

## Online Health Information Seeking among Malaysian Women: Technology Acceptance Model Perspective

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### ABSTRACT

Although there are studies on Internet usage for searching health information based on Technology Acceptance Model, research about women looking for health information is still scant in spite of the fact that women are dominant Internet users in terms of health information. The objective of the study is to examine the influence of perceived ease of use, perceived usefulness, and attitudes toward Internet usage on online searching for health information. The mediation role of attitude is also tested in the relationship between perceived usefulness and perceived ease of use as independent variables and Internet usage for health information, using structural equation modeling. Data for this study was collected from women working at a public university in Kuala Lumpur. A total of 293 usable responses were analyzed. Results showed that perceived usefulness and attitude have a significant effect on Internet usage for health information seeking. Findings also suggest that attitude was significantly predicted by perceived usefulness and perceived ease of use. Moreover, this study found that attitude partially mediates the influence of perceived usefulness on online health information seeking. Furthermore, perceived ease of use indirectly influences online health information seeking through attitude.

**Keywords:** Health information seeking, internet, Technology Acceptance Model

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### 1. INTRODUCTION

Self-health management and preventive healthcare have become increasingly important in Malaysia because of widespread prevalence of western chronic diseases that consume an ever increasing allocation of health budgets (Hashim, 2003). Of particular concern is the impact this would have on the female population. Malaysian women are susceptible to chronic diseases more than men (Amal et al., 2011; Ministry of Health, 2006; Zainuddin et al., 2011).

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Health information seeking is a manifestation of self-health management. It can promote individuals' health knowledge, formulate their judgments, beliefs, and attitudes toward healthy behaviors accordingly and empower them to make an informed decision about health eventually (Goonawardene et al., 2013; Jamal et al., 2015). Today, the Internet usage has noticeably increased and became an integral part of people's lives (Joorabchi et al., 2013). Information seekers can acquire an abundance of health information freely through the use of Internet. Without a shadow of doubt, the Internet has potential to become the main source of health information for women as it provides an avalanche of easily accessible information about health, affords the efficient interactivity between patients and health professionals (Cline & Haynes, 2001), creates a unique forum for more informed discussion about health issues (Wald et al., 2007), reduces health care cost particularly for those who are not supported by government and private insurance (Murero & Rice, 2006), and provides privacy because individuals can ask any awkward or sensitive health and medical query with the comfort of remaining anonymous (Cotten & Gupta, 2004).

In spite of considerable attention paid to the study on online health information seeking behavior among women in many societies and factors influencing this behavior (Dumitru et al., 2007; Fox, 2011; Lim et al., 2011; Yan, 2010; Yun & Park, 2010), in Malaysia there is no published study which provides information about online health information seeking and possible cognition and affective-related factors which may affect Internet adoption as a health information source. According to the Technology Acceptance Model (TAM), technology adoption rests on the individuals' cognitive beliefs about technology which in turn forms their affective feeling towards the respective technology which in turn causes technology acceptance (Davis, 1989).

This study aims to look into online health information seeking behavior among urban Malaysian women drawing upon TAM and to examine whether and how cognition factors (i.e. perceived usefulness and perceived ease of use) and affective feelings contribute to the Internet usage for health information purposes.

## 2. BACKGROUND OF RESEARCH AND HYPOTHESES DEVELOPMENT

### 2.1 *Online Health Information Seeking Behavior*

Today millions of people throughout the world are using the Internet, and much of this activity has focused on health. The most common online health related activity is health information seeking (Atkinson et al., 2009; Dumitru et al., 2007; Hale et al., 2010).

Information seeking refers to the "purposive seeking for information as a consequence of a need to satisfy some goal" (Wilson, 2000, p. 49). Individuals seek information to fill gaps between what they know and what they need to know in various fields including health. Health information seeking takes place in an environment where different sources are available (Brashers et al., 2002) and information seekers consciously select one or more sources to meet their informational need (Rieh, 2004). Among formal and informal health information sources, while the mass media plays a pivotal role in disseminating information, the Internet may be implementing much

of this function. Internet as the largest online medical library contains over 100,000 health-related websites (Harrison et al., 2007).

Since 2000, Internet popularity for seeking health information has widely increased. A Pew survey in 2000 showed that 55 percent of American adults use the Internet to acquire health information (Fox et al., 2006) while in 2006 the percentage of American online health information seekers increased to 80 percent (Fox, 2006). Similarly, Harris Poll survey in 2010 revealed that 88% of adult Internet users have searched for health information (Harris Poll, 2010). However, the latest finding of Pew survey in 2012 indicated that 72 percent of Americans reported that they have searched health information online in the past year, indicating the decline in online health information seeking as compared to the prior findings of Pew surveys (Fox & Duggan, 2013). In their research on Internet usage for health and disease information, Dumitru et al. (2007) found that searching for health-related information after an appointment with the doctor (e. g. for second opinion) was the most prevalent health-related Internet activity (66.2 % of health Internet users), followed by seeking out information to make decision to consult with a health professional (65.0 %), reading about health/illness issues in general (61.3 %) and looking for health-related information before appointment with doctor (53.8 %). Similarly, Hale et al. (2010) found that Internet is used for "looking for health or medical information for oneself, looking for health or medical information for someone else, looking for information about physical activity or exercise, looking for information about diet or nutrition, looking for information about protecting oneself from the sun and looking for information about quitting smoking." (p. 1310).

International Research Institutes (IRIs) (2011), the largest association of independent market research agencies in the world conducted a survey in 2011 concerning health perception around the globe. Using face to face and online interview, 427 Malaysians were surveyed to understand how they perceive issues on health. The survey showed that among primary sources of health information, 56 percent of Malaysians select family and friends, 49 percent choose one or more specialist physicians, 34 percent select a pharmacist and 31 percent choose their own family physician. Regarding the variation in use of secondary sources of information health, Websites were valued more than the other channels with 63 %, followed by magazines and newspapers with 54 %, Brochures from physicians' offices or clinics with 43 %. TV and radio were used less than the other channels with 41%.

Women are one of the certain groups of Internet users who are more likely to show online health information seeking compared to men (Cotten & Gupta, 2004; Escoffery et al., 2005; Fox, 2006; Fox & Duggan, 2013). Fox (2006) found that eighty two percent of American women utilized the Internet to search information on health whereas 77 percent of male use the Internet for health information. The findings from Pew survey in 2010 indicated that 65% of women and 53% of men reported to have searched online for information about health or medical issues (Fox, 2011). Moreover the latest Pew survey in 2012 revealed that women are more likely than men to go online to figure out a possible diagnosis (Fox and Duggan, 2013). A study also found

that women were about two times more likely to use the Internet for health-related purposes after controlling for sociodemographic and health status (Atkinson et al., 2009). According to Abraham et al. (2010), health sites have been visited by higher percentage of women (22.8%) as compared to men (17.4%).

Salman and Hasim (2009) investigated sustainability of Internet use among Malaysian female Internet users living in an urban area and found that 77% of them utilized the Internet to look for information and they were also satisfied with the Internet as communication and information source. However, some other studies conducted in rural areas and among breast cancer patients showed that Internet popularity to acquire health information is still low (Ahmad Bakeri et al., 2009; Mazanah et al., 2011; Mohd-Nor et al., 2013).

**2.2 Theoretical Framework: Technology Acceptance Model**

A great number of empirical studies revealed the ability of TAM to explain technology usage in different contexts including investigation of Internet usage for health information (Ahadzadeh et al., 2015; Kim & Park, 2012; Lemire et al., 2008; Lim et al., 2011; Sharif et al., 2015; Wong et al., 2012; Yun & Park, 2010).

