Journal of Infrastructure, Policy and Development 2024, 8(7), 4570.
https://doi.org/10.24294/jipd.v8i7.4570

Article

Factors affecting the personal benefit of users: An experimental study on information system in hospitals in Viet Nam

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CITATION

Doan TH, Hoang TTH, Nguyen Thi HU, Nguyen Thi KP. (2024). Factors affecting the personal benefit of users: An experimental study on information system in hospitals in Viet Nam. Journal of Infrastructure, Policy and Development. 8(7): 4570. https://doi.org/10.24294/jipd.v8i7.4570

ARTICLE INFO

Received: 6 February 2024
Accepted: 14 March 2024
Available online: 2 August 2024

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Abstract: The benefits of information system users are an important topic in research on information system implementation in general as well as in hospital information systems in particular. The study is applying structural equation modelling in determining the factors affecting personal benefits of information system users, with the antecedents being the combination of perspectives, and the outcomes including individual user results of the system in hospitals. The study was conducted in two phases: a preliminary study and a formal study. The preliminary study aimed to adjust and supplement the observed variables to be suitable for the actual conditions in Vietnam by conducting a preliminary survey with a questionnaire involving 55 samples to assess the internal consistency reliability, convergent validity, and discriminant validity of the measurement scales. The formal quantitative study, which employed linear structural analysis with PLS-SEM, was conducted on 215 samples of individuals who had previously used information systems in several hospitals in Vietnam. The proposed model explained 80.6% of the variance in user engagement with the system and 50.6% of the variance in user satisfaction when using the information system. In more detail, for user benefits, it is worth noting that the strongest impact intensity belongs to information quality and the weakest belongs to support structure. In addition, confidence in one's own abilities also has a high impact on user benefits when using the information system.

Keywords: user benefits; information systems; hospitals; PLS-SEM; factors

1. Introduction

Information and information utilization are considered fundamental elements and the first steps that assist directors in building plans, making decisions, managing operations, monitoring, and capturing information to enhance the quality of management. Information systems have become crucial factors in the management system of organizations, serving as keys to effective management and contributing to their competitiveness in the field while better satisfying customer needs.

In the modern era of industrialization and digitization, the application of information technology to activities ranging from production, and business to healthcare is indispensable for any organization. In Vietnam, healthcare has always been a top concern for the government leaders. Currently, digital transformation in healthcare is a global trend that brings significant benefits to nations by improving healthcare quality, saving time and costs, and enhancing efficiency in diagnosis and treatment. Vietnam is no exception to this trend which proves by the Decision 749/QD-TTg dated 3 June 2020, by the Prime Minister approved the "National Digital Transformation Program until 2025, orientation to 2030". Under this program, healthcare is a top priority in the eight areas of digital transformation and is identified as "an area with immediate social impact, daily relevance to the people, the fastest

changes in perception, cost-effectiveness, and thus, the need for prioritized early digital transformation".

Research on hospital information systems has become an attractive trend that many researchers are currently examining the acceptance and usage by healthcare professionals and administrative staff (Pai and Huang, 2011). However, for scholars in electronic health, very few of them focus on studying the actual user system usage (Pai and Huang, 2011), let alone exploring user satisfaction with the system after initial use (Oktal et al., 2016). Furthermore, it's essential to note that user satisfaction with initial system use is a critical factor leading to long-term acceptance and usage (Bhattacherjee and Lin, 2015). User acceptance and utilization of information systems are critical factors for the success of applying information technology to hospitals. Therefore, the authors decided to carry out the research topic: "Factors affecting the personal benefits of users: An experimental study on information system in hospitals in Viet Nam" to provide both theoretical and practical significance and to contribute valuable reference material for the implementation of hospital information systems in Viet Nam.

In addition, the research will propose and validate a structural model in which theoretical factors: Perceived job compatibility, support structure, self-confidence in one's own capability, information system quality, perceived value, and user satisfaction will be behaviors affecting the benefits of hospital information system users.

2. Literature review

2.1. Hospital information system

The Hospital Information System (HIS) has been recognized as an important branch of the emerging field of Medical Informatics in the international academic community. "A Hospital Information System (HIS) is an integrated information system that provides hospital information requirements for daily activities such as planning and patient care" (Moghaddasi et al., 2018). HIS manages the hospital's operations, including medical, clinical, financial, and administrative activities (Pai and Huang, 2011). **Figure 1** shows the hospital management system components. These systems enhance the coordination of patient care by providing healthcare professionals with patient health information and visit history at the necessary locations and time points.

