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The Role of Internet Self-Efficacy in Accepting Web-based Medical Records

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Abstract

Although numerous studies have found that self-efficacy is an important determinant of perceived ease of use (PEOU), there is no research to test the relationship between self-efficacy and intention to use an information technology. The studies on the effect of self-efficacy on perceived usefulness (PU) are also rare, and findings are inconsistent. In this study, we consider Internet self-efficacy (ISE) as an antecedent to PU, PEOU, as well as behavioral intention (BI), and empirically investigate how ISE influences the end user's willingness to accept web-based medical records. We use hierarchical regression analysis to calculate both direct and indirect effects of ISE on PEOU, PU, and BI. We found that ISE explained 48% of the variation in PEOU, ISE and PEOU explained 50% of the variation in PU, and the full model explained 80% of the variance in BI.

Keywords: Self-efficacy, technology acceptance model, perceived ease of use, perceived usefulness, behavioral intention, Web-based medical records

Introduction

Internet technology has been widely accepted as evidenced by the growing population of Web users. Application service provision (ASP) — a model of distributing software services over the Internet — has shown its advantages over the traditional model of information technology (IT) deployment. However, the growth of ASP business clients is comparatively slow. The problem has recently drawn attention from many researchers (Susarla et al. 2003). It also motivates this study to understand end user acceptance in the new context and search for useful guidance on methods and effective interventions to promote the adoption of the ASP model.

In the technology adoption literature, the technology acceptance model (TAM) by Davis (1989) is one of the most widely applied models. It has received extensive empirical support through validations, applications, and replications. Compared with competing models, the TAM is believed to be more parsimonious, predicative, and robust (Venkatesh 2000). However, the TAM has been criticized for being less informative in understanding usage behavior (Taylor and Todd 1995). Recognizing the necessity and importance of identifying the antecedents to user acceptance behavior, researchers have attempted to extend the TAM by embedding it into a nomological network of other antecedents and consequences. To this end, some researchers appeal to cognition theories and recognize the importance of self-efficacy. Along this line of inquires, a few studies have found that self-efficacy is an important determinant of perceived ease of use (Venkatesh et al. 1996; Venkatesh 2000; Agarwal et al. 2000). However, there is no study examining its impact on behavioral intention. The studies on the effect of self-efficacy on perceived usefulness are also very few and findings are inconsistent.

In this paper, we examine the effect of Internet self-efficacy (ISE) on all the constructs of the TAM. Therefore, we extend the TAM by considering ISE as an antecedent to perceived usability, perceived usefulness, as well as behavioral intention to use a technology. We empirically investigate how such an extension affects our understanding of the end user's acceptance behavior. We conduct the study in the context of web-based medical records, which are centrally managed and delivered over the Internet by application services providers.

Related Literature

There are several theoretical perspectives from which one studies user acceptance and usage behavior of information technologies. One of them is intention-based, and the technology acceptance model (TAM) by Davis (1989) is a most successful example of this perspective. The TAM is grounded in social psychology theory — the theory of reasoned action (TRA) (Fisherbein and Ajzen 1975). Figure 1 shows a revised nomological network of the TAM, as proposed in Davis et al. (1989). The model consists of three constructs: perceived usefulness (PU), perceived ease of use (PEOU), and behavioral intention (BI). It stipulates that both perceived ease of use (PEU) and perceived usefulness (PU) directly influence behavior intention (BI) to accept a technology, and PEU influences BI indirectly through PU.

The TAM has received extensive empirical support through validations, applications, and replications. It has been applied to a wide range of technologies, including email, fax, word processors, spreadsheets, and workgroup applications. It has been also recently applied to the adoption of e-commerce and Internet technologies (Gefen 1997; Gefen and Straub 2000; Lederer et al. 2000). According to Ma and Liu (2003), there are over one hundred studies that apply or validate the TAM. Most of these studies confirmed the reliability and validity of PU and PEOU in predicting BI or technology usage, although conflicting evidence exists.