Technology Acceptance Model (TAM) has been frequently studied by scholars in different contexts. The major objective of proposing the TAM by Davis (1989) was to predict the factors determining behavior toward technology acceptance. The first proposed theoretical framework of the TAM focused on realizing and enhancing technology acceptance for organizational performance improvement (Davis, 1989). TAM framework was adopted from the Theory Reasoned Action (TRA) model. However, the principle aim of the TRA is to describe any specific belief of human behavior, it does not explain the influence of any specific belief on human behavior (Davis, Bagozzi, & Warshaw, 1989). In order to overcome this limitation, Davis (1989) designed measurement scales for two unique constructs, i.e., perceived usefulness (PU) and perceived ease of use (PEOU) and validated them conducting experimental study. Davis (1989) emphasized that “perceived ease of use and perceived usefulness function as basic determinants of user behavior” (Davis, 1989, p. 321). PU is defined as the “degree to which a person believes that using a particular technology would enhance his/her performance on a task” (Davis, 1989, p. 320). In contrast, PEOU is defined as the “degree to which a person believes that using a particular system would be free from effort” (Davis, 1989, p. 320).

In order to ensure high reliability and validity of the developed measurement scales for PU and PEOU, a multi-step process was conducted by Davis and his colleagues (1989). Specifically, in their studies they focused on “the ability to predict peoples’ computer acceptance from a measure of their intentions, and the ability to explain their intentions in terms of their attitudes, subjective norms, perceived usefulness, perceived ease of use, and related variables” (Davis et al., 1989, p. 982). As theoretical frameworks, TRA and TAM were utilized to explain the rejection or acceptance of computer technology. TRA predicts and explains individuals’ behavior in different

areas of expertise (Ajzen & Fishbein, 1977). The validity of TRA “comes from evidence for the effectiveness of theory-based behavior change interventions” (Ajzen & Fishbein, 1977, p. 432). The TRA posits that individual’s particular behavior is directly influenced by their behavioral intention (BI) to do the behavior which in turn is influenced by their attitude (ATT) and subjective norm (SN) to a specific behavior (see Figure 2.1) whereas the TAM framework posits that perceived usefulness (PU) and perceived ease of use (PEOU) as initial drivers for technology acceptance behavior influence on Attitude (ATT) towards using the technology which in turn influences behavioral intention to use followed by actual use (see Figure 1). Thus, in addition to PU and PEOU, attitude also plays an essential role in recognizing how technology is accepted (Davis, 1989).

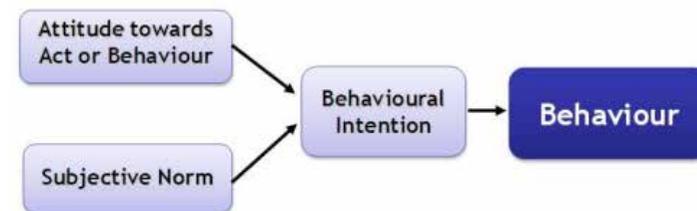


Figure 1. Theory Reasoned Action

In order to identify the effectiveness of PEOU, PU, ATT and BI in explaining and predicting technology acceptance, Davis et al. (1989) carried out an empirical study to achieve this objective. Based on the results obtained, the authors concluded that, “These results suggest the possibility of simple but powerful models of the determinants of user acceptance, with practical value for evaluating systems and guiding managerial interventions aimed at reducing the problem of underutilized computer technology” (Davis et al., 1989, p. 982). The final determinant in the TAM is external factor which predicts both PU and PEOU. As it is illustrated in Figure 2, TAM does not postulate any direct effect on technology use from external factors. Based on the TAM framework, external factors which are technology and/or user-related characteristics can indirectly influence technology use through PU, PEOU and ATT (Davis et al., 1989).

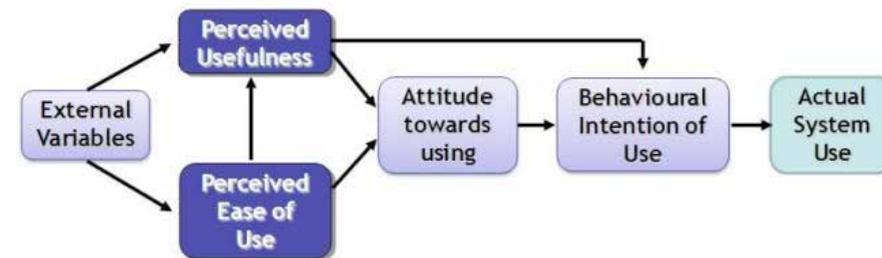


Figure 2. Technology Acceptance Model (TAM)

While the TRA model is proper in predicting and explaining any human behavior, the TAM framework is appropriate in explaining and predicting any technology acceptance. A great number of empirical studies revealed the ability of TAM to explain technology use in different contexts (Davis et al., 1989; Kim & Park, 2012; Lim et al., 2011; Venkatesh & Davis, 2000; Wong et al., 2012; Yun & Park, 2010).

The major objective of original TAM is to determine and explain the technology usage that is fundamentally established by user's behavioral intentions and their attitudes towards technology. These in turn are significantly influenced by perceived technology usefulness as well as perceived ease of technology use. By adding or removing some constructs, researchers have modified the original TAM. However, three most important constructs of TAM (i.e. perceived usefulness of technology, perceived ease of technology use and attitude) have mostly remained. A construct that is often been eliminated from the original TAM is behavioral intention (BI) which plays the mediating role between perceived usefulness, ease of use, and attitude towards technology usage (Davis, 1989; Davis et al., 1989; Horton et al., 2001). Horton et al. (2001) stressed that BI should be removed from the TAM framework in order to realize the direct effects of other constructs such as attitude, perceived usefulness, perceived ease of use on technology usage. Additionally, studies revealed that BI has not mediated the influence of perceived usefulness, perceived ease of use, and attitude on technology use (Horton et al., 2001; Mohanty & Turner, 2006). Regarding the suggestions given on BI deletion from TAM, therefore, BI is omitted from the proposed model.

### 2.3 *Determinates of TAM*

In Technology Acceptance Model, usage functions as the dependent construct to measure acceptance of a particular technology (Davis, 1989). In many empirical studies, usage has been considered as an acceptable measure of technology use (Davis et al., 1989; Goeke et al., 2010; Lim et al., 2011; Turner et al., 2010; Wong et al., 2012). Straub et al. (1995) proposed two styles of measurements for technology usage: actual technology usage and self-reported technology usage. Actual technology usage is established on objective measurements and gained by gathering data from technology server records or duration and activity of technology usage while self-reported technology usage is established on subjective measurements and obtained by gathering data via questionnaire or interview, focusing on the frequency of usage of a certain technology (Straub et al., 1995). Both types of measurement have been utilized in the TAM framework.

Obtaining actual usage of technology in the timely fashion can be difficult, even if a researcher has the capability to access data of actual usage (Straub et al., 1995). Moreover, obtaining accurate data could be problematic due to confidentiality and complexity (Straub et al., 1995). According to these issues in obtaining actual usage data, many researchers prefer to use self-reported usage measurements in investigating technology adoption. Five indicators were found in several studies on self-reported technology usage including (1) perceived daily use; (2) perceived frequency of use;

(3) the number of applications used; (4) perceived usage level; (5) sophistication level of applications used (Al-Gahtani & King, 1999). To increase the reliability and robustness of self-reported technology usage measurements, Szajna (1996) suggested the simultaneous use of a variety of self-reported measurements, as long as there is strong correlation between the various self-reported measurements. However, for the current study, perceived frequency of use is asked to measure respondents' health-related Internet use.

