E-Healthcare Service: An Investigation of the Antecedents, Moderating Roles, and Consequences

Chulmo Koo
Chosun University
helmetgu@gmail.com

Yulia Wati
Chosun University
yulawati@gmail.com

Abstract

The rapid growth of internet usage for acquiring health information has received a great deal of attention. Thus, by empirically investigating the official website of National Cancer Center of South Korea, this study adopted the concept of Elaboration Likelihood Model to examine the integration effects of website quality and perceived credibility on user satisfaction and the intention to use under an e-healthcare context. We also measured the moderating roles of self-efficacy and active control, and their consequences on both user satisfaction and intention to use. The research model was tested using Partial Least Square. The empirical results showed that both, website quality and perceived credibility, influence user satisfaction. Moreover, these three variables jointly influence intention to use. Related to the interaction effects, the results showed mixed supporting factors. In sum, our study showed that the proposed antecedents, incorporated with the moderating variables, affect the user satisfaction and intention to use.

1. Introduction

In recent years, the rapid growth of internet usage for acquiring health information has received a great deal of attention [1]. Accessing internet-based health information has been viewed as a patients’ method to gain equality and provide input into the doctor-patient relationship [2]. However, among surveys conducted to assess the health information quality on the websites, the findings indicated that most of accessible information provided on this media is contradictory to medical knowledge (e.g. [3]) and circumvented established medical guidelines [4]. The good news is, these problems would be minimized if health-information seekers flocked to sites sponsored by established organizations (e.g. National Cancer Center) [4]. Therefore, finding a rigorous approach to persuade the potential users to choose these websites has challenged both health providers and researchers.

To respond this issue, however, the contribution of IS researchers is still insignificant. Very limited exceptions are study by Bass et al. [5], Hong [4], and Rains and Karmikel [6]. While these scholars carried out an experimental study, to date, little empirical study has been conducted to examine the integration model of website quality and perceived credibility nomologically. Turn to the IS context itself, even though website quality issue has been widely studied in this area, however, a few studies has explored exclusively the detail factors of e-healthcare website quality, including how this attribute, associated with credibility, contribute to alter consumers’ belief and attitude. Partial empirical test has been conducted by a few scholars; however, the integration of website quality and credibility is not the focus (e.g. [7]).

Furthermore, as more healthcare consumers go online to self-educate, more will arrive for appointments with internet-fueled questions, concerns, and ream of printouts [8]. To this extent, previous literature has shown the evidence that not only the media cues influencing the elaboration of information message, but the potential self-mechanism such as self-efficacy [9] and active control [10] also play a significant role [11]. The relationship between these variables and internet use also has been pointed out by previous studies in healthcare setting (e.g. [5]). Nevertheless, the whether these variables have a positive (e.g. [12]) or negative effect (e.g. [13]) on credibility, beliefs, and intentions does exist among the scholars. Thus, by considering an important role of these individual abilities in shaping intention and behavior in the variety of domains [14], the possibility of their moderating roles is needed to investigate in e-healthcare setting.

One main theoretical approach to that can help explain the association of web quality, perceived credibility, and individuals’ self-mechanism is Elaboration Likelihood Model (ELM). The ELM has been applied successfully to a variety of contexts including health [15]; and especially in IS context (e.g. [16]). This theory offers a theoretical explanation for observed differences in the amount of influence accepted by recipients exposed to new information [17]. Based on this grounded theory, two research questions are examined in this study. First, “How do the website quality and perceived credibility influence processes change user satisfaction and intention to use?” Second, “Do the self-efficacy and active control
moderate the relationships between independent variables (website quality and perceived credibility) and both user satisfaction and intention to use, and if so, how?"

Within the context of the above discussion, the first objective of this study is to examine the effects of two main aspects of an e-healthcare website (website quality and perceived credibility) on satisfaction and intention to use. The second objective of the present study is to measure (1) the potential moderating effects of individuals’ self-mechanism (self-efficacy and active control) on the relationship between the independent variables (website quality and perceived credibility) and the independent variables (user satisfaction and intention to use), and (2) how these moderating effects together with website quality and perceived credibility predict the intention to use. A research model for this purpose was developed with reference to literature from healthcare context as well as prior IS research.