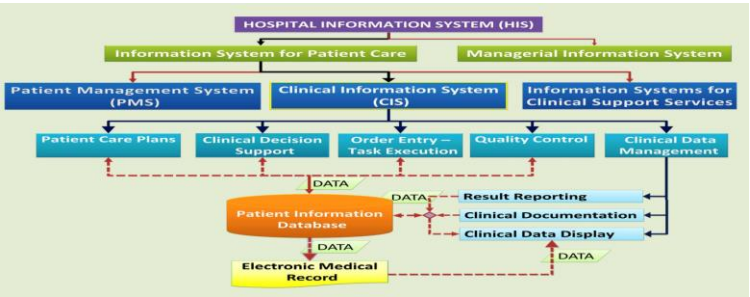

Figure 1. Hospital management diagram (HIS).

Source: Healthcare Information and Management Systems Society (HIMSS).

In Vietnam, researchers from the Ministry of Health designed the Medisoft 2003 software, which is known as a Hospital Information System (HIS) and has been implemented in many Vietnamese hospitals until now. The Hospital Information System comprises various components, such as:

- Picture Archiving and Communication System (PACS)
- Radiology Information System (RIS)
- Clinical Information System (CIS)
- Nursing Information System (NIS)
- Pharmacy Information System (PIS)
- Financial Information System (FIS)
- Laboratory Information System (LIS)

HIS is designed to centrally manage patient and related information through electronic data processing and predict health conditions in a hospital environment.

2.2. Social cognitive theory

According to Social cognitive theory (Bandura and Walters, 1977), an individual's behavior can be regulated by controlling their perceptions. To be more specific, when an individual believes they have the necessary resources or conditions to solve a problem, they are more likely to act on that belief to engage in problem-solving behavior. Specifically, the Social cognitive perspective posits that an individual's ability to perform certain tasks depends on their level of self-confidence in their own abilities, and thus, self-efficacy is a central concept in social cognition (Bandura and Walters, 1977).

Self-efficacy is understood as the belief that one has the ability and competence to perform work-related behaviors with a certain level of success (Bandura and Walters, 1977). In the context of using a hospital information system, self-efficacy of the user is the belief of the user that they can access, prepare, and use the provided hospital information system for their work, such as logging in, performing authorized functions, etc.

2.3. Relevant previous studies

2.3.1. DeLone and McLean's (D&M) information system success model (1992, 2003, 2016)

DeLone and McLean's information system success model (1992) consists of six variables, and these variables are interrelated rather than independent, depending on each other (see **Figure 2**).

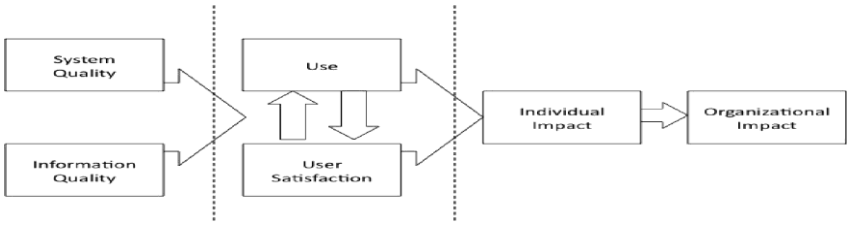

Figure 2. Information systems success model by D&M.

DeLone and McLean's information system success model provides a framework and model for measuring complex dependent variables in IS research. Their IS success model (DeLone and McLean, 1992, 2003) offers a useful perspective through which we can understand success following the implementation of ERP systems in a more integrated manner. DeLone and McLean (2003) note that the selection of aspects and the structure of IS success should depend on the goals and context of the empirical investigation, thus they propose an updated IS success model to reflect this (see **Figure 3**)

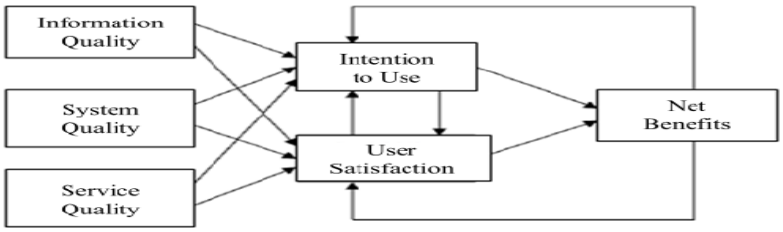

Figure 3. Updated information systems success model by D&M (DeLone and McLean, 2003).