Compared with other competing models, the TAM is believed to be more accurate when it is used to predict adoption. However, it is criticized for being less informative in understanding usage behavior (Taylor and Todd 1995). Benbasat and Zmud (1999) remind that what practitioners desire to have is implementable prescriptions. They encourage researchers to provide practitioners with more useful guidance on methods and effective interventions, say by augmenting PU and PEOU, to achieve greater technology acceptance or usage. Gefen and Keil (1998) also contend that, without a better understanding of the antecedents to PU and PEU, managers and developers are unable to know which levers to pull in order to affect these beliefs and, through them, technology usage.

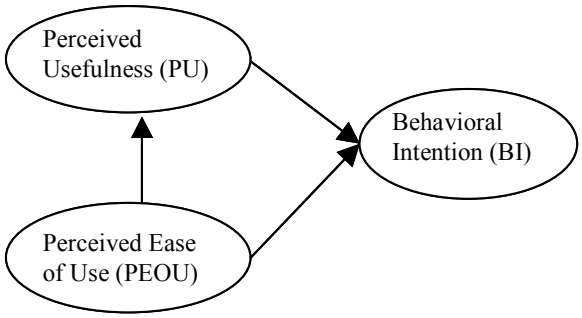

Figure 1. Revised Technology Acceptance Model

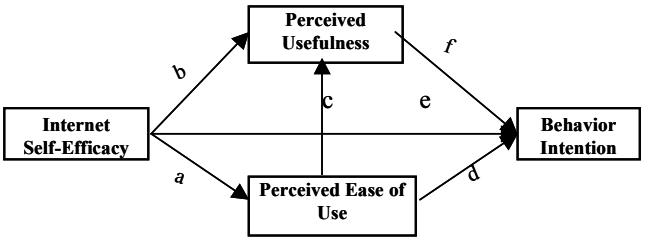

Figure 2. Research Model

Recognizing the necessity and importance of identifying the antecedents to user acceptance behavior, researchers have attempted to extend the TAM by encompassing various constructs such as gender, culture, trust, experience, and social influence (Chircu et al. 2000; Gefen and Straub 1997; Gefen and Keil 1998; Straub 1994). Among these constructs, self-efficacy is recognized to be a most important one.

The concept of self-efficacy is due to Bandura (1977). It is defined as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives". Note that self-efficacy is not a measure of skills. Instead, it reflects what individuals believe they can do with the skills they possess. It is not concerned with what one has done in the past but rather with judgments of what could be done in the future. Since its inception, the construct has been widely tested in organizational behavior, education, and human resource management. In the context of IT adoption, numerous studies have found that self-efficacy is an important determinant of user perception. Compeau and Higgins (1995) proposed the concept of computer self-efficacy to refer to the judgment of one's capability in using the computer. Levine and Sonitsa-Schmidt (1998) found that, as individuals expressed stronger computer confidence, they demonstrated more positive attitudes toward computers and higher levels of computer-related knowledge. Venkatesh (2000) found that computer self-efficacy was one of the main factors that affect PEOU. Agarwal et al. (2000) defined software-specific self-efficacy and had a similar finding on its impact on PEOU.

To date, very few studies have been done to understand the effect of self-efficacy on perceived usefulness, and their findings are inconsistent. In a study with a sample of 58 participants from the California Network Engineering Center, Lopez and Manson (1997) found that computer self-efficacy was positively related to the PU of the Empowered Desktop Information System. By using 288 junior business students, Agarwal et al. (2000) conducted a similar test within the context of Web technologies. They found a positive effect of self-efficacy on both PU and PEOU, and a stronger effect on PEOU than on PU. In contrast, Igbaria et al. (1995) found that self-efficacy had an insignificant direct effect on PU. Chau (2000) examined the influence of computer attitude and self-efficacy on IT usage behavior and also found that computer self-efficacy has a relatively small, but negative, effect on PU. Therefore, to understand the exact effect of self-efficacy on PU, additional evidence is necessary.

Research Model and Hypotheses

The aim of this study is to examine the role of Internet self-efficacy (ISE) in accepting Web-based medical records. In addition, we also want to validate prior findings in the new context. To this end, we extend the TAM by including ISE as an antecedent to the three theoretical constructs: perceived ease of use (PEOU), perceived usefulness (PU), as well as behavior intention (BI). We hypothesize that ISE directly influences PEOU and PU, which in turn influence BI (see Figure 2). We also hypothesize that ISE directly influences BI.