This study makes contributions to both literature and practice. First, theoretically, this study enhances extant literature on e-healthcare from IS perspective by adopting Elaboration Likelihood Model to investigate the effects of specific website attributes (i.e. information quality, information presentation, navigation, attractiveness, and technical support) and website credibility, a crucial phenomenon that has been mentioned frequently for empirical research (e.g. [18]). Second, practically, this study provides a range of decisive factors for creating intensive healthcare website by considering individual ability variables (i.e. self-efficacy and active control). Results generated from our findings may be referred as the guidelines by e-healthcare providers and or physicians to explore the potential benefits of website as a reliable information medium.

2. Literature Review

2.1. Elaboration Likelihood Model

ELM is a dual-process theory of attitude formation and change [11]. According to the Elaboration Likelihood Model (ELM), individuals are influenced by a particular appeal as a result of central or peripheral route processing [19]. Central route processing represents the process of elaborating on an appeal by paying attention to an argument and evaluating it. In comparison, peripheral route processing describes the process of drawing conclusions from rules of thumb or reliance of heuristic cues without much regard toward the actual merits of an argument [20]; [11]. It has been suggested that non-expertise users focus on what have traditionally been known as peripheral cues such as credibility of the source [17]; [20]. Thus, behavioral impacts associated with website credibility are likely to be relevant to low-involvement individuals [19]. In contrast, people in the high elaboration likelihood state are more likely to engage in careful scrutinization or thoughtful processing of an information message, and in turn, tend to be persuaded by argument quality than by peripheral cues [16].

2.2. Website Quality

To understand the concept of website quality, we provided literature review from two perspectives: medical and IS perspective. From the first perspective, Carden et al. [21] used six criteria: content, literacy demand, graphics, layout and typography, learning stimulation and motivation, and cultural appropriateness. Childs [3] suggested that credibility in form of trust and reputation; information quality; design; and navigation are needed to judge the quality of health website. Rains and Karmikel [1] and Hong [4] suggested two features of website: message content (information quality) and structural features (features relate to images, third-party endorsements, etc.). More comprehensively, Eysenbach et al. [22] performed a systematic review of health website evaluations and noted that the most frequently used quality criteria included accuracy, completeness, readability, and design. From IS perspective, quality constructs are argued as multidimensional [23]. Moreover, regarding to the IS quality, previous researchers suggested two distinctive dimensions: information quality and system quality (e.g. [23]; [24]). For the study purpose, we are likely to categorize the dimensions into a practically detail construct instead of measure information and system quality separately as suggested by the IS scholars. Drawing on the above discussion, we suggested five dimensions of e-healthcare website: (1) information quality, (2) information presentation, (3) website attractiveness, (4) navigation, and (5) technical support. We proposed “website quality” construct as a formative second-order model because the five website quality dimensions are not expected to be highly interrelated.

2.3. Perceived Credibility

Source credibility was captured as notable factor in e-health care because of (a) the growing concerns about the extent to which consumers are getting information from unreliable sources; (b) the attempts of e-health information providers to create a positive web presence that encourage consumers to use their portals [25]. The term of credibility is used to refer to the traits of the communicator, including expertise, trustworthiness, attractiveness, and power [26]. Under online setting, website credibility is one factor that consumer use to make judgments about the quality and
utility of information posted on a website [27]. Fogg and Tseng [28] defined this credibility as a perceived quality that one person has in another which results in believability. Website credibility also potentially influences consumer decision-making and health behaviors [29]. Following the prior studies, in this research, we refer our credibility as website credibility.

2.4. Moderating Effect

Moderating effect can occur within causal models when a moderator variable influences the strength of the direct effect between the independent variable (X) and the dependent variable (Y) [30]. A moderator is “a variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable” ([31], p.718). In a mathematical equation, the relationships can be formulated as:

\[ Y = a + b.X + c.M + d. (X \times M) \]

Where, Y represents the dependent variable, X represents the independent variable, M represents the moderator, and \( X \times M \) is the interaction term. In this study, two moderating variables were measured: (1) self-efficacy and (2) control-ability.

3. Research Model and Hypotheses

3.1. Research Design

Drawing on the literature reviewed above, the research model for this study is presented in Figure 1.