### 2.4 *Perceived Usefulness*

The two important constructs of TAM are perceived usefulness (PU) and perceived ease of use (PEOU). Davis (1989) argued that PU is a more important determinant than PEOU. In the TAM framework, PU influences both attitude and behavioral intention to use technology, as illustrated earlier in Figure 2.

The relationship between PU and technology acceptance is based on the presumption that expectation of performance based on technology use has a significant influence on technology acceptance (Davis et al., 1989). The basic assumption behind PU is the belief that utilizing a certain technology increases user's performance (Davis, 1989; Davis, et al., 1989). It is argued that if one believes a particular technology is beneficial, then ease of use does not influence the adoption of that technology as well as the frequency of its usage (Szajna, 1996). On top of that, if user believes a technology is easy to use, he/she also believes that technology is useful.

A large number of studies have revealed that PU and PEOU significantly predicted technology use (Davis, 1989; Henderson & Divett, 2003; Lim et al., 2011; Park, 2009; Shroff et al., 2011). Compared to PEOU, PU has explained a greater variance of technology usage. Several research studies have indicated that PU is a more influential factor predicting technology usage than PEOU (Igarria et al., 1997; Jeong & Yoon, 2013; Park et al., 2013). Examining the most significant and powerful variables of the TAM affecting microcomputer usage, Igarria et al. (1997) found that PU and PEOU positively contribute to technology usage. However, PU had a larger influence than PEOU. In his empirical study, Davis (1989) found that 38% of variance in IT usage is explained by PEOU and PU. The influence of PU on IT use alone was significant when controlling PEOU. On the contrary, the influence of PEOU on IT usage alone was not significant when controlling PU. In another empirical study, Davis (1989) also found that both PU and PEOU explained 74% of variance of future IT use. In addition, the study also revealed that the effect of PU on IT technology use was more than that of PEOU. Some research studies provided evidence in supporting the PU effect on the usage of information technologies for health information. For instance, Lemire et al. (2008) found the positive influence of perceived usefulness of a health website on the usage of the site as a preferred source of health information as well as the frequency of health site use. Using TAM framework, Lim et al. (2011) also carried out a research to investigate mobile phone usage for health-related information among Singaporean

women. The authors found that perceived usefulness as a core TAM variable was found to be significantly and positively contributed to behavioral intention to use mobile phone for health information. Similarly, Wong et al. (2012) used TAM constructs to examine the determinants of intention to use Internet to look for health-related information among Chinese older adults. Findings showed that perceived usefulness of Internet has a significant relationship with intention to use Internet for health information seeking, indicating that individuals with higher perceived usefulness presented higher behavioral intention to use Internet for health information. Yun and Park (2010) also found the positive effect of perceived usefulness of Internet for disease information seeking on intention to search for disease information on the Internet.

In addition to technology usage, attitude is also influenced by PU based on the TAM framework. Several studies supported the influence of PU on attitude (Guritno & Siringoringo, 2013; Holden & Rada, 2011; Porter & Donthu, 2006). Examining attitudes towards online airlines ticketing usability, Guritno and Siringoringo (2013) found that perceived usefulness of Internet to shop for online tickets has the greatest and direct influence on consumer attitudes towards usability of service tickets online. Similarly, another study found that the more an individual perceives the Internet useful, the more favorable that individual's attitude toward use of the Internet (Porter & Donthu, 2006). Holden and Rada (2011) also identified that teachers' perceived usefulness of educational technologies has relationship with their attitude towards these technologies and this relationship is significantly stronger than the relationship between perceived ease of use and attitude.

Regarding the influence of perceived usefulness of the Internet for health-related purpose on attitude towards Internet usage for health issues, Yun and Park (2010) found that perceived usefulness of disease information seeking on the Internet positively influenced attitude towards looking for disease information on the Internet. In consistence with Yun and Park (2010), Kim and Park (2012) also identified that attitude towards health information technology use for health information such as Internet is significantly affected by perceived usefulness of these information technologies. Literature reviewed above indicated the impact of PU on attitude and usage of information technology. Numerous studies have also provided strong support for mediating role of PU between external variables and technology usage as well as between external variables and attitude. In a study regarding training and organizational support, Igbaria et al. (1997) found that PU and PEOU mediated the influence of computer self-efficacy, computer anxiety, organizational support, and computer experience on computer usage. Examining the roles of information quality and system quality in predicting public health students' intention to use e-resources for completing research paper assignments, Tao (2009) also identified that the impacts of both information quality and system quality on behavioral intention to use e-resources were mediated through perceived usefulness and perceived ease of use. Similarly, a study showed that perceived

usefulness and perceived ease of use are substantive mediators (full mediating effects) between age, education, income and race as external variables, and attitude towards Internet usage (Porter & Donthu, 2006). Hubona and Geitz (1997) found that the effect of the external variables on technology usage is partially mediated by the perceived usefulness and perceived ease of use as there were significant and direct relationships between external variables and technology usage behavior as well.

### 2.5 Perceived Ease of Use

PEOU after PU is the second important and powerful variable predicting technology usage in TAM framework (Davis, 1989). PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). The assumption of PEOU is that "an application perceived to be easier to use than another is more likely to be accepted by others" (Davis, 1989, p. 320). PEOU indirectly influences technology usage through attitude and perceived usefulness, if behavioral intention to use technology as another mediator is eliminated from the TAM. TAM posits a strong positive association between PU and PEOU (Venkatesh & Davis, 2000). The role of PEOU within the TAM framework is significant because technology adoption depends on the perception about how easy technology use is and their perception regarding its usefulness (Igbaria et al., 1997). In other words, if users believe a particular technology is easy to utilize, they most likely believe that the technology is beneficial (Szajna, 1996). Findings regarding the influence of PEOU on technology usage are not constant in all conditions. For instance, Adams et al. (1992) emphasized that influence of PEOU on technology usage differ in different circumstances where experience and external variables come to play as the key factors. A study showed that perceived ease of use of individuals who have more experience with IT did not influence their technology use (Venkatesh & Davis, 2000).

Based on the original TAM framework, PU and PEOU are correlated. Venkatesh and Davis (2000) examined the factors predicting PEOU and the influence of PEOU on technology usage, employing the TAM framework. The authors found that PEOU and PU explained 35% of variance in intention to use technology. On top of that, PEOU positively and significantly had an influence on the intention to use PU (???). Furthermore, Leng et al. (2011) supported the TAM framework and the influence of PEOU on PU and intention to use social networking sites. Guritno and Siringoringo (2013) also found that perceived ease of Internet use to shop for online tickets has less influence on consumer attitudes towards the usability of online ticketing services compared to perceived usefulness.

Regarding the usage of information technology for health-related purposes, Lim et al. (2011) found that perceived usefulness of mobile and perceived ease of mobile use predicted 30% of mobile usage to seek health information. Moreover, PU and PEOU have significant impact on mobile use. Wong et al. (2012) discovered that PEOU is significantly associated with behavioral intention to use Internet for health related Information, indicating that Internet users with higher perceived

ease of use have a higher intention to use the Internet for health information.