2.3.2. Technology acceptance model (TAM)

TAM was developed by Davis, Bagozzi, and Warshaw (Davis, 1989; Davis et al., 1989) and is one of the most influential extensions of Fishbein and Ajzen's Theory of Reasoned Action (1976). Both the Theory of Reasoned Action and TAM have strong behavioral components, arguing that when a person forms an intention to act, he or she will freely act without constraints. TAM is presented in **Figure 4**.

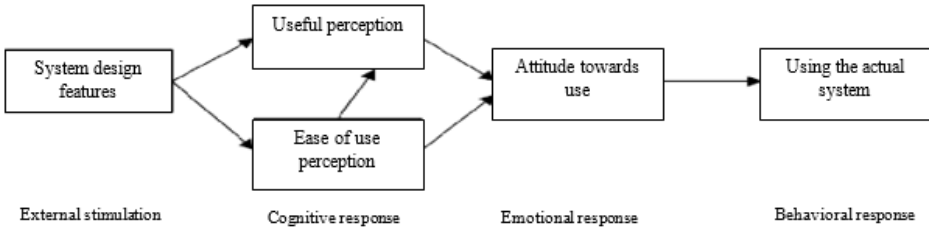

Figure 4. Technology acceptance model (TAM) conceptual model (Davis, 1993).

Venkatesh and Bala (2008) proposed an extension of the TAM model by exploring how managers make informed decisions about interventions that can lead to more effective acceptance and use of information technology. The authors drew from the TAM research, especially studies on determinants of perceived usefulness and perceived ease of use, and developed an integrated model of factors influencing the adoption and use of information technology at the individual level (Venkatesh and Bala, 2008).

2.3.3. Research model of Nugroho and Prasetyo (2018)

Research model of Nugroho and Prasetyo (2018) is presented in **Figure 5**.

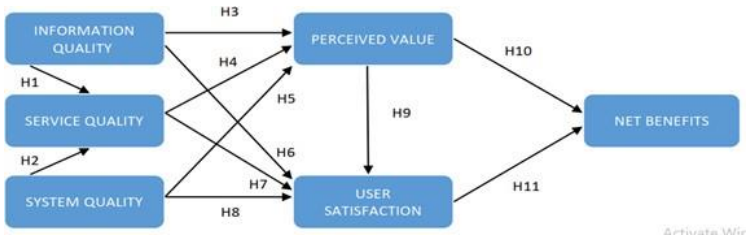

Figure 5. Yanuar Nugroho model (2018).

In this study, the authors determined the success of the DeLone and McLean (2003) model by altering the direction of influence of perceived quality constructs, including information quality, system quality, and service quality. The research results in three important conclusions. First, information and system quality were was demonstrated to be factors influencing service quality. Second, information quality, system quality, and service quality are the causes of perceived value formation, which in turn affects user satisfaction and net benefits. Third, the characteristics of the information system are an important aspect that researchers should consider when testing information system success. The attributes of the information system are widespread and can complicate the assessment of information system success.

2.3.4. Wang research model (2008)

Perceived value has been incorporated into the specific model of electronic commerce system success as a measure of intervention success, mediating the effects of Information Quality, System Quality, and Service Quality on user satisfaction and the intention to reuse (see **Figure 6**). With the emergence and development of electronic commerce systems, measuring variables that satisfy emotions continues continue to be essential. Additionally, including the Perceived Value structure in the electronic commerce system success model provides a richer description of the dynamics surrounding quality measurements, customer perceived value, satisfaction assessment, and repeat usage intentions. The authors point out that individuals continue to use electronic commerce systems because they perceive value in them and are satisfied with their quality.