Venkatesh (2000) studied factors that affected PEOU and classified them into two categories: anchors and adjustments. Anchors include computer self-efficacy, perception of external control, computer anxiety, and computer playfulness. Adjustments include perceived enjoyment and objective usability. The general computer self-efficacy turns out to be a strong determinant of PEOU before hands-on experience (Venkatesh and Davis 1996). Based on this evidence, we expect that ISE have a positive effect on the PEOU of web-based applications.

Computer self-efficacy refers to the beliefs about one's capability in using the computer to perform a computing task (Compeau and Higgins 1995). Munro et al. (1997) found that self-efficacy is significantly related to end user competence. They suggested that the construct of user competence is multi-faceted, composed of an individual's *breadth* and *depth* of knowledge of end user technologies, and his or her ability to creatively apply these technologies (*finesse*). Thus, it is reasonable to infer that self-efficacy is also a multi-dimensional construct, with some capability beliefs coming from breadth of knowledge, some from depth of knowledge, and some from finesse of knowledge. Based on this logic, we assume that some aspects of competence or knowledge give a user confidence in using a technology, which contributes to the perception of its ease of use, whereas others give the user confidence in understanding the design logic or objectives of the technology, which contributes to the perception of its usefulness. Therefore, we anticipate that ISE has a direct positive relationship with both PEOU and PU.

According to Baudura (2001), perceived self-efficacy is also a major determinant of intention. Although there is no IT research to test the relationship between self-efficacy and intention to use a technology, studies in other areas have shown that self-efficacy has direct impact on behavioral intention. For example, Armitage and Conner (2001) conducted a study testing a theory of planned behavior-based model on blood donation with a sample of 136 subjects. They found that self-efficacy accounted for unique variance in behavioral intention. In another extended study with sample of 172, they also found that self-efficacy and several other factors were all independent predictors of behavioral intention.

We summarize the above theoretical and empirical evidence using three hypotheses — Hypotheses 1-3. In addition, we present the original three hypotheses stipulated by the TAM as Hypotheses 4-6. Note that each of these hypotheses stipulates the total effect of a predictor on a dependent variable, including both direct and indirect effects. Thus, it may not necessarily correspond to a labeled path on Figure 2.

***Hypothesis 1*:** Internet self-efficacy has a positive effect on behavioral intention to use Web-based medical records.

Hypothesis 2: Internet self-efficacy has a positive effect on the perceived ease of use of Web-based medical records.

Hypothesis 3: Internet self-efficacy has a positive effect on the perceived usefulness of Web-based medical records.

Hypothesis 4: Perceived usefulness has a positive impact on behavioral intention to use Web-based medical records.

Hypothesis 5: Perceived ease of use has a positive impact on behavioral intention to use Web-based medical records.

***Hypothesis 6*:** Perceived ease of use has a positive impact on the perceived usefulness of Web-based medical records.

Research Design

In order to validate the research hypotheses, we conducted a controlled experiment using senior healthcare students and clinic staff members. We collected the data for this study by means of a survey instrument. We distributed a questionnaire and a cover letter with instructions to selected subjects. In the cover letter, the subjects were informed that the experiment was volunteer-based and they could refuse to participate or quit at any time. In the instruction, each subject is provided with an URL to the target system under testing, a test account for using the system, and a link to a quick user guide that details the functionalities of the system.

Subjects

The population under study comprises of healthcare workers who are responsible for patient records management. In this study, we obtained 85 physicians' email addresses through a medical worker association. In addition, we identified as surrogates 90 senior health care students in a large mid-west university. These students were majored in dental hygiene, physician assistant, and radiology. These four-year programs were designed to prepare the graduates to successfully enter health care organizations such as hospitals and clinics. Their program curricula include intense problem-based learning modules combined with clinical experiences such as internships and externships. All the subjects we selected had training and experience in managing patient records and were familiar with the daily operations in hospitals and clinics. In the end, 175 copies of survey forms were passed out and 86 subjects accomplished the experiment and returned the questionnaires with completed responses. The response rate is 49%.