![Figure 1. Proposed Research Model](image)

3.2. Hypotheses Development

Scholars have been long indicated that perceptions of credibility can be highly situational and may depend on the receivers’ relationship to the medium, the source of the message, and the message itself [31]. Flanagin and Metzger [32] proposed credibility as a property judged by the receiver of the information instead of as a property of the information itself. That is, credibility judgments may be influenced by objective properties of the information or its source. Hovland [33] showed that the information source attributes such as attractiveness, physical appearance, familiarity and power, etc., could have an impact on the credibility. Thus, we hypothesized:

**H1:** Website quality has a positive effect on perceived credibility

User satisfaction refers to the summary psychological state resulting when the emotion surrounding confirmed expectations are coupled with the customer’s prior feelings about the consumption experience [34] and intention to use is defined as willingness to use the website [14]. Hassenzahl and Trautmann [35] suggested that the characters of website affect user’s interpretation, acceptance, and further interaction with the site. Prior IS research has also demonstrated a positive relationship between website quality and both user satisfaction and the intention to use (e.g. [23]; [24]). Therefore, we hypothesized:

**H2:** Website quality has a positive effect on user satisfaction

**H3:** Website quality has a positive effect on intention to use

In offline contexts, social marketers have been suggested to build their campaigns around credibility actors who hold the publics’ trust because this kind of source credibility of organizations and individual may impact on the degree to which target audiences are likely to adopt alternative behaviors [19]. According to ELM, at the first visit to the website, consumers are likely to rely on cues, signals, and symbols to make inferences about the vendor [11]. Thus, users make a judgment from the website credibility. From this initial stage, they may develop their perception toward the website according to their satisfaction level. Moreover, the study by Hu and Sundar [36] found that perceived credibility on a certain medium has a significant effect on behavioral intention. Hence, we hypothesized:

**H4:** Perceived credibility has a positive effect on user satisfaction

**H5:** Perceived credibility has a positive effect on intention to use

Research has shown that online health seekers are satisfied with the internet as a health information source, are relieved by the information they find on the internet, and in turn, develop their intention to use (e.g. [5]; [18]; [36]). From IS perspective, users’ information system continued intention is determined primarily by their satisfaction with prior IS use [34]. Thus, we argued that user satisfaction toward e-healthcare website may positively influence intention to use.

**H6:** User satisfaction has a positive effect on intention to use

Computer self-efficacy refers to “a judgment of one’s capability to use a computer” ([37], p. 192). According
to ELM perspective, information recipients can vary widely in their ability (e.g. self-efficacy and active control) to elaborate on an argument’s central merits, which in turn, may constrain how a given influence process impacts their attitude change [16]. These abilities are presumed to moderate the effects of argument quality and peripheral cues on perception changes. Compeau and Higgins [38] pointed out that self-efficacy would exhibit a positive influence on individual expectancies about the consequences of performing a specific behavior. Thus, that person who believes that they can gain information effectively will use media more than others [38]. Hence, following these concept, we hypothesized:

H7a: Self-efficacy moderates (positively or negatively) the relationship between website quality and user satisfaction

H7b: Self-efficacy moderates (positively or negatively) the relationship between website quality and intention to use

Because credibility is a users’ assessment and not a source characteristics, individual factors are important determinants of source credibility [4]. Flanagin and Metzger [32] suggest that users with high self-efficacy view the medium as more credible but, recognizing its limitation, also tend to verify information obtained on the web more stringently. Moreover, they tend to apply a higher level of scrutiny to the information they obtain from the medium. When task involves information seeking, it is assumed that credibility is associated with self-efficacy [38]. Users who are familiar with the subject matter will evaluate the computer product more stringently and likely perceived the computer product to be less credible [28]. Based on the literature, we posit these two hypotheses.

