Effects of Innovation Characteristics and Emotional Attachment on Adoption of the Digital Magazine

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Abstract - Research of digital publishing content has previously focused only the impact of its functionality or characteristics towards the intention to adopt the product. Over the years, with the advancement of information and communication technology and the adoption of various personal mobile device platforms, digital magazine adoption rates are soaring rapidly. Much of this phenomenon results from the acceptance of tablet computing devices. However, other additional factors contributing to the high adoption rate of digital magazine are ignored. This study investigates the effect of digital magazine innovation characteristics and the emotional attachment to paper magazines on the adoption of the digital magazines. The emotional attachment is found not to be a significant determinant factor both in terms of the intention to adopt and the frequency of use after adoption. Complexity and risk, and perceived inconvenience factors play important roles in the frequency of use after adoption.

Keywords: Innovation, Emotional Attachment, Digital Magazine, Adoption, Tablet Computing Device

1 Introduction

Progress in information and communication technology (ICT) continually leads to changes in consumer lifestyle and also incessantly creates new opportunities for new products. The electronic book is one of such products that emerged from the advancement of the ICT. However, during the emerging stage when the technology was in its infancy, the e-book was adopted only by small groups of readers in educational and research areas [1]. The main reasons for low adoption rate stemmed from limited diffusion and adoption of reading devices and poor graphic quality. Therefore, the majority of the e-book research has focused on technical development of the graphic output quality [2, 3, 4, 5] and usage of the e-book in education [6, 7, 8].

In the 2000s, rapid development of the graphic quality and widespread diffusion of personal mobile devices has changed how consumers perceive and adopt digital media. Improvements in these technologies have provided consumers with more opportunities to use the e-books [9]. Application of digital publishing content has been stretched into other products such as novels, comic books, and particularly magazines.

As e-books become a part of lifestyle choice, adoption criteria of the digital publishing content no longer depends on the technical quality of the contents, or technological innovation of mobile devices alone. Digital magazines are of interest, with a double-digit growth rate globally and provide a huge opportunity for publishers in the digital content markets. However, by nature, magazine consumption is markedly different from book consumption. It is not a one-time purchase product. Buyers read it periodically or hold a subscription. Buyer’s choices of magazines are highly related to their lifestyles and emotions. Therefore, other factors influencing digital magazine adoption must be explored and investigated in detail. Coupled with the fast adoption of personal mobile devices, this research question has become a significant and crucial pursuit. Tablet manufacturers and marketers need to find ways to maximize the monetizing of the digital revolution.

Past digital book and online newspaper studies showed that functional value is a main deciding factor for adoption [10]. Thus, it is interesting to investigate whether functional value remains the only factor affecting adoption of digital magazines. This study hypothesizes that innovation characteristics of digital magazines and emotional attachment to paper magazines are the determinant factors that lead to adoption of the digital magazine.

2 Literature review

Most digital book studies explored the attributes that influence the adoption of the product. Other studies focused on the diffusion of devices to read digital books, such as e-book readers [11, 12] and smartphones [11]. However, none of the studies tried to develop a model to investigate the factors affecting adoption of the innovation.

2.1 Innovation characteristics and innovation adoption

Past literature confirms that innovation characteristics affect adoption of new products. Roger (1983) suggested that these characteristics include relative advantage, compatibility, observability, trialability and complexity.
[13]. As more studies paid attention to the topic, the concept of innovation characteristics was modified to include perceived risk [14, 15]. Recently, a more complex consumer decision process started to include characteristics related to the context of using the products, such as customization [16], volition [14, 17] and social advantage [17]. These in turn, increase depth in the construct of innovation characteristics. Flight et al. (2011) developed a measurement scale to evaluate how the customer perceives innovation in technology-based consumer durables [18]. The measurement scale has four dimensions including information, risk and communicability, complexity and relative advantage.

2.2 Technology acceptance model (TAM)

Technology acceptance model is another stream of research investigating factors affecting the adoption of innovation. Davis [19, 20] incorporated perceived ease of use and perceived usefulness into the TAM model. These factors have an impact on consumer preference towards technology and thus affect the intention to adopt the technology [21, 22].

Later study recognized that the emotional aspect of the products is another important criterion, thus the model was modified to include emotional attachment [23].

3 Conceptual model

It can be said that the TAM considers factors in a narrower focus and is more precise than the innovation characteristics concept. This is because the TAM explores relative advantage in more detail using perceived ease of use and perceived usefulness. Moreover, the TAM also includes the emotional attachment factor considered significant in fashion technology consumer products. However, the TAM ignores other innovation characteristics other than relative advantage.

This study is to recognize that both functionality and emotional values are involved in the consumer decision process. As a result, this study integrates the innovation characteristics with the TAM to predict the likelihood of the intention to adopt the digital magazine.

Thus, conceptual models are proposed as shown in Figures 1 and 2.

Figure 1 shows the independent variables - innovation characteristics of the digital magazine and emotional attachment to the paper magazine. The dependent variable is intention to adopt the digital magazine.

Figure 2 shows the same independent variables as in Figure 1, but the dependent variable is extended to investigate a higher degree of intention to adopt by measuring frequency of use after adoption.

4 Methodology

The samples of this study were drawn from a population 18-50 years old who generally read magazines, either paper magazines or digital magazines. Also, they must own a personal mobile device, i.e. smartphone, tablet, e-reader and others.

