have been used before were Technology Acceptance Model (TAM) as well as Unified Theory of Acceptance and Use of Technology (UTAUT).

### 6.1 Technology Acceptance Model (TAM)

As mentioned earlier, TAM has been developed by Davis (1989). The model is as below:



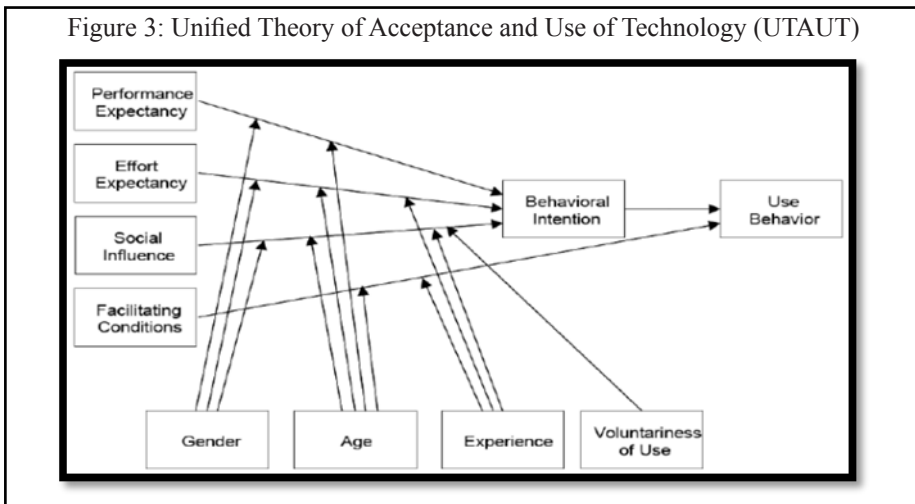
The variables in TAM are perceived usefulness, perceived ease of use, attitude towards use, behavioral intention and actual system use. TAM has been modified by Thong, Hong, and Tam (2002) in order to investigate the acceptance of the digital library where they investigated the interface characteristics, organizational context and individual differences. The figure is as follows:



For the interface characteristics, the elements are terminology, screen design and navigation. While, for the organizational context they include relevance, system accessibility and system validity. The individual differences consist of elements such as computer self-efficacy, computer experience and domain knowledge.

## 6.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

Unified Theory of Acceptance and Use of Technology (UTAUT) model is as follows:



The models that are involved in the Unified Theory of Acceptance and Use of Technology (UTAUT) are:

1. Theory of Reasoned Action (TRA)
2. Technology Acceptance Model (TAM)
3. Motivational Model (MM)
4. Theory of Planned Behaviour (TPB)
5. Combination theory of Planned Behaviour/Technology Acceptance Model (C-TPB-TAM),
6. Model of PC Utilization (MPCU),
7. Innovation Diffusion Theory (IDT)
8. Social Cognitive Theory (SCT)

Many of the previous researchers have used the UTAUT in order to investigate the acceptance and continued use of information system. UTAUT are able to explain about 70% of the behavioral intention while, TAM can only explain 35% of the prediction capacity.

The variables in the UTAUT are performance expectancy, effort expectancy, social influence and facilitating conditions. The moderators used in the UTAUT are age, gender, experience and voluntariness of use.

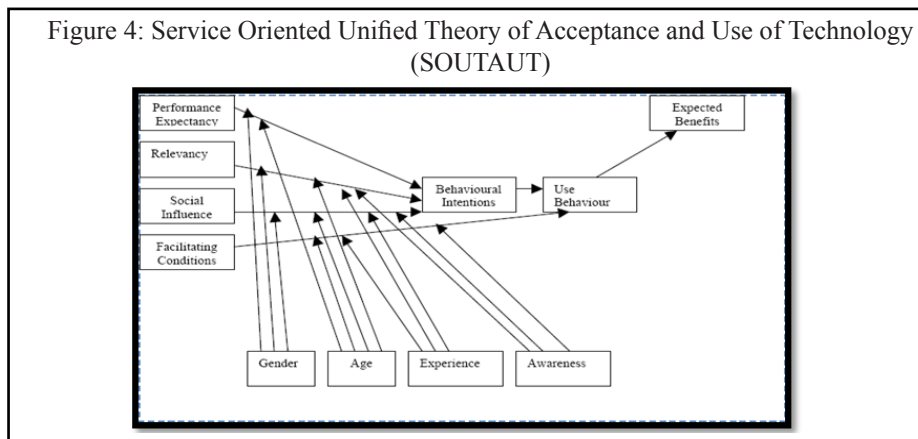
Performance expectancy can be defined as the degree to which using a technology will provide benefits to consumers in performing certain activities; effort expectancy is the degree of ease associated with consumers' use of technology; social influence is the extent to which



consumers perceive that it is important for others (family and friends) to believe they should use a particular technology; and facilitating conditions refer to the consumers' perception of the resources and support available to perform a behavior.