In addition to technology usage, attitude is also influenced by PEOU. For example, Porter and Donthu (2006) found that the more perceived ease of Internet use leads to the more favorable attitude toward the Internet usage. Similarly, a study showed that perceived ease of Internet use for seeking disease information positively influenced attitude towards disease information seeking on the Internet (Yun & Park, 2010). In agreement with Yun and Park (2010), Kim and Park (2012) also found that perceived ease of health information technology use significantly contributes to attitude towards this technology usage.

Similar to PU in the relationship within the TAM framework, PEOU also has a mediating role. Despite the fact that the TAM framework ignored the examination of this mediating role, the latter model versions posit that PEOU mediates the effects of external factors on attitude and technology usage. Hence, numerous researchers have studied this important role while extending the TAM framework. Venkatesh and his colleague's study (2000) indicated that self-efficacy, perceptions of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability were all significant predictors of PEOU. These external variables, on average, accounted for a 50% variance in PEOU. The result interpretation provided by Venkatesh and Davis (2000) implied that PEOU was impacted by mostly individual characteristics which were related to individuals' general beliefs regarding computers. In summary, PEOU is an important factor influencing technology usage, PU and attitude. It also has a mediating role in the TAM framework between external variables and attitude as well as external variables and technology usage.

## 2.6 Attitude

Attitude toward a behavior (e.g. technology usage) is defined as an individual's positive or negative evaluation of performing the behavior. It involves an individual's judgment that performing a behavior is good or bad and also a general evaluation that an individual is inclined or disinclined to perform the behavior (Ajzen & Fishbein, 1980).

Attitude guides individual's behaviors by shaping perception of the world (Ajzen & Fishbein, 1980). As shown in the TAM framework, attitude is derived from perception of technology usefulness and perception of ease of technology use and establishes technology usage (Davis, 1989). In their study, Hubona and Geitz (1997) found that that frequency of technology usage and amount of usage are significantly influenced by attitude towards technology using. Another study also showed that acceptance of information technology is positively influenced by attitude (Al-Gahtani & King, 1999). Regarding the relationship between attitude toward health information technology usage and technology usage for health-related issues, Yun and Park (2010) found that attitude towards using the Internet for seeking disease information had a significant impact on the intention to use this technology for seeking disease information. Similarly, the positive influence of attitude towards health information technology usage was found in Kim and Park's study (2012).

Based on the TAM framework and existing literature reviewed above, the following hypotheses are proposed:

H1: Perceived usefulness of Internet has a positive influence on Internet use for health information.

H2: Perceived ease of Internet use has a positive effect on Internet use for health information.

H3: Perceived usefulness of Internet has a positive influence on attitude towards Internet.

H4: Perceived ease of Internet use has a positive effect on attitude towards Internet.

H5: Attitude towards Internet use has a positive effect on Internet use for health information.

H6: Attitude towards Internet use mediates the effect of perceived usefulness of Internet on Internet use for health information.

H7: Attitude towards Internet use mediates the effect of perceived ease of Internet use on Internet use for health information.

## 3. METHOD

### 3.1 Participants and Data Collection

For this study, a questionnaire was used to collect data. It contained 23 items measuring perceived usefulness of Internet for health information and management, perceived ease of Internet use, attitude towards Internet use for health issues, and Internet usage for seeking health information.

This study used power analysis to determine the required minimum sample size to test the developed model and hypotheses. Considering  $\alpha = .95$ ,  $\beta = .8$ , and a small effect size ( $f^2 = .05$ ), 222 samples are enough to achieve the desired power (Cohen, 1988). Moreover, the rule of thumb of 10 cases for each item suggests 180 samples for testing this study's model (Hair et al., 2010).

The research participants were recruited among non-academic female members of the staff working at a public university located in Kuala Lumpur, capital of Malaysia. The identified population for the present study was most likely to include a large number of Internet users in terms of health-related issues because female health-related Internet users are mainly educated (Bowen et al., 2003; de Boer et al., 2007), married (Bowen et al., 2003; Choi, 2011; Walsh et al., 2012), and from urban areas and vicinities (Mazanah et al., 2011; Valero-Aguilera et al., 2013) and mainly access to the Internet to search health-related information from workplace (Atkinson et al., 2009; Mazanah et al., 2011). Two hundred and ninety three responses were identified as usable after excluding cases that have not used the Internet for health information, and cases that had more than 10 percent missing values fulfilling the sample size determination by this study. Researchers personally proceeded to distribute and collect the data through convenience sampling method. This method was considered to be the best way to collect data as the completion rate seems higher than straightforward mail survey. Data collection procedure took almost two months.

**Table 1.** Demographic Characteristics of Respondents

	Frequency	Percentage	Mean	SD
<b>Age (Years)</b>			34	8
20-29	109	38		
30-39	120	42		
40-49	44	15.5		
≥50	13	4.5		
<b>Marital Status</b>				
Single	92	31.5		
Married	194	66.5		
Others	6	2		
<b>Education Level</b>				
Primary school	18	6		
Secondary school	138	47.5		
College/university	135	46.5		
<b>Job Title</b>				
Administrative staff	85	30		
Clerical staff	168	59		
Secretary	18	2		
Others	14	6		
<b>Household Income (RM)</b>			3428	1824
1000-2999	114	39.5		
3000-5999	133	46		
6000-8999	39	13.5		
≥ 9000	2	1		

**3.2 Measurement of Variables**

Perceived usefulness of Internet for health information and health management and perceived ease of Internet use were assessed by the 8 items developed by Davis (1989). All items of these constructs were rated on a 5-point Likert scale (1= Strongly disagree, 2= Disagree, 3=Neutral, 4= Agree and 5= Strongly agree). Higher score indicated the more perceived usefulness of Internet for health information and health management and more perceived ease of Internet use. Four items on attitudes toward Internet use for health information were adopted from Wong et al.’s study (2012). All items of these constructs were rated on a 5-point Likert-type scale (1= Strongly disagree, 2= Disagree, 3=Neutral, 4= Agree and 5= Strongly agree). Higher score indicated the more favorable attitude towards Internet use for health information. Internet usage for seeking health information was measured by 11 items which were adopted from past studies (Atkinson et al., 2009; Dumitru et al., 2007; Hale et al., 2010; Kalichman et al., 2003; Kim & Park, 2012; Yoo & Robbins, 2008). Respondents were asked to determine how frequently they use the Internet for health and medical information. All

items were rated on a 5-point Likert-type scale (5= Always, 4= Often, 3= Sometimes, 2= Rarely, and 1= Never). Higher score indicated higher frequency of Internet usage for health information seeking (see Appendix 1)

**3.3 General Characteristics of the Participants**

As indicated in Table 1, respondents of the study are of a relatively wide range having 20 as minimum and 57 years as the maximum age (Mean = 34, SD = 8). Majority of the respondents (42%) are made up of the 30 to 39 age group. Most respondents (66.5%) were married and less than half of them (47.5%) possessed a college or university degree. The range of respondents’ monthly household income was from RM 1000 as the minimum to RM 10000 as the maximum. The mean income was RM 3428 (SD= 1824). Majority of respondents (46 %) fell in the RM 3000-5999 income range, followed by those (39.5%) with the 1000-2999 income group.