H7c: Self-efficacy moderates (positively or negatively) the relationship between perceived credibility and user satisfaction

H7d: Self-efficacy moderates (positively or negatively) the relationship between perceived credibility and intention to use

Active control is the individual’s perception that she or he exercises control over the interaction with technology [39]. According to the control theory [10], individuals’ reactions to feedback are determined by their desire to minimize the discrepancy between their behavior and their internal standards. Control is a construct relating to an individual’s perception of the available knowledge, resource, and opportunities required to perform the specific behavior [14]. According to Baronas and Louis [40], the desire for control lies behind individual’s attempts to gain information from the environment. Decrease in personal control result in negative consequences for individuals such as reduced the satisfaction and intention to use. Hence, we hypothesized:

H8a: Active control moderates (positively or negatively) the relationship between website quality and user satisfaction

H8b: Active control moderates (positively or negatively) the relationship between website quality and intention to use

H8c: Active control moderates (positively or negatively) the relationship between perceived credibility and user satisfaction

H8d: Active control moderates (positively or negatively) the relationship between perceived credibility and intention to use

Prior researchers have indicated that both self-efficacy (e.g. [14]) and active control (e.g. [42]) may shape intention and behavior in the variety of domains interchangeably [14]. According to Bandura [43], individuals are considered as actual causal agents; through directed action they shape their own functioning and environmental events. People beliefs in their capability to exercise control over such action is a key mechanism of personal agency [44]. Moreover, the beliefs point of view [45] suggested that an individual’s control beliefs are shaped by the individual’s capacity and strategy belief. From these descriptions, the implicit relationship between self-efficacy and active control may moderate both human beliefs and behavior interaction with the external system. Thus, we hypothesized:

H9a: The interaction of self-efficacy and active control moderates (positively or negatively) the relationship between website quality and user satisfaction

H9b: The interaction of self-efficacy and active control moderates (positively or negatively) the relationship between website quality and intention to use

H9c: The interaction of self-efficacy and active control moderates (positively or negatively) the relationship between perceived credibility and user satisfaction
H9d: The interaction of self-efficacy and active control moderates (positively or negatively) the relationship between Perceived credibility and intention to use

4. Methodology

4.1. Sample and Research Procedure

The survey was conducted in South Korea. As one of the implementation of e-healthcare, the South Korea National Cancer Center, delivers its information through the internet. For this study purpose, this website was surveyed and evaluated. Prior to the survey, a pilot test was conducted to a small group of respondents to enhance the psychometric properties of the measurement scales. The questionnaire was administered as online form by posting the electronic form on the website of National Cancer Center (NCC). Data were collected from September 2009 to January 2010. The total number of completed responses was 200. Out of this total number, we excluded 7 invalid responses, resulting 193 usable responses for further analysis. Out of 193 usable respondents, 71.50% are female. The majority of respondents’ age are in their 20s (50.81%), followed by 30s (26.94%). More than fifty percent of respondents have university degree (69.43%) (The details of demographic respondents will be provided upon request).

4.2. Operational of Variables

The items for information quality were adapted from Wixom and Todd [24]; information presentation items were adapted from Rai et al. [46]; website attractiveness items were developed from Montoya-Weiss et al.’ study; navigation items were adapted from Webster and Ahuja [48]; and technical support measures were developed from Chung and Kwon [49]. Items for perceived credibility were adapted from Fogg and Tseng [28] and the questions for user satisfaction were developed from Oliver [50]. The self-efficacy items were adapted from Compeau and Higgins [37]; while the questions for active control were modified from Trevino and Webster [39]. Lastly, intentions to use items were adopted from Venkatesh [14]. Each questions was measured on a 5-point, Likert-scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

5. Analysis and Results

5.1. Measurement Validation

The research model was tested using Partial Least Square [51]. PLS-Graph 03.00 was used for data analysis. We performed the higher order construct of website quality as second order molar model (see [52], p. 665). All weights were significant, indicating the five proposed indicators are the major determinant of website quality (Figure 2).

For the measurement validation of reflective construct, we followed the criteria recommended by Gafen and Straub [54]. We run the raw data in PLS and excluded the poor loading scores. After the exclusion, all the outer loadings showed significant value at p<0.01, suggesting convergent validity was met. For the next step, we performed CFA in PLS. Each item loads more highly on their own construct than on other constructs and that all constructs share more variance with their measures than with other constructs. Next, the square root of all AVEs is much higher than all other cross correlations. In sum, these findings suggest acceptable convergent and discriminant validity.

Figure 2. Weighted scores of website quality

To deal with the issue of common method bias, we first assessed the common method variance by using Harman’s one-factor test [54]. Secondly, we performed a single method factor test in PLS [55]. The results indicated that common method bias does not seem to be a serious problem in this study. Regarding concern of multicollinearity, VIF (Variance Inflation Factor) were below the common VIF threshold of 10, indicating all items were subjected to further analysis [56]. Lastly, nonresponse bias was measured by verifying that the early and late respondents were not significantly different [57].