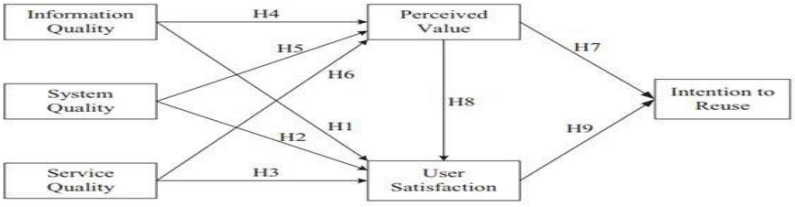

Figure 6. Wang model (2008).

2.4. Research model and research hypothesis

2.4.1. Research model

In this study, the authors have proposed a research model and research hypotheses based on a selective review of previous research results, as shown in **Figure 7**. The proposed research model consists of 9 concepts and 16 interrelated hypotheses, integrated from previous research models, specifically:

Precursors for information system quality (system quality, information quality,

service quality) in the model are integrated from studies by Sun et al. (2019) examining the factor of Perceived Work Compatibility, Sykes (2020) examining the factor of Support Structure, McKee et al. (2006) examining the factor of Self-efficacy.

Successors for information system quality (system quality, information quality, service quality) in the model are integrated from studies by Kim (2010) examining the factor of Perceived Value, Hsu et al. (2015) examining the factor of User Satisfaction.

Precursors for satisfaction in the model are integrated from the study by Kim (2010) examining the factor of Perceived Value. Precursors for User Benefits in the model are integrated from the studies by Kim (2010) examining the factor of Perceived Value, Hsu et al. (2015) examining the factor of User Satisfaction.

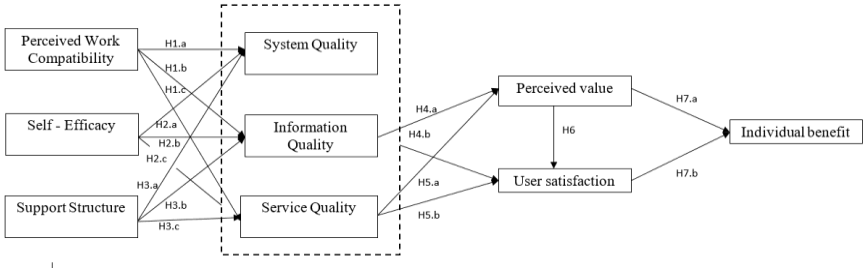

Figure 7. Research proposal model.

Based on theoretical foundations and previous research findings, the authors propose the following research hypotheses:

- H1a: Perceived work compatibility positively influences system quality.
- H1b: Perceived work compatibility positively influences information quality.
- H1c: Perceived work compatibility positively influences service quality.
- H2a: Self-efficacy positively influences system quality.
- H2b: Self-efficacy positively influences information quality.
- H2c: Self-efficacy positively influences service quality.
- H3a: Support structure positively influences system quality.
- H3b: Support structure positively influences information quality.
- H3c: Support structure positively influences service quality.
- H4a: Information quality positively influences user-perceived value.
- H4b: Information quality positively influences user satisfaction.
- H5a: Good service quality positively influences user-perceived value.
- H5b: Good service quality positively influences user satisfaction.
- H6: User-perceived value positively influences user satisfaction.
- H7a: User-perceived value positively influences user personal benefits.
- H7b: User satisfaction positively influences user personal benefits.

2.4.2. Research methodology

The research comprises two phases: Preliminary research and formal research:

Preliminary research: Preliminary research is conducted to identify factors for building the research model, evaluate, and determine appropriate measurement scales through in-depth interviews and pilot surveys.

Formal research: Based on the preliminary research results, the formal research is conducted using quantitative research methods. The Partial Least Squares Structural

Equation Modeling (PLS-SEM) method is applied to analyze and assess the research model and hypotheses. The research involves two main steps: First, assessing the measurement model, comprising: assessing internal consistency (Composite Reliability—CR), convergent validity (Average Variance Extracted—AVE, factor loadings), and discriminant validity (Fornell-Larcker criterion); Second, evaluating the structural model, which including: assessing multicollinearity of concepts (VIF), path coefficients (β), determination coefficient (R^2), and effect size (f^2).

Sampling method: The study uses a convenience sampling method. Firstly, this method allows the author to select accessible survey participants, saving time and costs in data collection (Tho and Trang, 2011). Secondly, it suits the research conditions, making it a preferred choice.