**3.4 Analysis and Results**

First of all, confirmatory factor analysis (CFA) was conducted to assess how well data fit into the model. The results of CFA are shown in Table 2. All factor loadings are greater than .5 and significant (z-value range 10.254 to 19.021). Besides, the model has a good fit [Model Fit:  $\chi^2(df) = 273.106 (121)$ ,  $\chi^2/df = 2.257$ , CFI = .907, IFI = .959, TLI = .948, RMSEA (90% C.I.) = .066 (.055-.076), SRMR = .0464] (Byrne, 2013; Hair et al., 2010; Pahlevan et al., 2015)2010; Pahlevan Sharif & Mahdavian, 2015. The reason for significant  $\chi^2$  is the sensitivity of  $\chi^2$  test to sample size (Hair et al., 2010).

**Table 2.** Measurement Items Properties

Construct / Measure (Construct Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), Average Shared Square Variance (ASV))		Factor Loading
Perceived usefulness of Internet (CR = .889, AVE = .728, MSV = .448, ASV = .336)		
PU 1	Using the Internet is useful in managing my daily health.	.777
PU 2	Using the Internet for health information is advantageous in better managing my health.	.943
PU 3	Using the Internet for health information is beneficial to me.	.832
Perceived ease of Internet use (CR = .842, AVE = .640, MSV = .491, ASV = .300)		
PEOU 2	It is convenient to find health information and learn health management tips on the Internet.	.773
PEOU 3	It takes less time to use the Internet for health related information and health management.	.811

PEOU 4	It takes less effort to use Internet than other media for web-based health information search and health management.	.816
Attitude towards Internet use (CR = .872, AVE = .631, MSV = .491, ASV = .402)		
ATT 1	Using Internet for health information and health management would be a good idea.	.811
ATT 2	Using Internet for health information and health management would be a wise idea.	.803
ATT 3	I like the idea of using Internet for health information and health management.	.788
ATT 4	Using Internet for health information and health management would be a pleasant experience.	.775
Internet use for health information (CR = .917, AVE = .583, MSV = .268, ASV = .217)		
IUHI 2	I use the Internet to get information on medicine/drug	.799
IUHI 3	I use the Internet to be equipped with information before/after doctoral appointment	.845
IUHI 4	I use the Internet to get description of various diseases	.764
IUHI 5	I use the Internet to get information on treatments/therapy/ diagnosis	.675
IUHI 6	I use the Internet to get information on how to care for oneself	.801
IUHI 7	I use the Internet to decide about how to treat an illness	.807
IUHI 9	I use the Internet to understand how to deal with an illness	.798
IUHI 11	I use the Internet to get information for health management (exercise, abstinence from drinking, smoking, diet, nutrition, stress, mental health, etc.)	.585

Model Fit:  $\chi^2$  (df) = 273.106 (121),  $\chi^2$ /df = 2.257, CFI = .907, IFI = .959, TLI = .948, RMSEA (90% C.I.) = .066 (.055-.076), SRMR = .0464. All factor loadings are more than 0.5 and they are significant (z-value range 10.254 to 19.021).

This final model, shown in Fig 3, was arrived after reviewing model modification indices for sources of model misfit. Based on the modification indices, three and five pairs of measurement errors between measured items of ATT and IUHI respectively were allowed to freely covary to improve model fit considerably ( $\Delta\chi^2$  ( $\Delta$ df) = 165.67 (8)).

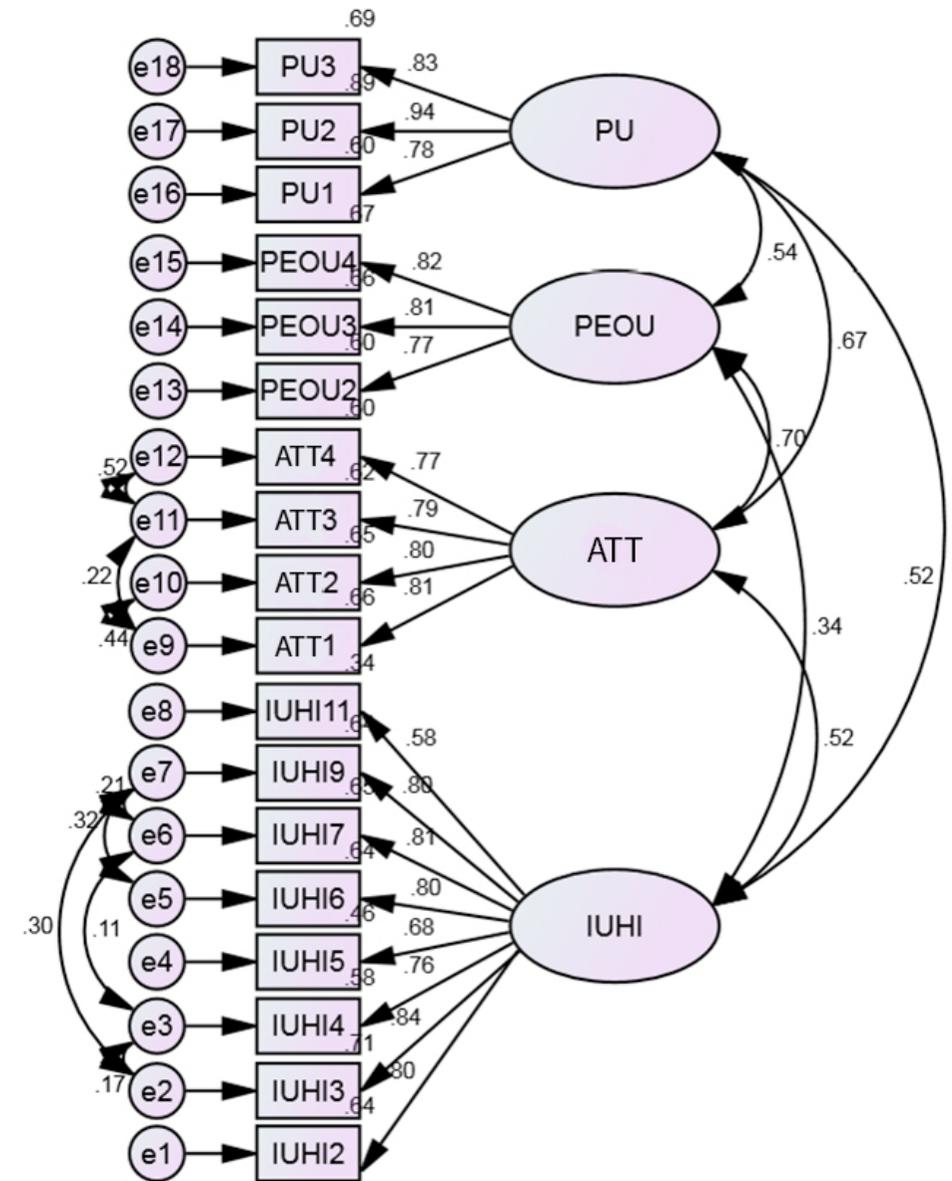


Figure 3. Measurement Model

Construct reliability of PU (.889), PEOU (.842), ATT (.872), and IUHI (.917) is greater than .7 which indicates good reliability of the constructs. Moreover, while average variance extracted (AVE) of PU (.728), PEOU (.640), ATT (.631), and IUHI (.583) is greater than .5, they are less than their respective construct reliability. Thus, all constructs have convergent validity (Hair et al., 2010). Moreover, maximum shared squared variance (MSV) and average shared square variance (ASV) of PU (.448 & .336), PEOU (.491 & .300), ATT (.491 & .402), and IUHI (.268 & .217) are less than their respective AVE. This demonstrates that discriminant validity of all constructs is established (Hair et al., 2010; Yang et al., 2015).