Among all the subjects, almost all of them are female and over 85% of them are at age of 20-25. 13% of the subjects reported that they were aware of some electronic medical record systems and only 8% of them had hands-on experience with web-based medical records. The rest of them had used traditional paper-based systems. Based on the 5-point Likert scale from very negative to very positive, 69% of them had reported neutral attitude to their current paper-based systems. With regard to Internet experience, 84% of them had over three years of using Internet and 69% of them had positive feelings toward surfing on the Internet.

Target System

Literally there were hundreds of application service providers who claimed to provide electronic medical record applications. Among them, a few delivered applications that truly worked within a Web browser. Many of them employ client/server architecture, i.e., a user had to download and install a windows client in order to work with a remote server. After a long process of searching, eliminating, pondering, and negotiating, we selected a commercial Web-based medical record application provided by HyperCharts as the target system for our experiment.

Task

Due to time limitation, we did not require the subjects to test all functionalities available in HyperCharts™. Instead, we focused on the primary functions of electronic medical records and required subjects to accomplish the following tasks: 1) log into the system with provided user name and password; 2) create, update, and delete a patient record, search for a patient record, and add quick notes to a patient record; 3) search for prescriptions for a patient, add and sign off a new prescription, and add and modify medications on a prescription; 4) upload and download a dictation audio file.

Instrument

All constructs are measured using multiple items. The items underlying each construct were carefully developed according to its respective definition. Each item is measured using a five-point Likert scale ranging from "low" to "high". Three Ph.D. students and two faculty members reviewed the survey questions regarding the face and content validity and clarity.

Internet self-efficacy. Previous studies on ISE (Nahl, 1996, 1997) focused on the operations of specific tasks such as entering Web address (URL), creating folders, adding and removing bookmarks, mailing Web pages, and using File Transfer Protocol. Accordingly, Joo et al. (2000) measured ISE based on specific tasks in Internet search such as navigation, printing, and closing the browser. On the other hand, Eastin and LaRose (2000) proposed an instrument based on overall performance of Internet users. They argued that ISE is different from general computer self-efficacy in that ISE focuses on what an individual believes he or she can accomplish online now or in the future—the belief that one can establish, maintain, and utilize the Internet effectively over and above basic personal computer. Thus, ISE assesses a person's judgment of his or her ability of applying Internet skills rather than measures a person's specific skills of using an Internet browser. People who have little confidence in their ability to use the Internet or who are uncomfortable using the Internet may be said to have weak self-efficacy beliefs. In this study, we took a balanced stand in between these two positions. We measure ISE using 8 items (see Appendix A). We adopted five items from Joo et al. (2000) and two items from Eastin and LaRose (2000). (There is one overlapping item actually). We created one additional item for an important skill, which was not addressed in previous studies.

Other Constructs. Items for measuring PEOU and PU were originally proposed by Davis (1989) and successively tested and validated in many other studies (Mathieson 1991; Hendrickson et al 1993; Chau 1996; Gefen 1997; Ridings et al 2000). We tailored the items so that they are related to the use of web-based technologies. The items for measuring BI were adapted from the studies of Chau (1996) and Venkatesh and Davis (1996).

Data Analysis

Analytical Techniques

The primary analytical technique we used in testing the hypotheses is hierarchical multiple regressions. The use of hierarchical regression allows us to test recursive models, where a predictor in one model may become the dependent variable in another, and therefore an antecedent variable may have impacts on a consequent variable in multiple distinct ways, with some are direct and some indirect. Our research model is a case in point. For example, according to Figure 2, ISE can affect behavioral intention in four distinct ways as follows and the total effect of ISE on BI is the sum of all these direct and indirect effects:

ISE → BI (path e)
ISE → PU → BI (path b + path f)
ISE → PEOU → BI (path a + path d)
ISE → PEOU → PU → BI (path a + path c + path f)

Following the guideline proposed by Hair et al. (1998), we assessed the assumptions of hierarchical regressions: linearity of the phenomenon, constant variance of the error term, and normality of the error term distribution. We chose studentized residual as the measure of prediction error of each dependent variable. We examined residual scatter plot and partial regression plots. We did not find that any of these assumptions was violated.