Sample size: Typically, for PLS-SEM, the sample size should be equal to or greater than ten times the number of paths in the structural model (Hair et al., 2016). Although sample size requirements are not stringent, PLS-SEM is a statistical method, so the sample size should still be considered in relation to the model's complexity and data characteristics (Hair et al., 2016). PLS-SEM, being a part of the SEM family of methods, benefits from larger sample sizes for more stable and reliable results.

Data collection method: The study's participants are users who have used the hospital information system within the last year at 17 hospitals in Viet Nam. Questionnaires were sent directly to respondents via paper surveys and online surveys.

Scale design: The study employs two types of scales: nominal scales and interval scales. Nominal scales are qualitative scales where measurements are used for categorization only and do not have quantitative significance (Nguyen, 2013). Interval scales are scales in which measurements are used to represent distances. In this study, the author uses a 5-point Likert scale (Likert, 1932). The Likert scale used has five specific choices:

- Choice "1" corresponds to "Strongly Disagree".
- Choice "2" corresponds to "Disagree".
- Choice "3" corresponds to "Neutral".
- Choice "4" corresponds to "Agree".
- Choice "5" corresponds to "Strongly Agree".

After obtaining qualitative insights from the preliminary research, the scales are developed and encoded accordingly. **Table 1** presents scales of variables in the research model.

Table 1. Table of scales of variables in the research model.

No.	Observed variables	Encode
Perceived work compatibility		PW
1	Using the X hospital information system is relevant to my work at the office.	PW1
2	Using the X hospital information system is consistent with my professional content.	PW2
3	Hospital Information System X is relevant to all aspects of my work.	PW3
Support structure		SS
4	Hospital Information System X has a department ready to assist with requests to operate the hospital information system when users need assistance.	SS1

Table 1. (*Continued*).

No.	Observed variables	Encode
5	The members of the support department using the X Hospital Information System have the expertise to be able to solve the problems that users encounter.	SS2
6	Support team members are always looking for solutions to help users solve obstacles when exploiting the X Hospital Information System.	SS3
Self efficacy		SE
7	I fully understand the user function role when exploiting the X Hospital Information System.	SE1
8	I feel comfortable solving problems that arise while using the X Hospital Information System.	SE2
9	I understand well how to interact with technical support when using the X Hospital Information System.	SE3
10	I know how to exploit the features of X Hospital Information System.	SE4
11	I know how to coordinate with other staff in the process of using the X Hospital Information System.	SE5
System quality		SQ
12	The functions of the X hospital information system are easy to use.	SQ1
13	X hospital information system can conveniently log in	SQ2
Information quality		IQ
14	The information provided from the X Hospital Information System quickly and promptly helps me to handle the work well.	IQ1
15	The information provided from the X Hospital Information System is not duplicated or incorrect between functional units and departments.	IQ2
16	The information provided by the X Hospital Information System is correct.	IQ3
17	The information provided by the X Hospital Information System is useful to the users.	IQ4
Service quality		SL
18	The interface of the X Hospital Information System is friendly and easy to use.	SL1
19	X Hospital Information System provides quick and timely information when required by users.	SL2
20	X Hospital Information System helps users easily access hospital information.	SL3
21	The X Hospital Information System provides functions that make it possible to solve difficult problems in performing daily tasks.	SL4
Perceived value		PV
22	X Hospital Information System has changed the way I work, helping me work faster and more efficiently.	PV1
23	Switching to the X Hospital Information System brings more benefits than its disadvantages.	PV2
24	Innovating the way, I work using the X Hospital Information System helps me increase my work efficiency.	PV3
25	When I first used the X Hospital Information System, it took me a lot of time and effort to get used to it. Currently, the information system of hospital X has brought me good value.	PV4
User satisfaction		US
26	I feel satisfied with the quality that X Hospital Information System provides.	US1
27	I am satisfied with the quality of information provided by X Hospital Information System.	US2
28	I am satisfied with the service quality of X Hospital Information System.	US3
29	In general, I am satisfied with the X Hospital Information System.	US4
User benefits		IB
30	I have learned many things about my professional experience while using the X Hospital Information System.	IB1
31	X Hospital Information System enhances my ability to handle professional work.	IB2
32	The X Hospital Information System enhances my efficiency at work.	IB3
33	X Hospital Information System helps to increase my work productivity.	IB4

Source: Compiled by the researchers.