Next, to test the research hypotheses, the structural model is developed (Figure 4). The results are reported in Table 3. As it is shown in the total effect model (the model without mediator), PU has a positive significant effect on IUHI (path coefficient = .622, *p*-value < .05) which supports H1. However, the effect of PEOU on IUHI is not significant at 95% confidence level (path coefficient = .107, *p*-value = .189). Thus, this research could not support H2.

The results for the mediation effect model shows that both PU (path coefficient = .411, *p*-value < .05) and PEOU (path coefficient = .441, *p*-value < .05) have significant positive effect on ATT providing support for H3 and H4. Furthermore, the significant positive effect of ATT on IUHI (path coefficient = .490, *p*-value < .05) supports H5. Finally, in order to test indirect effects, this research uses bootstrapping technique to achieve more powerful and robust results than the causal steps approach (Baron & Kenny, 1986) and normal theory approach (Sobel, 1982). The results show that the indirect effect of PU on IUHI through ATT is positive and significant (path coefficient = .201, *p*-value < .05). As after controlling ATT, the direct effect of PU on IUHI is still significant (path coefficient = .427, *p*-value < .05), the positive effect of PU on IUHI is partially mediated through ATT which supports H6. Similarly, the indirect effect of PEOU on IUHI is significant (path coefficient = 0.216, *p*-value < 0.05). This shows that PEOU indirectly influences IUHI through ATT which partially supports H7. Squared multiple correlations for IUHI which indicates 32.5% of variance of IUHI is explained by this model.

Table 3. Structural Model Assessment

Outcome	Standardized Path Coefficient	Percentile 95% confidence intervals
[← Mediator] ← Independent Variable	( <i>p</i> -value)	

**Total Effect Model**

Internet use for health information		
← Perceived usefulness of Internet	.622*** (.001)	[.458; .805]
← Perceived ease of Internet use	.107 <sup>ns</sup> (.189)	[-.061; .289]

**Mediation Effect Model**

Attitude towards Internet use		
← Perceived usefulness of Internet	.411*** (.001)	[.260; .569]
← Perceived ease of Internet use	.441*** (.001)	[.314; .573]
Internet use for health information		
← Attitude towards Internet use	.490*** (.001)	[.220; .905]
← Perceived usefulness of Internet	.427*** (.001)	[.226; .619]
← Attitude towards Internet use ← Perceived usefulness of Internet	.201*** (.001)	[.087; .420]
← Perceived ease of Internet use	-.113 <sup>ns</sup> (.328)	[-.366; .121]
← Attitude towards Internet use ← Perceived ease of Internet use	.216*** (.001)	[.090; .431]

\*\*\* indicates statistical significance at the 0.001 level. *ns* indicates not significant at 95% confidence level

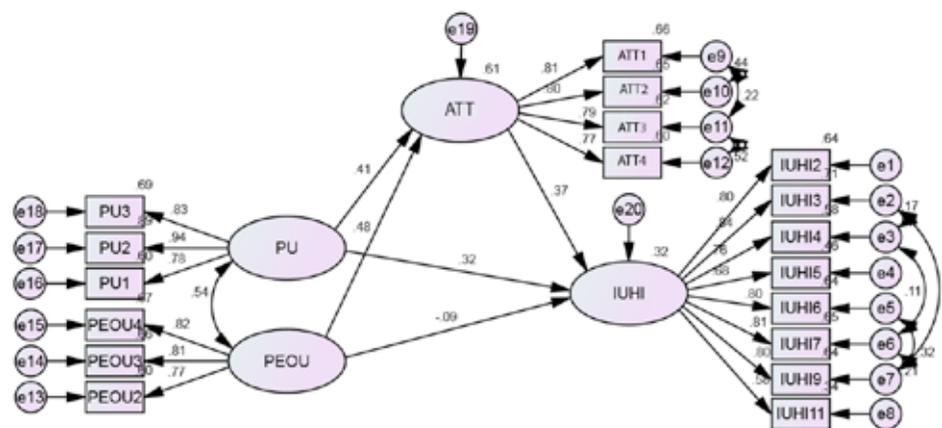


Figure 4. Structural Model

#### 4. DISCUSSION

The current study used the theoretical framework of TAM to examine the Internet usage for health information among Malaysian women. It was hypothesized that perceived usefulness, perceived ease of Internet use and attitudes have a positive effect on women's Internet usage to search for health information. Perceived usefulness and perceived ease of use were also hypothesized to significantly influence attitude towards Internet use for health information. Finally, two hypotheses were developed to test the mediation effects of attitude between perceived usefulness, perceived ease of use and Internet use for health information. As indicated in Table 3, the results of structural model analyses revealed that perceived usefulness and attitudes positively affect Internet use for health information while this study failed to find any relationship between perceived ease of Internet use and health-related Internet use. This failure might be due to the high degree to which participants believe that using Internet would not be free from effort. Moreover perceived usefulness and perceived ease of Internet use showed a positive impact on attitude towards Internet use for health information. Consistent with these findings, prior studies have also found that perceived usefulness of Internet and attitude were significantly associated with Internet use for searching health information (Kim & Park, 2012; Wong et al., 2012; Yun & Park, 2010). The study also provides support for past findings which revealed the influence of perceived usefulness and perceived ease of Internet use on attitude towards Internet use for health information (Kim & Park, 2012; Yun & Park, 2010). Regarding the mediation role of attitude in the effect of perceived usefulness of Internet on health-related Internet use, the present study is in line with the findings of prior study which showed that attitude explains this relationship (Kim & Park, 2012). Moreover, this study showed that perceived ease of use indirectly influences health-related Internet use through attitude. This result does partially support Kim and Park's (2012) finding.

The study also found that both perceived usefulness of Internet and perceived ease of Internet use shape women's positive affective feeling about the Internet usage for health information which in turn directly influences health-related Internet use, suggesting the salience of women's cognition with respect to the Internet for acquiring health information as their cognition shape their favorable attitude towards Internet.

These results would be helpful for health providers to enhance women's perception of Internet usefulness through intervening programs and also webpage designers to minimize any possible hindrances of perceived ease of health websites usage discouraging women from using the Internet for health information. For example, usage of health and medical jargon words might be deterrent to health information seeking behavior.

This study further proposes that more emphasis should be placed on attitude towards Internet usage for health seeking. This is because this variable has greater weight on online health information seeking behavior as compared to perceived ease of use and perceived usefulness. This indicates that positive affective feelings about Internet use for health information strongly contribute to the Internet use for health information. On top of that, female attitudes towards Internet usage to search for

health information has a direct effect on Internet use, whereas perceived usefulness of Internet and perceived ease of Internet use influence women's use of Internet for health through the aforementioned variable. Therefore, the attitude towards Internet is more prominent in influencing women's use of Internet. Thus, a further consideration may be given to those two variables by the Ministry of Health in encouraging women to effectively utilize the Internet for health-related issues.

According to statistics released by Malaysian Communications and Multimedia Commission (MCMC) (2015), more than half of the Malaysians use smartphone to access the Internet. This could be a golden opportunity to design applications for this device to encourage healthy living. The Ministry of Health Malaysia validated the tremendous potential for information and multimedia communication technologies to contribute to the area of healthcare and implemented Telemedicine blueprint. One of the key aims of Telemedicine blueprint is to change people's attitudes towards health management from concentrating on seeking post-diagnostic treatment to active prevention. Combination of Internet and mobile technology could facilitate the fulfillment of this proactive approach to health and disease management.