Scale Assessment

Since all research constructs are latent, each one is reflected by a group of measurable items and indirectly measured as the average of their scores. Therefore, before we conduct data analysis on the constructs, we need to ensure the reliability of their scales, which are usually measured by Cronbach's alpha coefficients. The reliability coefficient of each construct is reported in Table 1. Generally, a coefficient value of 0.70 or higher is considered acceptable (Hair et al. 1998). As per this standard, the reliabilities of all constructs are very high.

Table 1. Scale Reliability

Construct	# of items	Cronbach's alpha
Perceived Usefulness (PU)	5	0.94
Perceived ease of Use (PEOU)	5	0.91
Behavior Intention (BI)	5	0.89
Internet Self-efficacy (ISE)	6	0.93

To ensure that the items for the same construct measure a single trait while items for different constructs measure distinct traits, we conducted a principal factor analysis with varimax rotation on 16 items for ISE, PEOU, and PU constructs. Using the Kaiser eigenvalues criterion, we extracted three factors that collectively explained 77.28% of the variance in all items. Statistically, to obtain a power level of 80 percent at a .05 significance level, the significant value of factor loadings with a sample size of 100 is 0.50 (Hair et al. 1998). The rotated factor matrix in Table 2 shows that all the items cleanly loaded on the correct latent constructs. Therefore, it supports the factorial validity of the measurement.

Table 2. Factor Loadings

	Factor 1	Factor 2	Factor 3
PEOU2	**.835**	.318	
PEOU1	**.817**		.308
PEOU3	**.785**		.324
PEOU4	**.760**		.367
PEOU5	**.627**		.338
PU4		**.851**	
PU2	.373	**.847**	
PU3	.328	**.840**	
PU5		**.756**	.415
PU1		**.734**	.344
ISE6	.346		**.858**
ISE1			**.795**
ISE5		.371	**.764**
ISE3		.392	**.728**
ISE2			**.705**
ISE4	.328	.399	**.693**
Eigenvalues	9.478	1.540	1.339
% Variance	59.24	68.91	77.28

Note: Factor loadings lower than .30 are not shown.

Results

In a hierarchical multiple regression, the researcher decides not only how many predictors to enter but also the order in which they enter. Usually, the order of entry is based on logical or theoretical considerations. We enter the "most" exogenous of the predictors first, and the "most" endogenous" predictor last. In our case, because ISE is modeled as having a direct influence on PEOU, it is important to statistically control the direct influence of ISE on BI before evaluating the independent contribution of PEOU to BI. Failing to control the direct influence of ISE could result in the relationship between PEOU and BI being artificially inflated due to the indirect influences through the perceptual variable. In the same vein, it is important to control the direct influence of PEOU on BI before evaluating the independent contribution of PU. Thus, ISE was entered into the regression model first, followed by PEOU and PU in the second and third step. In this way, we are able to tease out the influence of ISE before considering that of PEOU and PU. The regression results are presented in Table 3. We did similar regressions when PU and PEOU are dependent variables and the results are shown in Table 4 and 5 respectively.

R-square value, also called the coefficient of determination, represents the percentage of the variance that can be explained by the predictors in a relationship. According to the guideline provided by Hair et al. (1998), the threshold of R-square, for example, with a power of .80 at significance level 0.01 is about 15% for a sample of 100 with four independent variables. In other words, if the R-square value for a relationship is greater than 15%, we will be confident that the effect of the independent variables on the dependent variable is statistically significant. According to this standard, all R-square values are statistically significant.

