A Study on the Personalization Characteristics Affecting User’s Intention to Use Mobile Learning

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Abstract. Mobile learning has been rapidly increasing from OpenCourseWare to smartphone applications. However, mobile learning not only has the characteristics of E-learning, but it also has a new characteristic called personalization that reflects the latest trends. This study introduces the personalization characteristic as Technology Acceptance Model (TAM). Personalization can be defined by three characteristics, namely, functionalization, interactivity, and subdivision. This study can be of scientific and practical importance for determining the factors that affect the learner’s preference in using mobile learning.

Keywords: Mobile Learning, Personalization, TAM

1 Introduction

A variety of smartphone brands have recently been introduced to the market and accepted by many users. As a result, the experience rate of mobile learning reached 34.1% as reported by the Korea Statistics Office (KSO). By area, mobile learning was more preferred in language learning (57.1%) and at work (37.2%). It was also reported that 25.7% of e-learning providers run mobile-based businesses, and it was expected to increase up to 37.9% in the near future. Mobile learning was mostly conducted with a smartphone (65.6%) and a tablet PC (15.6%), which explains that smart devices are the predominant means for mobile learning. Since its beginning in 2001, the MIT OpenCourseWare (OCW) platform was further developed and in 2014, a cyber master’s degree program in Georgia Tech, USA was opened. It also supported mobile learning, which has a significant grown both quantitatively and qualitatively. In order to advance further, mobile learning should take full advantage of the assets of a smartphone, which is the perfect tool for mobile learning. It is also one of the devices that are easy to access, and mostly being carried for 24 hours a day. In addition, it is a device which can collect a user’s information in more detail than any other tools. Such characteristic of a smartphone and the advancement of the big data analytics technology developed the concept of personalization. It means that the service concept evolved from customization, which focuses on meeting the needs of individual users to a personalized service that analyzes an individual’s usage patterns, and provides
better service to the user.[1] The present study is aimed at understanding the effect of the characteristic of personalization and mobile based on the user’s usage of mobile learning. Therefore, this study examines what are the sub-factors of the characteristics that have impact on their intention and frequency in using the mobile learning. In Chapter 2, the concept and characteristics of Technology Acceptance Model (TAM) and personalization are discussed. In Chapter 3, the research model and methodology are presented.

2 Related Researches

2.1 Technology Acceptance Model

For the purpose of developing the Theory of Reasoned Action to provide information or prediction as to the reasons why the users acknowledge technology, Davis conceived the Technology Acceptance Model (TAM).[2] The Technology Acceptance Model explains that two belief variables (perceived usefulness and perceived ease of use) have significant influence on attitude variables, which then influences the user’s intention to use. The strength of the TAM lies in the simplicity and high exploratory power of what attribute a user is influenced in accepting technology. In addition, it can easily advance into several models with the other models, so it has often been applied to the studies of technology and devices. Davis excluded attitude variables from the basic TAM and he demonstrated that the perceived usefulness variable and perceived ease of use have a direct impact on the user’s intention to use. Many subsequent models were also based on the modified TAM.[3] This study also employs the modified TAM in examining if the characteristics of personalization have an impact on TAM.

2.2 Personalization

In his study regarding personalization, Blom defined personalization as a series of process in which the differentiation of system, information contents, interface, and functions change in order to increase individual conformity.[4] Terziyan defined personalization on the basis of three factors, namely, service, content, and dynamic. He claimed that the system provides the function of personalization through the development of contents suitable for individual users.[1] Lee Sung Woo reported that the intention to use information system (Intranet) had an effect on perceived ease of use and usefulness in his study on TAM for information system and personalization. [5].
3 Research Model and Methodology

3.1 Research Model

The research model in Figure 1 is an extended TAM in which the characteristics of personalization (individualization, mediation, and segmentation) and those of mobile (content expandability and ubiquity) are added to the existing TAM as exogenous variables. It is the basis in deriving the factors that have an impact on consumer’s intention for mobile learning.