The present study was limited in several ways. First, the sample population was relatively homogenous in that they were women who worked for a public university located in capital of Malaysia, Kuala Lumpur. Therefore, a more comprehensive future study is suggested to include other population of women to provide more accurate and precise information and enhance the generalizability of the findings. Second, the present study did not include additional variables in the model. Therefore, we suggest that the future studies could be included constructs in the model to increase the predictive power of the original TAM framework. Lastly, the present study focused only on Internet use for searching health information. However Internet might be used to communicate health-related purposes such as emailing with doctor or health providers, chatting with people experiencing a specific illness, sharing and exchanging experiences on health-related issues. Thus, further study is required to examine this communication function of Internet for health-related purposes.

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#### REFERENCES

- Abraham, L. B., Morn, M., & Vollman, A. (2010). Women on the web: How women are shaping the Internet. *Comescore.com*.
- Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly*, *16*(2), 227-247.
- Ahadzadeh, A. S., Sharif, S. P., Ong, F. S., & Khong, K. W. (2015). Integrating Health Belief Model and Technology Acceptance Model: An Investigation of Health-Related Internet Use. *Journal of medical Internet research*, *17*(2), e45.
- Ahmad Bakeri, A. B., Latif, B. A., & Abul Yasar, A. (August, 2009 ). *Seeking access to health*

- information: *The dilemma of woman community in rural Malaysia*. Paper presented at the World Library and Information Congress: 75<sup>th</sup> IFLA General Conference and Council, Milan, Italy. <http://irep.iium.edu.my/10944/>
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888-918.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. New Jersey: Prentice-Hall.
- Al-Gahtani, S. S., & King, M. (1999). Attitudes, satisfaction and usage: Factors contributing to each in the acceptance of information technology. *Behaviour & Information Technology*, 18(4), 277-297.
- Amal, N. M., Paramesvarathy, R., Tee, G. H., Gurpreet, K., & Karuthan, C. (2011). Prevalence of chronic illness and health seeking behaviour in Malaysian population: Results from the third national health morbidity survey (NHMS III) 2006. *Med Journal of Malaysia*, 66(1), 36-41.
- Atkinson, N. L., Saperstein, S. L., & Pleis, J. (2009). Using the internet for health-related activities: Findings from a national probability sample. *Journal of medical Internet research*, 11(1), e4.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Bowen, D., Meischke, H., Bush, N., Wooldridge, J., Robbins, R., Ludwig, A., & Escamilla, G. (2003). Predictors of women's Internet access and Internet health seeking. *Health Care for Women International*, 24(10), 940-951.
- Brashers, D. E., Goldsmith, D. J., & Hsieh, E. (2002). Information seeking and avoiding in health contexts. *Human Communication Research*, 28(2), 258-271.
- Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. New York: Routledge.
- Choi, N. (2011). Relationship between health service use and health information technology use among older adults: analysis of the US National Health Interview Survey. *Journal of Medical Internet Research*, 13(2), e33.
- Cline, R. J., & Haynes, K. M. (2001). Consumer health information seeking on the Internet: the state of the art. *Health Education Research*, 16(6), 671-692.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> Ed.). New Jersey: Lawrence Erlbaum Associates.
- Cotten, S. R., & Gupta, S. S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science & Medicine*, 59(9), 1795-1806.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35(8), 982-1003.
- de Boer, M. J., Versteegen, G. J., & van Wijhe, M. (2007). Patients' use of the Internet for pain-related medical information. *Patient Education and Counseling*, 68(1), 86-97.
- Dumitru, R. C., Burkle, T., Potapov, S., Lausen, B., Wiese, B., & Prokosch, H.-U. (2007). Use and perception of internet for health related purposes in Germany: results of a national survey. *International Journal of Public Health*, 52(5), 275-285.
- Escoffery, C., Miner, K. R., Adame, D. D., Butler, S., McCormick, L., & Mendell, E. (2005). Internet use for health information among college students. *Journal of American College Health*, 53(4), 183-188.
- Fox, S. (2006). *Online health search 2006*. Retrieved from <http://www.pewinternet.org>
- Fox, S. (2011). *Health topics*. Washington: Pew Research Center's Internet & American Life Project.
- Fox, S., & Duggan, M. (2013). *Health online 2013*. Washington: Pew Internet & American Life Project.
- Fox, S., Rainie, L., & Horrigan, J. (2006). The online health care revolution: How the web helps Americans take better care of themselves. Washington: Pew Internet & American Life Project.
- Goeke, R. J., Hogue, M., & Faley, R. H. (2010). The impact of gender and experience on the strength of the relationships between perceived data warehouse flexibility, ease-of-use, and usefulness. *Information Resources Management Journal (IRMJ)*, 23(2), 1-19.
- Goonawardene, N., Jiang, J., Tan, S., S., L., & Jiang, Z. (June, 2013). Online health information seeking and adolescents' intention towards health self-management. Paper presented at the Pacific Asia Conference on Information Systems, Jeju Island, Korea.
- Guritno, S., & Siringoringo, H. (2013). Perceived usefulness, ease of use, and attitude towards online shopping: Usefulness towards online airlines ticket purchase. *Procedia-Social and Behavioral Sciences*, 81, 212-216.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7<sup>th</sup> Ed.). New Jersey: Prentice Hall.
- Hale, T. M., Cotten, S. R., Drentea, P., & Goldner, M. (2010). Rural-urban differences in general and health-related internet use. *American Behavioral Scientist*, 53(9), 1304-1325.
- Harris Poll. (2010). Cyberchondriacs' on the Rise? Those who go online for healthcare information continues to increase. Retrieved from <http://www.harrisinteractive.com/NewsRoom/HarrisPolls/tabid/447/mid/1508/articleId/448/ctl/ReadCustom%20Default/Default.aspx>
- Harrison, S., Barlow, J., & Williams, G. (2007). The content and interactivity of health support group websites. *Health Education Journal*, 66(4), 371-381.
- Hashim, A. (2003). Over review of Malaysia's integrated tele-health project. Retrieved from <http://www.eimjm.com/Vol2-No1/Vol2-No1-I4.htm>
- Henderson, R., & Divett, M. J. (2003). Perceived usefulness, ease of use and electronic supermarket use. *International Journal of Human-Computer Studies*, 59(3), 383-395.
- Holden, H., & Rada, R. (2011). Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance. *Journal of Research on Technology in Education*, 43(4), 343-367.
- Horton, R. P., Buck, T., Waterson, P. E., & Clegg, C. W. (2001). Explaining intranet use with the technology acceptance model. *Journal of information technology*, 16(4), 237-249.
- Hubona, G. S., & Geitz, S. (1997). External variables, beliefs, attitudes and information technology behavior. Proceedings of the 30<sup>th</sup> Annual Hawaii International Conference on System