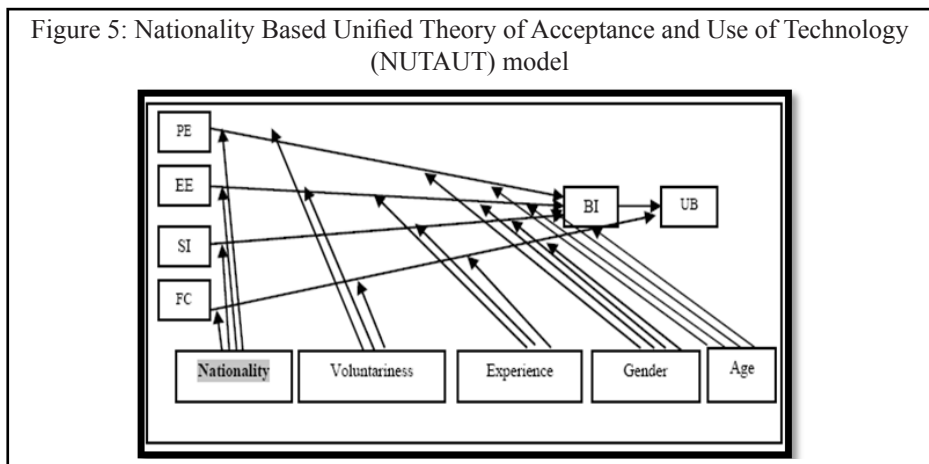
Based on Figure 3, it shows that, performance expectancy, effort expectancy and social influence do influence behavioral intention to use a technology.

The UTAUT models have been used by the previous researchers in order to investigate the acceptance and continued use of digital library. Tibenderana, Ogao, Ikoja-Odongo, and Wokadala (2010) used and modified the UTAUT for their study. Their model is as follows:



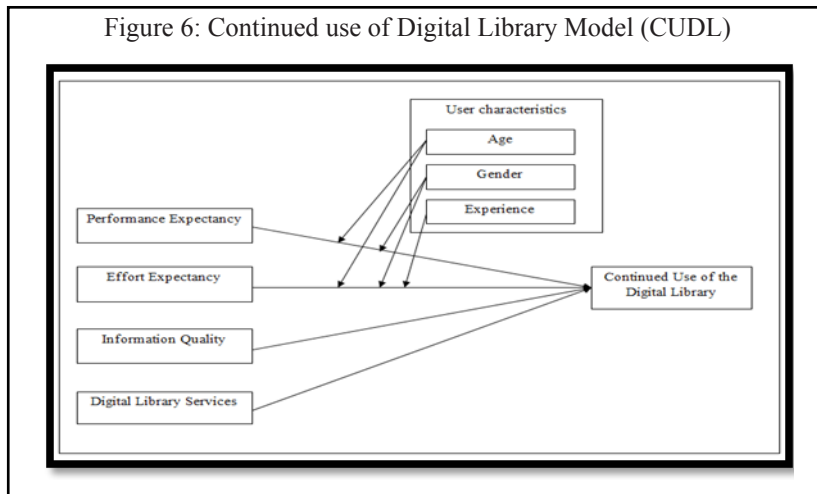
In their study, they replaced the effort expectancy to the relevancy and they also dropped the voluntariness of use to the awareness. Based on their study, it shows that 30% of the end-users have the intention to use the electronic library services.

Orji (2010) also adopts and modified the UTAUT model into Nationality Based Unified Theory of Acceptance and Use of Technology (NUTAUT) model. In their model, they add on the Nationality to investigate the acceptance of the digital library based on nationality. The NUTAUT model is as below:



Based on the findings, it shows that, the nationality has the positive influence in using the digital library.

Other than that, Abd Latif et al. (2011) investigated the continued use of digital library (CUDL) based on UTAUT model. They have used model from Information System Success introduced by DeLone and McLean (2003) in their study. The model is as follows:



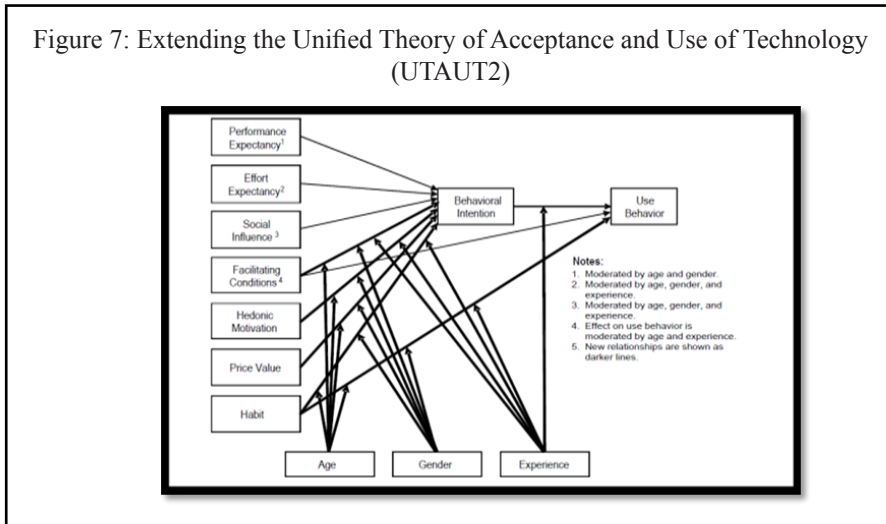
In their study, they only used performance expectancy and effort expectancy from the UTAUT independent variables. They also used two important keys in Information System Success by DeLeon & McLane (2003) which are information quality and service quality. They also used age, gender and experience as their moderator. The results show that, performance expectancy, effort expectancy and information quality have the positive influence to the continued use of the digital library.