Moreover, to eliminate the confounding of results based on specific individual characteristics: a respondent education level, age, income, and gender, were included in the analysis as control variables. (1) Age. Previous studies indicated that functional health literacy decreases significantly with older age [58]. (2) Education. Computer users with higher education have less anxiety and better attitudes toward microcomputers than users with lower education [59]. (3) Gender. The researcher has found that women are the predominant users of the internet for health advice [27]. (4) Income level. Current research reports that e-health access rates are much lower for low income than for mid-to-upper income groups [60].

5.2. Testing the Structural Model

5.2.1. Main Effect. Firstly, the test of the structural model for main effect was performed (figure 3). The results indicated that all the proposed hypotheses were
significant (H1-H6). After confirmed the main effect model, we entered the moderating variables into the model.

5.2.2. Moderating Effect. To estimate moderating effects when formative constructs are involved, we followed the two-stages PLS approach recommended by Henseler and Fassott [31] (for more detail explanation, please see [31]) (see figure 4). The tests for moderating effects were conducted by following Chin [48]. Firstly, Cohen’s $f^2$ [61] was performed to calculate the change in R-square values between main and interaction effects. The moderating relationships were also investigated by performing F-test. All F-statistic scores are significant and the Cohen’s $f^2$ are sizeable, thus, the proposed moderating effects were accepted (table 1).

<table>
<thead>
<tr>
<th>Interaction Effect</th>
<th>F-stat.</th>
<th>Cohen $f^2$</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy x website quality on intention to use</td>
<td>2.09 (p&lt;0.05)</td>
<td>0.04 Small</td>
<td></td>
</tr>
<tr>
<td>Active control x website quality on user satisfaction</td>
<td>1.87 (p&lt;0.05)</td>
<td>0.03 Small</td>
<td></td>
</tr>
<tr>
<td>Active control x perceived credibility on user satisfaction</td>
<td>1.96 (p&lt;0.05)</td>
<td>0.03 Small</td>
<td></td>
</tr>
<tr>
<td>Active control x self-efficacy x website quality on user satisfaction</td>
<td>1.63 (p&lt;0.05)</td>
<td>0.03 Small</td>
<td></td>
</tr>
<tr>
<td>Active control x self-efficacy x perceived credibility on user satisfaction</td>
<td>1.69 (p&lt;0.05)</td>
<td>0.03 Small</td>
<td></td>
</tr>
</tbody>
</table>

As illustrated in figure 4, three from eight hypotheses of two-ways interacting effects were accepted. Self-efficacy only (negatively) moderated the relationship between website quality and user satisfaction (-0.13, p<0.05). Thus, H7b was accepted, while H7a, H7c, and H7d were rejected. The interacting effect between active control and website quality on user satisfaction was positively significant (0.16, p<0.05), supporting H8a. Likewise, the interacting effect between active control and perceived credibility on intention to use was negatively significant (-0.13, p<0.05). Hence, H8c was accepted. However, contradict to our hypotheses, the moderating effects between active control and both website quality and perceived credibility on user satisfaction were insignificant, rejected H8b and H8d.

As we hypothesized, this website quality significantly influenced perceived credibility (H1). This result suggested that the five dimensions of website quality (information quality, information presentation, website attractiveness, navigation and technical support) contributed to increase the level of perceived credibility. While some studies (e.g. [4]) suggested that only information feature is critical for health-information seekers, we found that the integration of both information and technical features

5. Discussion

This study has several key findings. First, it integrated the concept of website quality and perceived credibility by applying Elaboration Likelihood Model under e-healthcare context. This is the first empirical study applying this theory under e-healthcare from IS perspective. Second, it measured the two-ways and tree-ways interaction effects of two self-mechanism cues: self-efficacy and control ability. From our empirical findings, we argued that both antecedents and moderating factors have significant roles in persuading e-healthcare users. The results supported the main hypotheses. Our proposed website quality dimensions based on multidimensional concept also exhibited a high validity and reliability.