- Sciences. Los Alamitos: IEEE Comput. Soc.Press.
- Igbaria, M., Zinatelli, N., Cragg, P., & Cavaye, A. L. (1997). Personal computing acceptance factors in small firms: A structural equation model. *MIS Quarterly*, 21(3), 279-305.
- International Research Institutes. (2011). Global Health Survey 2011: Experience and perception in 28 countries. Retrieved from [bellresearch.hu/show\\_file.php?id=1332757720707016](http://bellresearch.hu/show_file.php?id=1332757720707016)
- Jamal, A., Khan, S. A., AlHumud, A., Al-Duhyim, A., Alrashed, M., Shabr, F. B., . . . Qureshi, R. (2015). Association of online health information-seeking behavior and self-care activities among type 2 diabetic patients in Saudi Arabia. *Journal of Medical Internet research*, 17(8), e196.
- Jeong, B. K., & Yoon, T. E. (2013). An empirical investigation on consumer acceptance of mobile banking services. *Business and Management Research*, 2(1), 31-40.
- Joorabchi, T., Hassan, M., & Osman, M. N. (2013). Relationship between Internet usage and positive youth development in Malaysia. *SEARCH: The Journal of the South East Asia Research Centre for Communication and Humanities*, 5(2), 37-64.
- Kalichman, S. C., Benotsch, E. G., Weinhardt, L., Austin, J., Luke, W., & Cherry, C. (2003). Health-related internet use, coping, social support, and health indicators in people living with HIV/AIDS: Preliminary results from a community survey. *Health Psychology*, 22(1), 111-116.
- Kim, J., & Park, H. A. (2012). Development of a health information technology acceptance model using consumers' health behavior intention. *Journal of Medical Internet Research*, 14(5), e133.
- Lemire, M., Pare, G., Sicotte, C., & Harvey, C. (2008). Determinants of internet use as a preferred source of information on personal health. *International Journal of Medical Informatics*, 77(11), 723-734.
- Leng, G. S., Lada, S., Muhammad, M., Ibrahim, A., & Amboala, T. (2011). An exploration of social networking sites (SNS) adoption in Malaysia using technology acceptance model (TAM), theory of planned behavior (TPB) and intrinsic motivation. *Journal of Internet Banking and Commerce*, 16(2), 1-27.
- Lim, S., Xue, L., Yen, C. C., Chang, L., Chan, H. C., Tai, B. C., . . . Choolani, M. (2011). A study on Singaporean women's acceptance of using mobile phones to seek health information. *International journal of medical informatics*, 80(12), e189-e202.
- Malaysian Communications and Multimedia Commission. (2015). Hand phone users survey 2014. Retrieved from <http://www.skmm.gov.my/skmmgovmy/media/General/pdf/MC-MC-Hand-Phone-User19112015.pdf>
- Mazanah, M., Afshari, M., & Nor Aini, M. (2011). Internet use and breast cancer survivors. *Turkish Online Journal of Educational Technology*, 10(4), 241-247.
- Ministry of Health. (2006). Malaysia cancer statistics: Data and figure Peninsular Malaysia 2006. Retrieved from <http://www.makna.org.my/PDF/MalaysiaCancerStatistics.pdf>
- Mohanty, M., & Turner, P. (2006). Foreign exchange reserve accumulation in emerging markets: what are the domestic implications? *BIS Quarterly Review*, September, 39-52.
- Mohd-Nor, R., Chapun, T. E., & Wah, C. R. J. (2013). Malaysian rural community as consumer of health information and their use of ICT. *J Komun Malays J Commun*, 29(1), 161-177.
- Murero, M., & Rice, R. E. (2006). E-health research. In M. Murero & R. E. Rice (Eds.). *The internet and healthcare: Theory, research and practice*. (pp. 3-26). New Jersey: Erlbaum.
- Pahlevan, S. S., & Mahdavian, V. (2015). *Structural equation modeling by the use of AMOS*. Tehran: Fazel.
- Park, C., Kim, D. G., & Kim, C. (2013). Adoption of short message service: Gender difference. *Issues in Information Systems*, 14(1), 10-20.
- Park, S. Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning. *Educational Technology & Society*, 12(3), 150-162.
- Porter, C. E., & Donthu, N. (2006). Using the technology acceptance model to explain how attitudes determine internet usage: The role of perceived access barriers and demographics. *Journal of Business Research*, 59(9), 999-1007.
- Rieh, S. Y. (2004). On the web at home: Information seeking and web searching in the home environment. *Journal of the American Society for Information Science and Technology*, 55(8), 743-753.
- Salman, A., & Hasim, M. S. (2009). Sustainability of internet usage: A study among Malay women in a sub-urban setting in Malaysia. *European Journal of Social Sciences*, 9(3), 433-447.
- Sharif, S. P., Ahadzadeh, A. S., & Wei, K. K. (2015). A Moderated Mediation Model of Internet Use for Health Information. *Journal of Social Sciences (COES&RJ-JSS)*, 4(1), 611-625.
- Shroff, R. H., Deneen, C., & Ng, E. M. (2011). Analysis of the technology acceptance model in examining students' behavioural intention to use an e-portfolio system. *Australasian Journal of Educational Technology*, 27(4), 600-618.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological Methodology* (pp. 290-312). Washington: American Sociological Association.
- Straub, D., Limayem, M., & Karahanna-Evaristo, E. (1995). Measuring system usage: implications for IS theory testing. *Management Science*, 41(8), 1328-1342.
- Szajna, B. (1996). Empirical evaluation of the revised technology acceptance model. *Management Science*, 42(1), 85-92.
- Tao, D. H. (2009). *Intention to use and actual use of electronic information resources: Further exploring technology acceptance model (TAM)*. AMIA Annual Symposium Proceedings 2009, 629-633.
- Turner, M., Kitchenham, B., Brereton, P., Charters, S., & Budgen, D. (2010). Does the technology acceptance model predict actual use? A systematic literature review. *Information and Software Technology*, 52(5), 463-479.
- Valero-Aguilera, B., Bermudez-Tamayo, C., Garcia-Gutierrez, J. F., Jimenez-Pernett, J., Cozar-Olmo, J. M., Guerrero-Tejada, R., & Alba-Ruiz, R. (2013). Information needs and Internet use in urological and breast cancer patients. *Supportive Care in Cancer*, 22(2), 1-8.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 46(2), 186-204.
- Wald, H. S., Dube, C. E., & Anthony, D. C. (2007). Untangling the Web-the impact of Internet use on health care and the physician-patient relationship. *Patient Education and Counseling*, 68(3), 218-224.

- Walsh, A. M., Hyde, M. K., Hamilton, K., & White, K. M. (2012). Predictive modelling: Parents' decision making to use online child health information to increase their understanding and/or diagnose or treat their child's health. *BMC Medical Informatics and Decision Making*, 12(1), 144.
- Wilson, T. D. (2000). Human information behavior. *Informing Science*, 3(2), 49-56.
- Wong, C. K., Yeung, D. Y., Ho, H. C., Tse, K.-P., & Lam, C.-Y. (2012). Chinese older adults' Internet use for health information. *Journal of Applied Gerontology*, 32(8), 1-20.
- Yan, Y. Y. (2010). Online health information seeking behavior in Hong Kong: An exploratory study. *Journal of Medical Systems*, 34(2), 147-153.
- Yang, E. C. L., Sharif, S. P., & Khoo-Lattimore, C. (2015). Tourists' risk perception of risky destinations: The case of Sabah's eastern coast. *Tourism and Hospitality Research*, 1467358415576085.
- Yoo, E. Y., & Robbins, L. S. (2008). Understanding middle-aged women's health information seeking on the web: A theoretical approach. *Journal of the American Society for Information Science and Technology*, 59(4), 577-590.
- Yun, E. K., & Park, H. (2010). Consumers' disease information-seeking behaviour on the Internet in Korea. *Journal of Clinical Nursing*, 19(19-20), 2860-2868.
- Zainuddin, R., Abdullah, N., Din, S. Z., Yeow, P. H., & Loo, H. (2011). A study of public health awareness among the elderly in an industrially developing country. *Journal of Social Sciences*, 7(2), 152-157.

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