ABSTRACT
Using the technology acceptance model (TAM) as the basic theory, this study referred to relevant literature and proposed extension variables to examine the influences of computer self-efficacy, perceived ease of use, perceived usefulness, subjective norms, and attitude, on the behavioral intentions of people who use educational Web sites. We conducted a survey using a self-designed questionnaire, and 248 valid questionnaires were collected. The obtained data were analyzed using descriptive statistics, the Pearson correlation, and path analysis. The results indicate that learners should improve their computer operation abilities prior to attempting to utilize educational Web sites because this can enhance perceived ease of use. Perceived ease of use can affect perceived usefulness and influence a learner’s attitudes and behavioral intentions. The opinions of critical reference groups can encourage people to use educational Web sites, but learners’ experiences and perceptions regarding these sites are more influential. Therefore, experiential learning, in addition to promotion, is a method by which people can be encouraged to learn with educational Web sites in the future.

KEY WORDS
Behavioral intention, educational Web sites, technology acceptance model
2. Theoretical background

The theory of reasoned action (TRA), proposed by Fishbein and Ajzen in 1975 [16], is primarily used to predict and understand human behaviors. The elementary assumption in this theory is that humans are rational and evaluate meanings and consequences prior to performing a behavior by reviewing a variety of information. Based on this theory, a person’s behavior is determined by their behavioral intention, and behavioral intention is determined by attitude and subjective norms. In TRA, subjective norms are the power that influences whether a person complies with important reference groups regarding their appreciation or rejection of a given behavior; attitude is their mental inclination toward a given behavior; and behavioral intention is their willingness to perform a given behavior.

Based on TRA, the TAM [17] [18] can explain and predict people’s acceptance of information technology (Figure 1). The TAM contends that a person’s adoption of an information technology is influenced by their behavioral intention. When learners are confronted with a novel technology, their behavioral intention, which affects their behaviors and attitudes toward technology utilization are affected by perceived usefulness and perceived ease of use. A greater perceived ease of use and perceived usefulness increases behavioral intention and enthusiasm in a learner’s attitude. Learners’ perceived ease of use positively influences perceived usefulness and indirectly affects their behavioral intention.

3. Method

3.1 Research model

Based on a literature review, this study used Davis’ TAM as a theoretical basis and included computer self-efficacy and subjective norms as variables. Figure 2 shows the research model.

Using TAM as a theoretical basis, this study examined behavioral intentions related to the use of educational Web sites by the public. Table 1 illustrates the operational definitions of computer self-efficacy (CSF), perceived ease of use (PEOU), perceived usefulness (PU), subjective norms (SN), attitude (AT), and behavioral intention (BI).

3.2 Reliability and validity

The questionnaire design used for this study referred to the TAM developed by Davis, and the first draft was established based on operational definitions of the variables and relevant literature. The questionnaire comprised 8 questions concerning CSF, 5 questions concerning PEOU, 6 questions concerning PU, 5 questions concerning SN, 6 questions concerning AT, and 4 questions concerning BI. After the questionnaires were returned, we conducted an item analysis and exploratory factor analysis to examine the dimensions to which factors belonged and content for the questionnaires, which acted as a foundation for deleting questions or modifying and transferring questions within various dimensions. Factors with an eigenvalue greater than 1 were extracted using principal component analysis, and the Promax rotation was adopted to maximize differences in factor loadings.

After the factor analyses were performed, we removed three questions that did not correspond to the factor affiliations and extracted six major factors. The eigenvalues for each question were greater than .4, and the original names of factor dimensions were retained. In the final procedure, reliability analyses were performed using Cronbach’s α, and CSF had an α of .903, PEOU .835, PU .925, SN .800, AT .870, BI .867. An overall internal consistency coefficient of .952 was achieved.
Table 2 Reliability analysis

<table>
<thead>
<tr>
<th></th>
<th>Familiarity with, using Web sites to locate desired information, knowing how to use Web sites effectively, and maximizing Web sites’ functionality.</th>
<th>.903</th>
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<tbody>
<tr>
<td>CSF</td>
<td></td>
<td></td>
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<tr>
<td>PEOU</td>
<td>The ease of discovering an educational Web site using the Internet and the ease of searching, browsing, operating, and reading on an educational Web site.</td>
<td>.835</td>
</tr>
<tr>
<td>PU</td>
<td>The enhancement of learning efficiency while using educational Web sites, or increased effectiveness in finishing assignments and reports with the assistance of educational Web sites.</td>
<td>.925</td>
</tr>
<tr>
<td>SN</td>
<td>Using educational Web sites because of family instruction or teaching (or influence) or using educational Web sites because of the influence or recommendation of classmates (or colleagues).</td>
<td>.800</td>
</tr>
<tr>
<td>AT</td>
<td>“I believe there should be more educational Web sites”; or “I believe more people should be familiarized with, and should utilize, educational Web sites.”</td>
<td>.870</td>
</tr>
<tr>
<td>BI</td>
<td>“In the future, I will actively search for various types of educational Web sites to facilitate learning”; or “in the future, I will recommend educational Web sites that I believe are rich in content or easy to use to others.”</td>
<td>.867</td>
</tr>
<tr>
<td>Cronbach’s α</td>
<td></td>
<td>.952</td>
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</table>

3.3 Data collection

The participants in this study consisted of people who had used educational Web sites. Questionnaires were distributed to learners sampled from three educational Web sites from May to August, 2012. A total of 256 valid questionnaires were returned and analyzed. Furthermore, 50% of the participants were male and 50% were female. Participants who were aged 14 or under occupied 46.4% of the sample, 15-25 19.2%, 26-35 18.8%, and 36 or older 15.6%. Participants who were teachers comprised 27.7% of the sample, students 65.6%, and other occupations 6.6%.