As we hypothesized, this website quality significantly influenced perceived credibility (H1). This result suggested that the five dimensions of website quality (information quality, information presentation, website attractiveness, navigation and technical support) contributed to increase the level of perceived credibility. While some studies (e.g. [4]) suggested that only information feature is critical for health-information seekers, we found that the integration of both information and technical features

![Figure 3. Main Effects Model](image)

![Figure 4. Full Model](image)
are crucial to improve the credibility. This finding also supported the previous studies (e.g. [1]).

The main effect model also indicated that e-healthcare website quality and perceived credibility had significant effects on both user satisfaction and intention to use (H2-H5). The direct effect of website quality on satisfaction is greater than direct and indirect effects of perceived credibility on satisfaction. These results corroborate the Elaboration Likelihood Model theory. Even though the effect of website quality is greater than perceived credibility, this study confirmed that credibility factor potentially affects customers’ decisions and their health-care behavior. It suggests that users’ perceptions may be formed jointly by central or peripheral route processing, however, the process is dominated by the central route, strengthening the study by Bhattacherjee and Sandford [16]. By associating this finding with the direct effect of website quality on perceived credibility, we argued that these influence mechanisms are complementary rather than an absolutely substitute relationship.

The other interesting finding from this study is the insignificant relationship between perceived credibility and intention to use after the inclusion of moderating effects. With the presence of moderating effects of self-efficacy and control ability, the effect was still dominated by website quality, while perceived credibility is subject to influence intention to use indirectly through user satisfaction. To this extent, users’ self-efficacy and control ability exhibit minor contribution, yet as indicated by Chin [52], the minor contribution is still influential.

The interaction effect of self efficacy with website quality and user satisfaction was negatively significant (H7b). It suggests that the confidence in one’s computer related abilities and knowledge can be expected to serve as the basis for an individual’s judgment about how easy or difficult a new system will be to use [14]. However, contrary to our hypotheses, self-efficacy did not moderate the relationship between website quality and intention to use as well as between perceived credibility and both user satisfaction and intention to use (H7a, H7c, H7d). We provided two arguments for these inconsistent findings. First, users with high self-efficacy accessing a high quality website, does not indicate that they will intent to use the website for they might have a higher expectation on it. In this vein, satisfaction is subject to mediate the relationship with the presence of self-efficacy. These results may suggest that the impact of efficacy depends on the purposes to which it is put [62]. When users who are familiar with the technology search the information on the internet, website quality is likely to directly persuade them to use the website, not the credibility (in ELM, this process refers to central route processing). There is also possibility that credibility can be built without the interaction of self-efficacy [63]. The alternative argument is, while we focused on website or medium credibility, the prior literature has different perception of credibility, as also pointed out by Flanagin and Metzger [13].

The positive interaction effect of the active control confirmed the ELM concept in e-healthcare (H8a). With respect to the negative interaction effect (H8c), we posit that the high individual’s perceived control over the interaction with technology, associated with high perceived credibility, may reduce the individuals’ evaluation. They can control and navigate the website well, and in turn, assign a higher expectation based on their on-hand experience. Thus, it reduces the satisfaction level. The other two associated hypotheses were not supported (H8b and H8d), suggesting that active control does not moderate the relationships between both website quality and perceived credibility and intention to use.

This study’s last findings are related to the tree-way interactions. Drawing on the previous hypotheses results (H8b and H8c), the interaction of both website quality and perceived credibility with active control and self-efficacy has no impact on intention to use (H9b and H9c), strengthening the argument that satisfaction mediates the existing relationships. Moreover, this study found the interaction of website quality with active control and self-efficacy was positively significant (H9a). This result specifies that increasing the self-efficacy will reduce the uncertainty associated with the website and enhance individuals’ sense of control over the system [64]. In this situation, their interaction with a high quality website may increase their satisfaction level, and in turn, affect their intention to use. Lastly, the interaction of perceived credibility with active control and self-efficacy was significant and negative (H9c). As argued by Dutta-Bergman ([25], p. 267). “the more involved searcher who scrutinizes the message more thoroughly evaluates the website with complete information to be less credible than does the less involved surfer.”

5. Conclusion, Limitations, and Implications

5.1. Conclusion

In sum, by empirically investigating the National Cancer Center of South Korea, this study adopted the concept of Elaboration Likelihood Model to examine the integration effects of website quality and perceived credibility on user satisfaction and intention to use. We also measured the moderating roles of self-efficacy and active control and their consequences on both user satisfaction and intention to use. Our study showed that the proposed antecedents, incorporated with the
moderating variables, affected the user satisfaction and intention to use.