Based on the previous researches, there are no researchers that have investigated the roles of aesthetics and information quality within the context of Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2) on the intention to continued uses of digital library.

### 6.3 Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2)

UTAUT2 that has been developed by Venkatesh et al. (2012) includes three more variables which are hedonic motivation, price value and habit. The moderator voluntariness of use was dropped for this model. The model is as follows:

Figure 7: Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2)



Hedonic motivation is defined as the fun or pleasure derived from using a technology, and it has been shown to play an important role in determining technology acceptance and use (Brown & Venkatesh, 2005); price value as consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them (Dodds, Monroe, & Grewal, 1991); and habit has been defined as the extent to which people tend to perform behaviors automatically because of learning (Limayem, Hirt & Cheung, 2007).

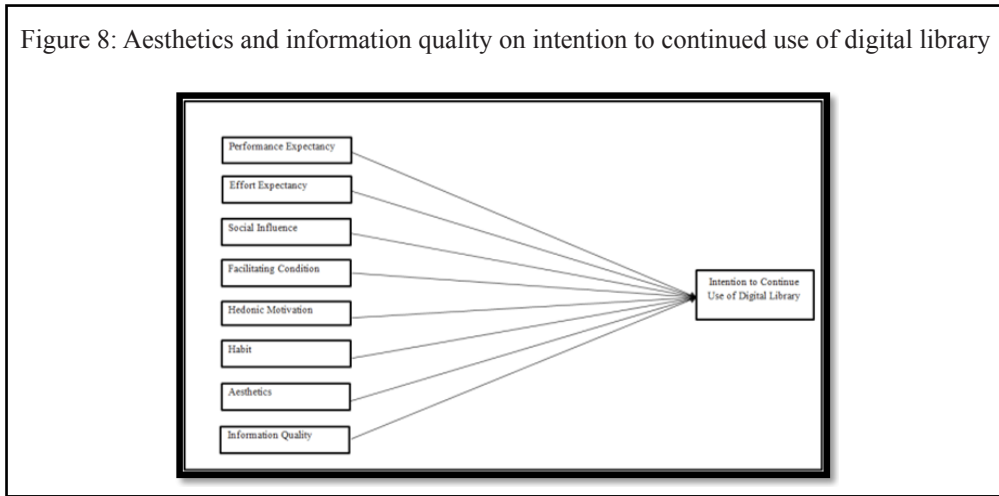
## 7. Proposed Research Framework

As mentioned earlier, there is yet any study investigating the roles of aesthetics and information quality on intention to the continued use of digital library. Hence, this study will investigate the roles of aesthetics and information quality on intention towards the continued use of digital library.

In this study, the model for the aesthetics and information quality on intention to continued use of digital library used model from UTAUT2. All the variables are included except price value because it is irrelevant to the digital library environment. The variables that are involved in this study are performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habits, aesthetics and information quality which are significant to the intention towards continued use of digital library.

The proposed research framework is as follows:

Figure 8: Aesthetics and information quality on intention to continued use of digital library



## 8. Limitations and Recommendation Future Study

The study was quite limited as the investigation was done at one university only in Malaysia which is University Sains Malaysia (USM). The study could be expanded to other universities as well to find the pattern of user's intention to continued use of digital library. This study can be replicated to the whole country in order to investigate and determine the user's intention to continued use of digital library and to know whether the roles of aesthetics and information quality can influence user's intention to continue using the digital library.

Besides that, this study only investigates the roles of aesthetics and information quality and the possible variables from UTAUT2 which according to the researchers' knowledge, these roles are important to be investigated in order to know the user's intention to continued use of digital library.

Hopefully, there are some other roles that can be investigated by future researchers in determining the user's intention to continued use of digital library.

## 9. Conclusions

It is important to investigate the continuous use of the digital library in order to ensure the budget allocated to develop the digital library is worth spending. Besides that, from the research, the librarians can know the reasons or factors that can influence users to continue using the digital library.

Perhaps, this study could give clear understanding to the librarians towards ascertaining user's perception of the digital library aesthetics as well as the quality of the information provided by the digital library. It is futile if the users do not continue to use the digital library since there are a lot of services rendered for them.

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