4. Results and discussion

To exclude outliers, we analyzed the data’s normality, constancy, independence, and multicollinearity before performing an official analysis. Eight samples were removed following the analysis, whereas the results from the multiple regression analysis on the additional 248 samples matched basic assumptions. Neither multicollinearity nor outliers were found.

The data in this study included six variables. The correlation coefficients of the six variables, shown in Table 3, implied that all of the variables were correlated. Therefore, no factor should be ignored if behavioral intention regarding the use of educational Web sites is to be enhanced. Among the variables, BI had the highest correlation with PU and AT. Consequently, if the frequency of people’s use of educational Web sites is to be increased, the efficacy of Web site content planning should be considered, and positive attitudes toward relevant Web sites should be developed among the public.

Table 3 Correlation coefficients of the variables

<table>
<thead>
<tr>
<th></th>
<th>CSF</th>
<th>PEOU</th>
<th>PU</th>
<th>SN</th>
<th>AT</th>
<th>BI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSF</td>
<td>1</td>
<td>.786***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>.666***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>.524***</td>
<td>.757***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>.613***</td>
<td>.662***</td>
<td>.774***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>.635***</td>
<td>.673***</td>
<td>.790***</td>
<td>.730***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td>.333***</td>
<td>.333***</td>
<td>.333***</td>
<td>.333***</td>
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<td>1</td>
</tr>
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### Cronbach’s α

<table>
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<tr>
<th></th>
<th>CSF</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>38.1</td>
<td>17.03</td>
<td>34.56</td>
<td>12.61</td>
<td>17.45</td>
<td>13.18</td>
</tr>
</tbody>
</table>

The path diagram in Figure 3 shows the results of the analyzed direct effects in the model. A total of eight sets of variables showed statistically significant effects ($p < .05$), indicating that they possessed a certain degree of influence over each other. Among the variables, CSF was the most effective for predicting PEOU. A high CSF signified a stronger perception among learners that educational Web sites were easy to use.

Regarding the direct effects of behavioral intention, if learners believed that the content of educational Web sites could assist in solving problems or increasing work performance, their intention to use the Web site would increase. Additionally, as learners’ attitudes toward educational Web sites became increasingly positive, intentions to use these sites were also enhanced.

Figure 3 Tested model of behavioral intention for educational Web sites using with standardized path coefficients provided

Based on the indirect effects of the path analysis, CSF→PEOU→PU and PEOU→PU→AT had the greatest indirect effects—.333 and .251, respectively. The second highest path coefficient was .197, shown in PU→AT→BI.
and CSF→PU→AT, and the third highest was .173 in CSF→PEOU→AT.

Integrating the direct and indirect effects, the results regarding the TAM were identical to the results proposed by Davis. The ease of use of educational Web sites influences learners’ perceived usefulness and attitudes toward the Web sites, and, therefore, learners’ behavioral intentions are affected. The helpfulness of educational Web site content can affect learners’ attitudes and behavioral intentions toward these sites. PEOU indirectly affected AT though PU, and PU indirectly affected BI through AT. This shows that easy operations that allow for easier learning of Web site content and further develop positive attitudes toward and stronger intentions to use the Web site are a critical step for educational Web site design. However, educational Web sites should not just be easy to use. Because no significant difference existed for the effect of PEOU on BI, and PEOU did not have a stronger influence on AT than did PU, the usefulness of Web site content is also important to educational Web design.

Regarding the extension variables, CSF affected PEOU and PU and had the greatest influence on PEOU. Furthermore, CSF did not directly affect AT. Therefore, a learner should develop the ability to operate a computer before using educational Web sites. Despite the irrelevance of the relationship between the ability to use a computer and learners’ positive attitudes toward educational Web sites, having greater ability directly influences learners’ evaluations of the usefulness and usability of Web sites.

SN influenced BI, implying that opinions from important reference groups motivate people’s use of educational Web sites. However, PU and AT had more influence on BI than did SN, indicating that, regarding the use of educational Web sites, learners pay greater attention to their feelings or perceptions regarding using Web sites rather than other people’s opinions or behavioral norms.

5. Conclusion

Learners should improve their ability to use a computer before utilizing educational Web sites. According to our results, CSF influenced PEOU and PU. Higher computer self-efficacy results made it easier for learners to obtain desired information from educational Web sites. Regarding teaching, teachers or parents must familiarize students with how to operate computers prior to encouraging them to use educational Web sites.

Learners’ perceived ease of use influences perceived usefulness, which subsequently influences learners’ attitudes, subsequently affecting behavioral intention. Therefore, regarding pedagogy, educational Web sites should be selected carefully for learning. Ease of use for an interface and content correctness are the elements that cultivate positive attitudes and increase learner willingness to return to Web sites. When creating educational Web sites, developers must design learner interfaces that are user-friendly and suitable for learners. In addition, the credibility and accuracy of Web site content must be verified because content correctness directly affects learners’ intentions.

Other’s opinions and behavioral norms influence learners’ inclinations to use educational Web sites, although learners’ feelings tend to be a stronger motivation. In addition to promotion, experiential learning should be used to encourage people to adopt educational Web sites.

This study only comprised 248 participants, most of whom were teachers or students. Whether this participant demographic resulted from the composition of learners who use educational websites or from a different cause should be investigated in future studies. We suggest that future studies increase the amount of questionnaire participants and include background variables in analysis. Additional interpretations and predictions regarding differences among various background variables can provide references for future educational Web site designs.

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References