Table 3. Hierarchical Regression Results (DV= BI)

Model	Coefficients				Model Summary	
	Beta	**T**	**Sig.**	**R^2**	**R^2 Change**	**Sig.**
1				.548	.548	.000
ISE	.741	10.100	.000			
2				.704	.156	.000
ISE	.363	4.391	.000			
PEOU	.546	6.613	.000			
3				.801	.097	.000
ISE	.162	2.157	.034			
PEOU	.408	5.699	.000			
PU	.441	6.306	.000			

Table 4. Hierarchical Regression Results (DV= PU)

Model	Coefficients				Model Summary	
	Beta	**T**	**Sig.**	**R^2**	**R^2 Change**	**Sig.**
1				.451	.451	.000
ISE	.672	8.310	.000			
2				.502	.051	.004
ISE	.455	4.246	.000			
PEOU	.313	2.925	.004			

Table 5. Hierarchical Regression Results (DV= PEOU)

Model	Coefficients				Model Summary	
	Beta	**T**	**Sig.**	**R^2**	**R^2 Change**	**Sig.**
1				.478	.478	.000
ISE	.691	8.770	.000			

An R-square change is probably more important than a R-square value itself. A significant R-square change means that an additional predictor can explain a significant amount of the variance in the dependent variable and hence add additional explanation power to the model. For example, According to Table 3, about 80% of the total variance in BI is explained by three predictors: ISE, PEOU, and PU. Besides, all R-square changes are significant, meaning all three predictors exhibited significant positive influences on BI. The three predictors explained respectively about 55% (ISE), 15% (PEOU), and 10% (PU) of the variance in BI. Similarly, according to Table 4, about 50% of the variance in PU was explained by ISE (45%) and PEOU (5%).

In order to test our research hypotheses, we need to calculate the coefficient of each path, called direct effect, as well as the total effect of each predictor. A direct effect represents the change in the dependent variable directly attributable to a standard deviation change in a certain predictor. A total effect represents the total change in the dependent variable attributable to the direct effect of the predictor, as well as its effects that are mediated through other predictors. Thus, we need to accumulate both direct and indirect effects to compute a total effect. Direct effects are the standardized beta coefficients in the full model. For example, according to Table 3, the beta coefficients in the full model are respectively 0.16 for ISE, 0.41 for PEOU, and 0.44 for PU. Thus, the direct effect of ISE on BI is 0.16. Similarly the direct effect of PEOU on BI is 0.41 and that of PU is 0.44. Figure 3 shows all direct effects taken from Tables 3-5.

To compute the total effect, we consider all the paths that link a predictor to the dependent variable with or without mediators in between. If a path has no mediator, it carries a direct effect. If a path consists of one or more mediators, it carries an indirect effect, which is the product of all direct effects on the path. For example, the indirect effect of ISE on BI through the path ISE $\rightarrow$ PEOU $\rightarrow$ PU $\rightarrow$ BI is $0.69 \times 0.31 \times 0.44 = 0.09$. The total effect is simply the sum of the direct and indirect effects carried

by all the paths. We summarized in Table 6 the total effect for each pair of a predictor and a dependent variable, and the level of support for each research hypothesis. As shown, all hypotheses are strongly supported by the data at the significance level 0.005 or higher.

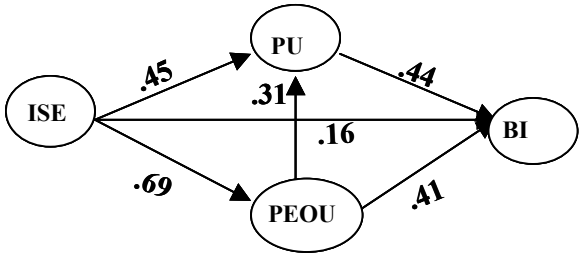

Figure 3. Direct Effects of Predictors

Table 6. Total Effects Summary

Hypothesis	Relationship	Total Effect	Supported?
H1	ISE → BI	.741	Yes (p<.001)
H2	ISE → PEOU	.691	Yes (p<.001)
H3	PEOU → PU	.313	Yes (p=.004)
H4	PU → BI	.441	Yes (p<.001)
H5	PEOU → BI	.546	Yes (p<.001)
H6	ISE → PU	.672	Yes (p<.001)

