

HEALTH CONSULTING ON THE INTERNET- A CASE STUDY ON A MEDICAL CONSULTATION WEBSITE

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ABSTRACT

Medical consultation website is an online service providing consultation of the diagnosing and treating health issues. It is getting popular as an important information source when people are seeking medical advises. This study forms a framework by extending Expectation Confirmation Theory to explore how people's perceptions toward medical consultation website and how to bring its success. The results reveal that perceived usefulness is a critical factor and it facilitates users' satisfaction, and in turn retains the loyalty and interests, and transforming into motivation to recommend the website to others. The suggestions to manage medical consultation websites are discussed.

INTRODUCTION

Except consulting doctors, medical consultation website is getting popular by the fast development of Internet [5]. Sine and Klaus [11] found that 20% patients had used Internet to get health information before seeing their general practice. People prefer electronic communication for requesting prescription renewals and obtaining general medical information due to Internet provides an easy-access channel to retrieve health information and consultation [4]. A medical consultation website comprises users, website system and medical personnel. The consultation structure is shown in Figure 1. Firstly, users login website to make inquiries. An email is sent to the correspondent medical personnel to notify the inquiries. After the medical personnel provide the answers, system reminds users through email and updates the database. Users can access the answers or make further inquiries. The system also provides the functions of searching past inquiries and answers which are stored in the database.

With the increasing needs of online health consultation, there is a need to explore how people's perceptions toward health consultation website and how to improve website to satisfy people's demands. Thus, this study extends Expectation-Confirmation Theory to formulate people's perceptions of using health consultation website and conducts a survey to collect data to validate the proposed model.

THE DEVELOPMENT OF RESEARCH MODEL AND HYPOTHESES

Figure 2 shows the proposed framework and the following sections introduce the theoretical background and hypotheses building.

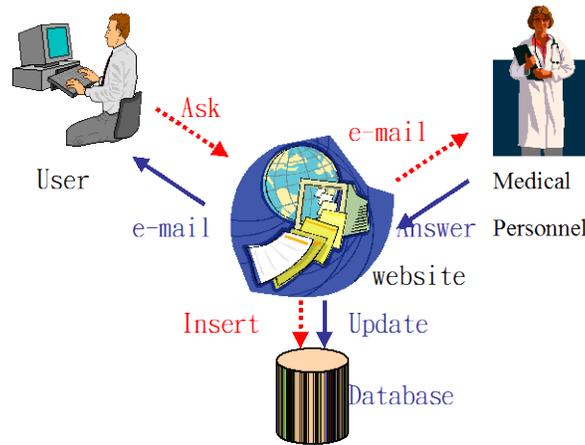


Figure 1. Consultation Procedures

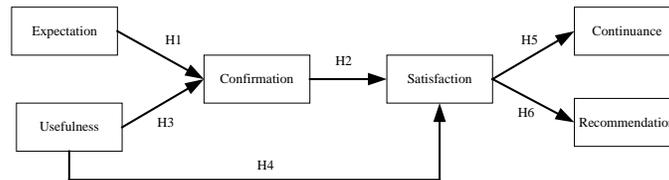


Figure 2. Proposed Framework

A. Expectation-Confirmation Theory

Oliver [9] developed Expectation-Confirmation Theory (ECT) to depict that consumers' intention to re-consume products or services is determined mainly by the extent of satisfaction with prior experience of that products or services. ECT presumes that consumers firstly form an initial expectation of the target products or services. Then they form perceptions about their performance after consuming them. The expectation is confirmed if the perceived efficacy matches their expectation. If not, disconfirmation occurs. Users' extent of satisfaction is influenced by the confirmation level and re-consume intention is assessed by satisfaction. Expectation provides the baseline of judgment about products or services and can be seen as an adaptation level. It is regarded as a determinant of satisfaction and is influenced by: (1) the products or services; (2) others' recommendation or promotion; and (3) individual characteristics [9]. Adaptation level is occurred by the extent to which products and services excel, match or lower one's expectation. Satisfaction is decided by the combination of expectation and the resulting disconfirmation.

In a health consultation website context, people use the services of the websites due to their personal need, such as search for disease symptom, treatment information and second opinions. Expectation is formed according to the quality of provided services. Subsequent usage reveals perceived performance level that is compared to prior expectation extent. The judgment resulting from the comparison is categorized as confirmation if the service is equal or better than expectation while it is categorized as disconfirmation if the service is worse than expectation. The expectation level provides a baseline that confirmation judgment is made. The confirmation is thought to originate from the associated emotional experiences. When people confirm their expectation, the positive emotion enhances the degree of satisfaction judgment. Lin et al. [7]

examined ECT model in the web portal context and found that confirmation is positively related to satisfaction. In sum, the hypothesis 1 and 2 are introduced below:

Hypothesis 1: Users' expectation is positively related to confirmation with health consultation website.