3. Results and discussion

3.1. Descriptive statistics of variables

Descriptive statistics of the quantitative variables for the concepts are presented in detail in **Table 2**.

Table 2. Descriptive statistics for quantitative variables.

Descriptive statistics	Mean	Median	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness
IB1	4.134	4.000	1.000	5.000	0.743	3.279	−1.178
IB2	4.176	4.000	1.000	5.000	0.711	3.786	−1.280
IB3	4.222	4.000	1.000	5.000	0.671	3.953	−1.129
IB4	4.241	4.000	1.000	5.000	0.692	3.401	−1.121
IQ1	4.134	4.000	1.000	5.000	0.698	3.066	−1.014
IQ2	4.046	4.000	1.000	5.000	0.744	2.966	−1.094
IQ3	4.167	4.000	1.000	5.000	0.714	1.760	−0.872
IQ4	4.231	4.000	1.000	5.000	0.689	4.199	−1.282
PV1	4.185	4.000	1.000	5.000	0.735	2.885	−1.154
PV2	4.162	4.000	1.000	5.000	0.780	3.794	−1.414
PV3	4.236	4.000	1.000	5.000	0.634	2.121	−0.683
PV4	4.111	4.000	1.000	5.000	0.743	3.358	−1.204
PW1	4.306	4.000	1.000	5.000	0.720	3.680	−1.360
PW2	4.370	4.000	1.000	5.000	0.675	3.192	−1.248
SE1	4.245	4.000	1.000	5.000	0.707	1.878	−0.945
SE2	4.273	4.000	1.000	5.000	0.641	3.094	−0.958
SE3	4.231	4.000	1.000	9.000	0.777	8.030	0.166
SE4	4.208	4.000	1.000	5.000	0.712	3.015	−1.102
SL1	4.134	4.000	1.000	5.000	0.730	1.581	−0.861
SL2	4.056	4.000	1.000	5.000	0.831	1.565	−1.078
SL3	4.204	4.000	1.000	5.000	0.704	2.436	−1.032
SQ1	4.185	4.000	1.000	5.000	0.716	3.118	−1.130
SQ2	4.023	4.000	1.000	5.000	0.723	3.651	−1.220
SS1	4.157	4.000	1.000	5.000	0.784	2.950	−1.274
SS2	4.292	4.000	1.000	5.000	0.760	2.848	−1.313
SS3	4.171	4.000	1.000	5.000	0.772	1.955	−1.036
US1	4.162	4.000	1.000	5.000	0.743	3.291	−1.293
US2	4.181	4.000	1.000	5.000	0.739	3.270	−1.273
US3	4.125	4.000	1.000	5.000	0.738	2.977	−1.178
US4	4.167	4.000	1.000	5.000	0.707	3.867	−1.279

Source: Synthesized based on SPSS 23.0 software.

Criteria for assessing the normal distribution of data: Skewness and kurtosis values fall within the range of (−1; 1). According to the table of descriptive statistics results, it appears that nearly all variables meet the conditions.

3.2. Measurement model

Measurement model evaluation aims to assess the value of scales through three criteria: internal consistency reliability, convergent validity, and discriminant validity with the support of Adanco 2.1.1 software. To assess the measurement model, the study uses criteria to evaluate internal consistency reliability, convergent validity, and discriminant validity of the conceptual scales (Hair et al., 2016). To evaluate internal consistency reliability, it is necessary to assess the composite reliability (CR). The results show that the CR of the scales ranges from 0.883 to 0.962 (>0.7).

The scale assessment results indicate that all scales have achieved internal consistency reliability (Cronbach's Alpha >0.7, and composite reliability of the scales >0.7). The factor range from 0.648 to 0.927 (>0.6), and the average variance extracted (AVE) ranges from 0.529 to 0.819 (>0.5), indicating acceptable convergent validity (Hair et al., 2016).

To assess discriminant validity, the Fornell-Larcker criterion should be examined, and the factor loadings of one construct's variables should be higher than the cross-loadings with variables from other constructs. The results show that the Fornell-Larcker criterion is met. Discriminant validity of the scales meets the requirements when the AVE of a construct is greater than the squared correlation coefficient between that construct and other constructs (Hair et al, 2016), and the criterion for cross-loadings is also satisfied.