5.2. Limitations

Prior to discussion the implications of our findings, we provided some limitations that should be acknowledged upon their interpretation. Firstly, we conducted the survey based on the survey of National Cancer Center, South Korea. Further research conducted in various countries is needed to verify the findings. Secondly, this study observed the cancer website only. This suggests that cross-comparison research is needed. Thirdly, one of the flaws of self-method survey is the existence of common method bias. Even though our analysis indicated that there is no existence of common method bias, further research is needed to verify the findings. Fourthly, most of our reported respondents are Korean female ranging from 20-30 years old, which is may bias the result. Subsequent studies should consider these demographic factors in order to generalize the findings.

5.3. Implications for Research

This study yields three implications for research. First, this study integrates the concept of e-healthcare website quality and perceived credibility as the antecedents of user satisfaction and intention to use from Elaboration Likelihood Model. To the best our knowledge, this is the first empirical study from IS perspective in this subject area. We recommend the researchers to elaborating the whole picture of quality when measuring the e-healthcare website, rather than focus the discussion only on the information quality. We also suggest five dimensions of e-healthcare website (i.e. information quality, information presentation, website attractiveness, navigation, and technical support) in order to gain a practical understanding from website-information seekers. Secondly, by conducted an empirical study from IS perspective, this study contributes to the application of ELM under e-healthcare context. Our empirical study found that users’ perceptions may be formed jointly by central or peripheral route processing, however, the process is dominated by central route. We also argued that the relationship of central and peripheral influence mechanisms are complementary rather than absolutely substitute. Related to these findings, we encourage the researchers to consider other peripheral cues in further research.

Secondly, the proposed research model also provides a mechanism for understanding and assessing the moderating influence of self-efficacy and active control on satisfaction and intention. Through this study, we also further enhance the theoretical argument of ELM related to the moderating effects of maximum likelihood. Initially, we posit that self-mechanism may have either positive or negative effects depending on the context they are put in. Even though the moderating effects are small, the inclusion of these interacting variables significantly affects the main model. Further research may examine the other self-mechanism factors such as personal motivation, experience, etc. Moreover, the moderating roles only influence the relationships with user satisfaction, but not intention to use. It suggests that personal characteristics should be considered in persuasion process to predict the satisfaction level. Further research may elaborate other mediating variables such as perceived usefulness or perceived value and compare the result with the present study.

The final theoretical contribution of this study is laid upon the three-ways interaction effects. Through this study we provide the evidences that the combination of these moderating variables with independent variables showed significant effects. This study also identifies the opportunity for further research to develop our model by measuring the concept of habit as the unconscious outcome.

5.3. Implications for Practice

A key benefit of this study is that national or non-commercial healthcare providers and physicians may have a new way from Information System perspective to persuade the potential users to use their website. Armed with the right information on a high quality website, the potential users can use e-health website to improve their knowledge. Drawing on ELM, the proposed research model also provides a mechanism of individual’s influence route processing of e-healthcare context. From these results, we also offer advices for the healthcare providers to help them with website design including high information quality, well information presentation, attractive features, complete navigation, and available technical support. We also suggest the health providers to integrate such life online assistance (instant messenger) on the website. The institutions may also establish more interactive website by involving more active users. These efforts are supposed to increase the perceived credibility of the website.

Furthermore, this research provides insight related to the roles of self-mechanisms (i.e. self-efficacy and active control). When consumers have to interact with the online media, their personal control behaviors also influence their interaction way. The health providers have to consider these factors, by adopting personal approach. Once consumers enter the website, each of them might have different personal characteristics that affect their perceived satisfaction. In sum, we concluded that even though inexperienced users
accessing the website have a poor knowledge, they not only rely on the credibility, but also depend upon the overall website quality. These variables, integrated with self-mechanism cues may influence satisfaction level, and in turn, affect the users’ decision whether to use the website or not.

10. References


[27] Sillence, E., Briggs, P., Harris, P. R., Fishwick, L. “How do patients evaluate and make use of online health information?” Social Science and Medicine (64), 2007, pp. 1853-1862.