Hypothesis 2: Users' confirmation is positively related to satisfaction with health consultation website.

B. Perceived Usefulness (PU)

TAM which was developed by Davis [3] has been extensively applied in the studies related to people's intention using website. TAM has become well-established as a robust and powerful model to predict user acceptance toward using information technology. It theorizes that an individual's intention to use information technology is determined by two beliefs: "perceived usefulness" (PU) and "perceived ease of use" (PEOU). Bhattacharjee [1] adapted ECT to a Post-Acceptance model for information system continuance. He believes that the decision of users' using information systems continually is similar to consumers' repurchase decision. His model incorporates PU to replace post-consumption expectation. Although PU and PEOU are two salient factors affecting IS acceptance, PU impacts attitude substantively and consistently across the period of IS usage, and PEOU only has influence on the attitude in the primary stage instead of later periods [6]. For promoting medical consultation website and enabling the continuance of usage, PU is significantly more important than PEOU. Therefore, PU is selected to present individual's belief that using consultation website is beneficial to his personal health care needs.

In a medical consultation website context, the initial expectation is different from that in e-commerce website context (e.g., online banking and web portal). When people browse, search the website or make inquires, they have clear purposes and realize why they come to this website. Their expectation is similar to consult a doctor to get some information or suggestions instead of surfing the Internet without specific targets. Thus, the expectation has been formed before they use the medical consultation website and it provides the reference degree for users to develop evaluative judgements whether the expectation is confirmed according to the services provided by the website. We hypothesize PU is positively related to confirmation and satisfaction. PU captures the instrumentality of using medical consultation website. When users perceive that the services provided by website are helpful for their needs, the confirmation of their needs will be formed. Additionally, when users perceive higher extent of usefulness of the website, it is expected to have higher extent of satisfaction. Hypothesis 3 and 4 are introduced below.

Hypothesis 3: User's extent of perceived usefulness is positively related to confirmation with health consulting website.

Hypothesis 4: User's extent of perceived usefulness is positively related to satisfaction with health consulting website.

C. Continuance and recommendation

For the long-term operation of medical consultant websites, exploring continuance and recommendation behavior is more essential and worthwhile than one-time consumption behaviors. This is especially true where website operations are competitive and hard to maintain users' loyalty. Satisfaction is an important index for users' continuance of using services. According to ECT, users' repurchase intention is positively

affected by their degree of satisfaction. The scenario of repurchasing and re-visiting website is similar. When users are satisfied with the services provided by medical consultation website, the continuance intention would be higher. Additionally, it is also critical to attract new users for the success of medical consultation websites. In health professional services, users may perceive greater risk and vulnerability due to their lack of experience and knowledge to evaluate the services confidently [10]. They prefer personal sources to provide clues for their judgments, such as friend referrals, instead of commercials. Therefore, the effect of Word-of-mouth (WOM) to attract new users would be important for the promotion of medical consultation website. When users are satisfied with the service quality, they would have higher intention to recommend others to use the services. In sum, we propose hypothesis 5 and 6 as below.

Hypothesis 5: User's extent of satisfaction is positively related to their continuance with medical consultation website.

Hypothesis 6: User's extent of satisfaction is positively related to recommendation with medical consultation website.

METHODOLOGY

To validate the model and hypotheses, online questionnaire was applied. We cooperated with Taiwan e-hospital which provides free health consultations for the public in Taiwan, and located the questionnaire link on the homepage. Email was sent to invite registered users who have made queries to ask them to fill in the online questionnaires. Participants were asked about their demographic data and perception of using Taiwan e-hospital website. The survey indicated that their responses would be kept confidential and only summary information will be displayed. The survey lasted one month and 226 validated questionnaires were collected. Females counted for 57% (n=129). Most participants were in the age group of 20-30 (30%), 30-39 (31%) and 40-49 (20%). Educational level was most Bachelor degree (61%) and experience using Internet was most greater than 3 years (85%).

DATA ANALYSIS AND RESULTS

The overall fit of the proposed structural model was quite satisfactory (e.g. $\chi^2 = 445.09$, $df = 214$, $\chi^2/df=2.08$, $RMSEA = 0.078$, $CFI = 0.98$, $IFI = 0.98$, $GFI = 0.88$, $AGFI=0.85$). Although χ^2 is a bit large ($\chi^2=445.09$), the value of (Chi-square/degree of freedom) is less than 3 and the GFI and AGFI are close to 0.90 (Hair et al., 1998). In addition, the RMSEA value is under the acceptable value of 0.08. CFI and IFI both present a good fitness.