3.1.1 Personalization Variable

Fan and Poole conducted a study on personalization variables. They drew four elements of personalization (individualization, utilization, mediation, and segmentation) from the Web. [6]

Individualization refers to the use of an environment suitable for an individual’s preference. For example, a user interface and design change signifies freedom. Utilization refers to the increase of an individual user’s efficiency and productivity through the use of a tool or system. Mediation refers to the development of a platform that provides social exchange while differentiated privacy is protected and maintained. Similar to SNS, it enables users to control the degree of exposing themselves and, simultaneously, they can communicate with their classmates in the same course.
Segmentation refers to the differentiated goods and services provided to individuals through the analysis of their patterns. For example, a course needed for a user can be recommended, and push alarm can be activated for study hour. Ubiquity refers to a device that acquires real-time information anytime and anywhere without the restraint of the device user’s location.[7] Various studies on mobile service have demonstrated the efficiency of the characteristics.[8]

In addition, this study investigated the impact of content expandability, which is one of the mobile characteristics, regarding the user’s intention to use mobile learning. It is also one of the elements of Web-Based Instruction (WBI). Learning materials through various applications under mobile environment can be one specific example of it.[9]

The present study chose individualization, mediation, and segmentation as personalization variables. Moreover, it employed ubiquity and content expandability, which are added for the purpose of future research as mobile characteristics, and their effectiveness were tested with the following hypotheses.

### 3.1.2 Hypothesis Test

<table>
<thead>
<tr>
<th>Hypothesized path</th>
<th>Research hypotheses</th>
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<tbody>
<tr>
<td>H1</td>
<td>Individualization will have a positive effect on perceived usefulness.</td>
</tr>
<tr>
<td>H2</td>
<td>Individualization will have a positive effect on perceived ease of use.</td>
</tr>
<tr>
<td>H3</td>
<td>Mediation will have a positive effect on perceived usefulness.</td>
</tr>
<tr>
<td>H4</td>
<td>Mediation will have a positive effect on perceived ease of use.</td>
</tr>
<tr>
<td>H5</td>
<td>Segmentation will have a positive effect on perceived usefulness.</td>
</tr>
<tr>
<td>H6</td>
<td>Segmentation will have a positive effect on perceived ease of use.</td>
</tr>
<tr>
<td>H7</td>
<td>Content expandability will have a positive effect on perceived usefulness.</td>
</tr>
<tr>
<td>H8</td>
<td>Content expandability will have a positive effect on perceived ease of use.</td>
</tr>
<tr>
<td>H9</td>
<td>Ubiquity will have a positive effect on perceived usefulness.</td>
</tr>
<tr>
<td>H10</td>
<td>Ubiquity will have a positive effect on perceived ease of use.</td>
</tr>
<tr>
<td>H11</td>
<td>Perceived ease of use will have an effect on perceived usefulness.</td>
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<tr>
<td>H12</td>
<td>Perceived usefulness will have a positive effect on intention to use.</td>
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<tr>
<td>H13</td>
<td>Perceived ease of use will have a positive effect on intention to use.</td>
</tr>
</tbody>
</table>

Table 1. Research Hypothesis

Table 1. shows the hypotheses of this study. H1–H6 assumed that the characteristics of personalization will have a positive impact on perceived usefulness and ease of use for mobile learning in relation to Figure 1. H7–H10 assumed that the characteris-
tics of mobile will have influence over perceived usefulness and ease of use. H11 is a hypothesis on the relationship between two belief variables (perceived usefulness and perceived ease of use) of TAM, while H12 and H13 assumed that these belief variables will have a positive impact on the user’s intention to use mobile learning, respectively.

3.2 Research Method

The purpose of this study is to understand the impact of personalization characteristics on the intentions of both current mobile learners and potential mobile learners to use mobile learning. In order to verify the relation in Figure 1, a survey will be conducted on students and workers. Frequency analysis will be used to analyze the demographic and general characteristics of the samples. SPSS 12 will be employed as the statistics software. This study will verify the proposed structural equation model by using Smart PLS 3, along with the theories of the precedent studies.

3.2.1 Test Method

In order to provide the same response range, the Likert 5-point scale was applied to the entire construction of the questionnaire. In order to verify the test reliability, which refers to the probability of the same test results, Cronbach’s alpha (\( \alpha \)) was used. If it is above 0.7, it is considered reliable. In addition, when the correlation coefficient of variables is above 0.3, it is considered significant. Furthermore, when collinearity is below 10, it is considered as having no significant correlation between independent variables. The proposed research model is tested with R2 for fitness. When R2 is more than 0.26, the research model can be considered as fit. When the path coefficient is higher than 0.1, it is considered as a statistical significance.

4 Conclusion

The present study examined the impact of the characteristics of personalization (individualization, mediation, and segmentation) and those of mobile (content expandability and ubiquity) based on the intention to use mobile learning while focusing on TAM. In this study, the analysis will be conducted on the relation between external variables and two internal variables (perceived usefulness and perceived ease of use) of TAM. In addition, this study will confirm the effectiveness of use intention of mobile learning, which has been verified by previous studies, and the internal variables of TAM. These empirical analyses will be able to present the importance of each variable and guide mobile learning designers to a more advanced stage in which they will establish an educational system and educational content that reflect the results of this study.
References