A questionnaire survey is used to collect data for analysis. The questionnaire consists of three parts. The first and second parts are the respondents’ demographic profile and magazine reading behaviors. The third part consists of evaluation questions of how respondents perceive innovation characteristics of digital magazines, emotional attachment to paper magazines and intention to adopt and frequency of use after adoption. A five-point Likert scale is used for this study. The 46 questions in the third part were developed based on past studies of innovation characteristics [18] and emotional attachment to paper books [24]. It was later adjusted to fit within the context of the digital magazines by in-depth interviews with six samples.

5 Results

Total sample data were collected with an even distribution among gender, age and education level as shown in Table 1.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Undergraduate and below</th>
<th>Graduate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>18-25 yr</td>
<td>27</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>26-35 yr</td>
<td>25</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>36-45 yr</td>
<td>17</td>
<td>27</td>
<td>15</td>
</tr>
<tr>
<td>46-50 yr</td>
<td>25</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>95</td>
<td>90</td>
</tr>
</tbody>
</table>
The reliability coefficient (Cronbach's alpha) of the 46 questions of the innovation characteristics and emotional attachment measurement scale is 0.881. This shows that the measurement scale is reliable for use in further analysis.

To explore the construct of the newly developed measurement scale, a principal component analysis with varimax rotation method was applied. After eliminating nine items with cross loading between factors, the final results reveal that the remaining 37 items of the measurement scale can be grouped into eight factors. The KMO index of the analysis is 0.861. The Eigen value of the eighth factor is 1.076 and cumulative percentage of total variance explained is 65.277. The eight factors are complexity and risk, compatibility, emotional attachment, perceived ease of use, social value, communicability, observability, and perceived inconvenience as shown in Table 2.

Table 2 Construct of innovation characteristics and emotional attachment

<table>
<thead>
<tr>
<th>Factor name</th>
<th>Number of items</th>
<th>Cronbach’s alpha coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity and risk</td>
<td>7</td>
<td>0.888</td>
</tr>
<tr>
<td>Compatibility</td>
<td>8</td>
<td>0.840</td>
</tr>
<tr>
<td>Emotional attachment</td>
<td>6</td>
<td>0.876</td>
</tr>
<tr>
<td>Perceived ease of use</td>
<td>5</td>
<td>0.856</td>
</tr>
<tr>
<td>Social value</td>
<td>4</td>
<td>0.861</td>
</tr>
<tr>
<td>Communicability</td>
<td>3</td>
<td>0.687</td>
</tr>
<tr>
<td>Observability</td>
<td>2</td>
<td>0.735</td>
</tr>
<tr>
<td>Perceived inconvenience</td>
<td>2</td>
<td>0.608</td>
</tr>
</tbody>
</table>

Subsequently, two structural equation models were developed to investigate the impacts of innovation characteristics and emotional attachment on the adoption of digital magazines (model 1) and the frequency of use after adoption (model 2). The construct of independent variables in the models is based on the results from the exploratory factor analysis discussed above. The results of analysis are presented in Tables 3 and 4. The goodness of fit indices of the two analytical models are acceptable. All GFI, AGFI and CFI fit indices are above 0.700.

Factors affecting the adoption of digital magazines and the frequency of use after adoption are different. In the model 1, the factors that influence the adoption of digital magazines are compatibility (0.292), social value (0.268), communicability (0.244), perceived ease of use (0.147) and observability (0.099). However, emotional attachment, complexity and risk, and perceived inconvenience are not significant at the 0.05 p-value level.

On the other hand, in model 2, the factors that have impact on the frequency of use after adoption are compatibility (0.319), social value (0.201), perceived ease of use (0.186), communicability (0.181), complexity and risk (0.150), and perceived inconvenience (-0.108), while emotional attachment and observability are not significant at the 0.05 p-value level.

6 Discussions and conclusions

In the first model, the intention to adopt the digital magazines depends on compatibility, social value, communicability, perceived ease of use and observability factors. It is evident that the initial adoption of digital magazines is mainly based on innovation characteristic factors while the emotional attachment, complexity and risk and perceived inconvenience factors are not significant. This is because the digital magazines are related to consumer lifestyle and social interest. The adoption of the product is not perceived as risky. As the respondents own personal mobile devices, they are familiar with the technology and thus the complexity and perceived inconvenience factors are not regarded as a barrier to adopt the product. The emotional attachment factor likewise is not a determinant factor to adoption as the magazines are not regarded as collectible items like books. Therefore, it is logical for the emotional attachment factor to be excluded.

In the second model, a more in-depth analysis is extended into frequency of use after adoption. The determinant factors are compatibility, social value, perceived ease of use, communicability, complexity and risk and perceived inconvenience. This model looks into a longer-term of adoption that is highly useful for businesses to plan and market their products. Many
important factors are similar to the first model and share the same rationale. It is interesting to see that complexity and risk and perceived inconvenience factors are significant determinant factors only in the second model. The perceived inconvenience factor has a negative relationship with the frequency of use after adoption. The higher the perceived inconvenience, the lower the frequency of use after adoption. This can be explained that high perceived inconvenience will lead to low frequency of use after adoption. Marketers and businesses must provide opportunity in ways for cross-referencing and comparison of multiple digital magazines to prevent perceived inconvenience. As for complexity and risk, this factor has a positive relationship with the frequency of use after adoption. It means that the higher the complexity, the higher the frequency of use after adoption. It is quite contrary to rationale. However, as the mobile application technology has improved and many digital magazines have become more complex, they are more interactive and have several new features for adopters to read the magazines more efficiently and effectively. For example, a drop-down menu, a photo slideshow and a scroll button have become common features. This implies that publishing houses cannot just convert print version periodicals into a digital version without added features and expect that the product will be adopted. In other words, consumers prefer, accept and expect digital magazine innovation even though the magazines may become more complex.

7 References