3.3. Structural model evaluation

The evaluation of the structural model aims to test the research hypotheses. The assessment process follows the recommendations by Hair et al. (2016) with the support of Adanco 2.1.1 software.

Assessment of collinearity: According to Hair et al. (2016), the first consideration when evaluating the structural model is collinearity. If the Variance Inflation Factor (VIF) is between 1 and 10, the model does not violate the collinearity issue.

Path coefficients (β): Path coefficients (β) are standardized regression coefficients, evaluated by both the sign and the magnitude of the coefficients. To test the research hypotheses and the effects, a bootstrapping estimation (n = 5000) is applied to calculate the path coefficients (β) and p-values to determine the significance of the effects in the research model. The path coefficients (β) related to the relationships in the model are statistically significant at the 5% level. Moreover, the bootstrap test results also show that all β coefficients are different from zero. Therefore, it can be concluded that the hypotheses from H1 to H18 are all supported by the data, as all have statistical significance at the 5% level.

Coefficient of determination (R^2): The next index to evaluate is the coefficient of determination (R^2), which measures the variance explained by the concepts. According to Hair et al. (2016), in marketing issues, an R^2 value of 0.75, 0.5, or 0.25 is considered substantial, moderate, or weak, respectively. The research results show that the R^2 value for the concept "Benefits of using the Hospital Information System," for example, R^2 *IB* = 0.806 or 80.6%, indicates that the variation in IB is significantly explained by IQ, PV, SerQ, SysQ, US, signifying substantial variance explanation for IB.

Effect Size (f^2): In addition to evaluating R^2, according to Hair et al. (2016), the effect size f^2 should be considered for all relationships in the structural model to assess whether the removal of an exogenous variable affects an endogenous variable. Specifically, f^2 should minimally exceed 0.02. Using Cohen's measure of the effect, called the effect coefficient f^2, the degree of influence f^2 allows to evaluate the contribution of an exogenous variable to a value of R^2 of the endogenous latent variable. Cohen (1988) gives the following criteria to test the value of f^2: $0.02 \leq f^2 < 0.15$ represents a small effect, $0.15 \leq f^2 < 0.35$ represents a medium effect, and $f^2 \geq 0.35$ represents a large effect. The results show that the direct relationship from the quality of information to perceived value has a large effect size ($f^2 = 0.405$), while the direct relationship from perceived value to personal benefits has a medium effect size ($f^2 = 0.295$).

The research findings are summarized in **Figure 8** and **Table 3**.

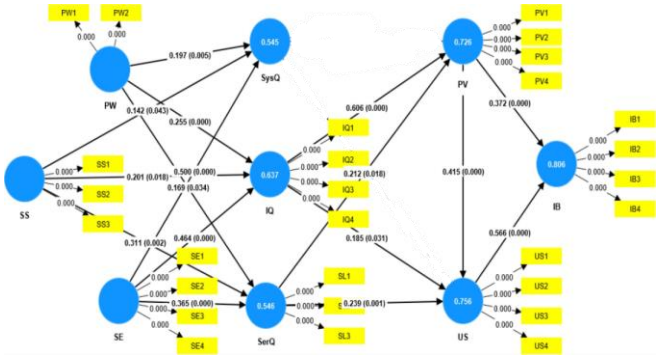

Figure 8. Test results of the research model.

Table 3. This is a table.

Hypotheses		Research models			VIF
		Path coefficient (β)	*p*-value	Bootstrap value range	
H1a	PW → SysQ	0.197	0.005	(0.197–0.195)	1.645
H1b	PW → IQ	0.255	0.000	(0.255−0.247)	1.645
H1c	PW → SerQ	0.169	0.034	(0.169−0.164)	1.645
H2a	SE → SysQ	0.500	0.000	(0.500−0.496)	2.022
H2b	SE → IQ	0.464	0.000	(0.464−0.471)	2.022
H2c	SE → SerQ	0.365	0.000	(0.365−0.352)	2.022
H3a	SS → SysQ	0.142	0.043	(0.142−0.147)	2.396
H3b	SS → IQ	0.201	0.018	(0.201−0.197)	2.396
H3c	SS → SerQ	0.311	0.002	(0.311−0.329)	2.396
H4a	IQ → PV	0.606	0.000	(0.606−0.603)	3.304
H4b	IQ → US	0.185	0.031	(0.185−0.187)	4.643
H5a	SerQ → PV	0.212	0.018	(0.212−0.213)	3.746
H5b	SerQ → US	0.239	0.001	(0.239−0.230)	3.909
H6	PV → US	0.415	0.000	(0.415−0.414)	3.645
H7a	PV → IB	0.372	0.000	(0.372−0.366)	3.148
H7b	US → IB	0.566	0.000	(0.566−0.569)	3.148

Source: Synthesis and calculation based on Adanco software 2.1.1.

