
DISCUSSION

Evaluating the User's Satisfaction of Applying Information System Based on EDUSOFT in Managing Students' Data at Đà Lạt University

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Received 24 March 2014

Revised 15 May 2014; Accepted 25 Jun 2014

Abstract: In recent years, in Vietnam the application of the Information Systems (IS) has become increasingly important in the educational management, especially in the secondary schools as well as in the universities and the management of students' data. The user's satisfaction is an indispensable element in the use of the IS in an effective way in the educational institutions. This article assesses the degree of the user's satisfaction with the IS based on the EDUSOFT information system currently applied at Dalat University to manage students' data. By the quantitative study method with the successful model via 270 staff members and students, it is possible to see the satisfaction degree towards the use of the IS in data management. The study results show that all the factors under examination in this study including system quality, information quality, service quality, and quality of LAN network have positive impact on the user's satisfaction.

Keywords: Information system, the user satisfaction, Information system in education, EDUSOFT, IS Success Model, DaLat University.

1. Introduction

Information system (IS), according to Laudon and Laudon (1993), as "a set of procedures that collects, processes, stores, and disseminates information to support decision making and control". In most cases, information systems are formal computer-based systems that play an integral role in organizations. Laudon and Laudon

(1993) also indicated that electronic computers and related software programs are the technical foundation, the tools and materials, and the modern information systems.

The evidence in Vietnam shows that information system data has played a significant role in supporting the planning process and the process of decentralization process have become more committed to support localized information system. As a result, many educational organizations are using data to prepare education plans and develop

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their budgets. Educational institutions, besides using information system to support decision making, coordination, and control, also help teachers, staff and students search necessary information, especially in analyzing and managing students' data.

Information system has kept an effective role in managing students' data at the University of Dalat. With the slogan "To change is to survive", universities in Vietnam manage to build their strategies for responding to challenges. Consequently, staff at these institutions must train themselves, know how to operate, perform comprehensive cooperation between employees, help each other in their work, and share necessary data and experiences. EDUSOFT, the information system currently applied at Dalat University, has shown its usefulness for both staff and students in getting necessary information from the database. The systems can help the staff to access all students' data quickly. Students can also use the information system to perform their course registration every semester, and know their tuition fees, studying results and even their weekly timetable. To meet its demands, the number of computers at the University of Dalat has newly installed year by year. All students' data has been transformed into the information system by the information processor.

Since applying information system in 1994, the University of Dalat has stored all its students' data into the system so managers and staff can manage students more effectively. Up to now there hasn't been any evaluation to users' satisfaction with the information system, so this study can help to understand staff and students' feelings, desires and expectations in the currently applied information system. This also helps to improve working and studying quality through managing students' data at the University of Dalat.

Tolley and Shulruf (2009) stated that most schools, universities and educational

organizations across the world collect data in some form or another; however, others agree that few of them effectively utilize their data to improve the quality of education. Hua and Herstein (2003) argued that a successful information system can powerfully highlight the interdependencies that exist within different elements of the education system as well as between education and other sectors of society. Universities' data occur in many forms such as student records which include demographic data, achievement, behavior and attendance data, students' CV, course registration, tuition fees, curricular materials, lesson plans; programmers' data; administrative and financial records, human resource management, and so on. These kinds of data used to be manually stored in many locations using a variety of storage methods including handwritten notes in teachers' workbooks. Collecting and organizing such an array of data show several complex challenges for school management councils intending to address the application of data to decision-making processes.

According to DeLeon and McLean (1992), user satisfaction is a key measure of computer system success. They consist of lists of factors. Respondents were asked to rate on one or more multiple point scales of every variables. DeLeon and McLean discovered that the items that their informants rated as the most importance include accuracy, reliability, timeliness, relevancy and confidence in the system. The factors of least importance were feelings of control, volume of output, vendor support, degree of training, organizational position of the electronic data processing, or computing department.

2. Research method

This study applied DeLone and McLean IS Success Model (1992, The D&M IS Success Model) extensively proposing the six

dimensions of IS success. These include system quality, information quality, user satisfaction, IS use, individual impact and organizational impact. The D&M IS Success Model is based on the communications and the information influence theory of the previous researchers.

Information Quality: this component is used to evaluate content variety, complete information, detail information, timely information on managing students' data. The variables of this component concern Information Quality. Information Quality measures are items assessing ease of use and user friendliness following Larcker and Lessig(1980)'s guidelines in developing the six-questionnaire items to measure the perceived importance and information utility.

System Quality: specific measures concerning the use of IS in managing students are added to evaluate technical support as a component of System Quality. They are good design, easy to use, response times are the sub factors used for measuring System Quality. Hamilton and Chervany (1981) proposed data currency, response time, turnaround time, data accuracy, reliability, completeness, system flexibility, and ease of use among others as part of a "formative evaluation" scheme to measure system quality.