Discussion and Conclusion

The results of this study indicated that Internet self-efficacy has a significant impact on perceived ease of use, perceived usefulness, as well as behavioral intention to use Web-based medical records. The total effect of Internet self-efficacy on perceived usefulness is slightly weaker than that on perceived ease of use. It indicates that users perceived the system to be both easer to use and more useful when their Internet self-efficacies are higher. This finding is consistent with that of previous studies (Lopez and Manson 1997; Agarwal et al. 2000). When comparing this study with other self-efficacy studies, we found a general pattern that the impact of self-efficacy on usefulness is always significant in Internet or Web related settings. While in traditional non Web-based contexts, the impact of self-efficacy is not significant. Of course, this finding needs further investigation before jumping to a firm conclusion.

Perceived ease of use influences both usefulness and intention. However, its total effect on behavioral intention is stronger than that of ease of use on usefulness. This finding is interesting because the role of ease of use has been found unstable and controversial (Ma and Liu 2003). Most studies indicated that the impact of ease of use on usefulness is stronger than that of ease of use on behavioral intention, although few other researchers found a much larger effect of ease of use on intention than usefulness (Lim 2001). In a study with Internet technology, Gefen and Straub (2000) found that PEOU influences BI when a web site involves inquiries but does not influence BI when a web site is used for a purchasing task.

Theoretically, this study helps understand the antecedents to the key constructs in the technology acceptance model. It confirms the existing findings on the role of self-efficacy in perceiving the usability of an information technology. It adds additional evidence to the conflicting findings on the role of self-efficacy in determining perceived usefulness. Most importantly, it does all these in the context of accepting Web-based medical records, which has not been done yet. Since software industry is currently undergoing a revolutionary transition from software as products to software as services, a study of how end users respond to such a transition is very important. This paper represents a first attempt in applying the technology acceptance model to the adoption of application services. The result may be generalizable to other emerging e-business technologies such as Web services and Grid services (Liu and Ma 2003). Practically, the findings of this study have some important managerial implications. First, our findings imply that cognitive factors are the biggest obstacle for widespread adoption of electronic medical records. In fact, the

medical informatics community blames physicians for not being ready for a change to the computer (Waegemann 2002). In the study of Voelker (2002), three critical cognitive factors was recognized: (1) confidence in computers amongst their users, and especially in the availability, privacy, and security of data made of the electronic medical records; (2) adoption of a positive attitude towards computers in the workplace; and (3) adequate skills and proficiency in the use of the computer application. Our study confirms this general belief and conceptualizes these factors into three constructs: self-efficacy, perceived ease of use, and perceived usefulness. Second, our findings imply that, as for other technologies, enhanced usability and usefulness are a very important step toward the acceptance of Web-based medical records. Third, as Table 6 shows, the total effect of self-efficacy on behavior intention is much larger than that of perceived ease of use and usefulness. It implies that application service providers should target on enhanced user self-efficacy by providing end user support and other intervention mechanisms; enhancing self-efficacy beliefs may be a more effective avenue toward increased system acceptance than enhancing perceived usability and usefulness.

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Appendix A. Survey Instrument

PU1	Using this system in my job would enable me to accomplish tasks more quickly
PU2	Using this system would improve my job performance
PU3	Using this system would enhance my effectiveness on the job
PU4	Using this system would make it easier to do my job
PU5	This system is useful in my job
PEU1	I found it was easy to do whatever I want
PEU2	The navigation on the site is easy
PEU3	Learning to operate this system is easy for me.
PEU4	This web site provides information content that is easy to understand
PEU5	I found this system was flexible to interact with
SE1	I feel confident to use search engines like Yahoo, Google, and Altavsta.
SE2	I feel confident to log on to a website if I have the account information.
SE3	I feel confident to download necessary material from Internet.
SE4	I feel confident to search for information on the Internet.
SE5	I feel confident to visit a web site if I am given a web address (URL).
SE6	Overall, I feel comfortable when I am using Internet.
BI1	I will support it if my clinic decides to use this system.
BI2	I would like to come back to this site for a second look
BI3	I do not mind spending some time to learn how to use this system for my work
BI4	I am willing to use the system for my work
BI5	It would be efficient if we were going to adopt this system.