With the above research results, it can be seen that all the proposed hypotheses are accepted.

3.4. Discussing research results

Out of the 16 hypotheses, all 16 hypotheses regarding the relationships between the constructs in the research model are accepted because they are statistically significant at the 95% confidence level ($p < 0.05$).

From the model results, $\beta = 0.311$ indicates that the structural support positively influences the information system and brings personal benefits to users. Users who can control their work have high self-efficacy and believe they can complete tasks independently.

The relationships between information quality ($\beta = 0.606$) and Service Quality ($\beta = 0.212$) positively affect user satisfaction. The quality of the system is also reliable. Service Quality (at $p = 0.001$) significantly influences both satisfaction and Information Quality (at $p = 0.05$). This result aligns with previous studies (Pei-Fang Hsu, 2015). User satisfaction is crucial because it directly affects their engagement with the system. Higher satisfaction with HIS leads to more time spent using HIS, resulting in more benefits for users. These measures of engagement significantly impact users' intentions to perform tasks on HIS.

The main impact of Service Quality on satisfaction is significant ($\beta = 0.239$, $p < 0.001$). The impact of Perceived Value on satisfaction is highly significant ($\beta = 0.415$, $p < 0.001$), while the impact of Information Quality on satisfaction is moderate ($\beta = 0.239$, $p < 0.001$). These results suggest that the importance of Service Quality, Information Quality, and Perceived Value of users not only directly influences satisfaction but also significantly affects it. The results also indicate that the quality of the information system plays a preventive role that should not be underestimated. However, significantly increasing the impact of these two aspects of quality on prolonged use and ultimately on user satisfaction.

These results imply that the importance of Service Quality and Information Quality not only directly affects satisfaction but also that Perceived Value significantly influences user satisfaction with HIS.

H8a ($\beta = 0.372$, $p < 0.000$) and H8b ($\beta = 0.566$, $p < 0.000$) indicate that when users perceive the value brought by the information system and are satisfied with it, it will provide effective value for their work.

4. Conclusion

Out of a total of 16 hypotheses, all 16 hypotheses regarding the relationships between the constructs in the research model are accepted because they are statistically significant at the 95% confidence level ($p < 0.05$).

This study experimentally examined the structural relationships between antecedents (perceived job compatibility, structural support, and self-confidence in one's abilities) and the quality of the Hospital Information System (system quality, information quality, service quality) and their corresponding outcomes (perceived value, user satisfaction, personal benefits).

The study has four theoretical implications for IS literature from a user

perspective. Firstly, this study affirms the roles of user satisfaction and perceived value as predictors of user personal benefits, in line with Pei-Fang Hsu (2015).

Secondly, the significant roles of perceived job compatibility and self-confidence in one's abilities complement the studies of Tracy Ann Sykes (2020) and Statia Elliot (2013).

Thirdly, the strong impact of the highest level of management support and support level on user benefits reveals a valuable linkage in understanding user benefits when using HIS through the support structure and the quality of the information system (information quality, system quality, service quality). This is in line with research cited from Tracy Ann Sykes (2020).

Lastly, this study can provide additional evidence in the literature on the simultaneous effects of IS attributes and perceived leadership support on user satisfaction through perceived value. This integration may be valuable as it highlights both system-related factors (IS quality) and management-related factors (support structure) in explaining user benefits when implementing HIS.

Author contributions: Conceptualization, KPNT; methodology, HUNT; software, HUNT; validation, HUNT and TTHH; formal analysis, HUNT; investigation, HUNT; resources, KPNT; data curation, HUNT; writing—original draft preparation, KPNT; writing—review and editing, TTHH; visualization, TTHH; supervision, THD; project administration, THD; funding acquisition, THD. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

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