Figure 2 shows the results of applying Structural Equation Modeling (SEM). Hypotheses 1 and 2 examine the links between expectation, perceived usefulness and confirmation. Expectation was insignificantly related to confirmation while usefulness was significantly related to confirmation. Therefore, hypothesis 1 was not supported but hypothesis 2 was supported. Expectation and perceived usefulness explained a significant percentage of variance in confirmation ($R^2=0.85$). Hypotheses 3 and 4 examine the effect of perceived usefulness and confirmation toward satisfaction. The link between perceived usefulness and satisfaction was insignificant but the link between confirmation and satisfaction was significant. Thus, Hypothesis 3 was not supported while Hypothesis 4 was supported. Perceived usefulness and confirmation explained 79 percentage of the variance in satisfaction ($R^2=0.79$). Satisfaction significantly influenced

continuance and recommendation, and explained the variance individually in 88 percentage and 84 percentage individually. Therefore, Hypotheses 5 and 6 were supported.

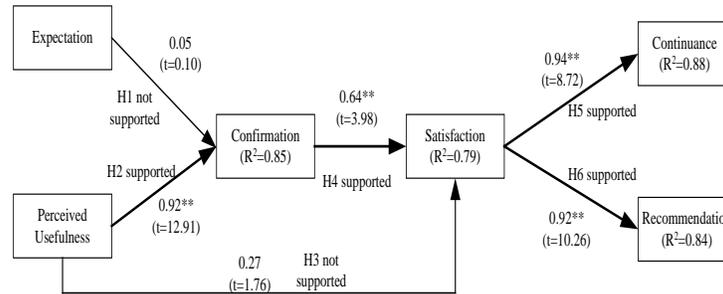


Figure 2. LISREL Analysis of Research Model

DISCUSSION

ECT assumes that consumers form initial expectations prior to consumption and their expectations are confirmed by the extent of perceived performance of the services. Results of this study presented the insignificant relationships between expectations and confirmation but significant relationships between perceived usefulness and confirmation. This confirmed the argument of Post-Acceptance model by Bhattacharjee [1]. Expectation formed by first-hand experience evolves along with their consumption. Their post-consumption expectation which may be different from pre-consumption expectation would be more realistic and less susceptible to change. That is, post-consumption may substitute pre-consumption expectation to guide subsequent continuance and recommendation decision. In a context of consultation website, perceived usefulness would replace the role of post-consumption. This implies that users' perceived usefulness of websites toward their satisfaction is more important than the confirmation of their expectation.

Failure to find support for Hypothesis 3 and success to support Hypothesis 2 and 4 indicated that users' perceived usefulness impacts satisfaction by the intermediate of confirmation. Perceived usefulness of medical consultation websites is the vital consideration to retain users. Perceived usefulness is regarded as whether the functions of the websites and the information provided by medical personnel are useful for their health decision making. Useful functions and information comes from well website structure and rapid and detailed advices from medical personnel. The former one helps users find existing questions and answers, well manage their questions and create personal profile. The latter one provides valuable references and recommendation for their health concerns, such as possible diseases or reasons, and recommended treatments.

Satisfaction presented as a strong predictor for continuance (R²=0.88) and recommendation (R²=0.84). This finding corresponded to previous research, such as [2] and [8]. Users with higher degree of satisfaction would have higher intention of continuance use and stronger motivation to recommend the websites to others. Therefore, users' satisfaction is an important index for the promotion of medical consultation websites. Once users are satisfied with the websites, they will become loyalty to it and pleasure to suggest it to others.

CONCLUSIONS

Perceived usefulness was confirmed as a crucial factor to improve users' extent of satisfaction. Users' pre-consumption expectation would be subsequently substituted by usefulness. Satisfaction is a major index for retaining users' loyalty and interests and transforming into motivation to recommend to others. To boost users' perceived usefulness is a key while managing consultation websites. Except intact website functions, facilitating the motivation of medical personnel to devote their time and expertise is the key to the success. Some measures such as incorporating the contributions into the evaluation of medical personnel's performance, rewarding the best participants and engaging in moral persuasion that it would benefit patients. While we collected data from the users in a specific website, some may criticize that the results may not provide satisfactory generalization. We believe that users behavior in every health consultation website have the same pattern. That is, although different health consultation websites may have different website structures, procedures and functionality, users' feeling toward their services should still follow ECT model. Additionally, subjects from a specific website reduce the variation caused by different perceptions from different websites.

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