In measuring **Service Quality**, all kind of support offered to users is emphasized to adopt the measures to be used in managing students' data and focused on support given by the experts and students. Variables of service quality measure information searching, confidentiality and suitability.

Local Area Network (LAN) is a computer network connecting computers and devices in a limited geographical area such as home, school, university, computer laboratory, office, etc. LANs may have connections with other LANs via leased lines, leased services, or by tunneling across the Internet using virtual private network

technologies. **Quality of LAN** is very important for experts and especially for students who use IS for working and studying.

User Satisfaction: User Satisfaction is seen as staff and students' attitude towards managing students' data. The respondents are generally satisfied with the IS in managing students' data. They have enjoyable experience when using the IS and this indicates that the application of IS is successful. According to Doll and Torkzadeh (1988), user satisfaction is defined as the attitude of the users towards a specific computer application.

Quantitative research approaches with the survey questionnaires are employed in this study. The survey questionnaires, after designing, were tested for their content validity and reliability. Eighteen administrative staff and students from several different departments at University of Dalat were asked to check the content of the questionnaire to see whether they are appropriate.

As the study attempts to evaluate four dimensions of fairness and quality influencing the user satisfaction with IS, the basic assumption is that user satisfaction is determined by systems quality, service quality, information quality and quality of LAN. Figure 1 states the theoretical model proposed to address this issue.

System quality in the information system measures the desired characteristics of online community including system reliability, convenient access, ease of use and system flexibility. These variables indicate the system qualities valued by online community members. Information quality measures online community output, includes information accuracy, timeliness, usefulness, completeness and customized information presentation. Service Quality represents overall user assessment and service delivery assessment in the virtual marketplace.

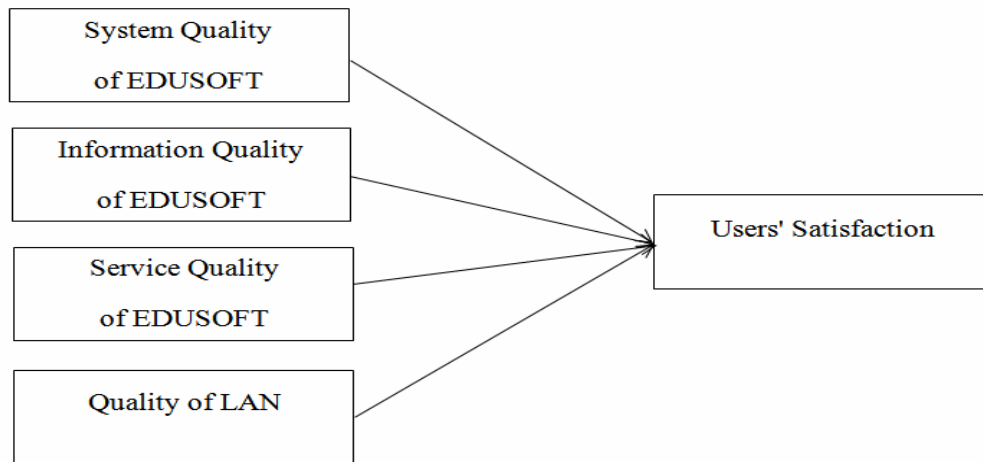


Figure 1. Research Model - An Revised IS Success Model.

The hypotheses tested in this study are:

H1: There is a positive relationship between system quality of EDUSOFT and the user satisfaction in managing students' data.

H2: There is a positive relationship between system service quality of EDUSOFT and the user satisfaction in managing students' data.

H3: There is a positive relationship between information quality of EDUSOFT and the user satisfaction in managing students' data.

H4: There is a positive relationship between quality of LAN and user satisfaction in managing students' data.

The survey questionnaires applied in this study were adapted from the review of literature based on the objectives of the research shown in Table 1.

Table 1: Variables and their measurement items

Variables	Measures	Questions
System quality	• Design	SQ1: The designed system (currently, appropriately) has impact to students use of credit selecting and accumulating.
	• Easy to use	SQ2: The designed system (appropriately, currently) is easy-to- use.
	• Help students	SQ3: The EDUSOFT can help students in course registration and in paying tuition fees.
	• Help staff	SQ4: The EDUSOFT can help staff in managing students' marks.
	• Response time	SQ5: The EDUSOFT can help to provide quick response.
Information Quality	• Content variety	IQ1: The EDUSOFT provides content variety.
	• Complete information	IQ2: The EDUSOFT provides complete information.
	• Detail information	IQ3: The EDUSOFT provides detailed information.
	• Timely information	IQ4: The EDUSOFT provides timely information.
	• Up-to-date	IQ5: The system information is up-to-date regularly.
Service Quality	• Searching Information	SSQ1: The EDUSOFT can help to search for information.
	• Confidentiality	SSQ2: The EDUSOFT can help to keep confidentiality.
	• Suitability	SSQ3: The EDUSOFT is suitable with user.

Quality of LAN	• Quality of transmittance	QL1: Quality of transmittance has positive impact to use IS
	• Quality of facilities	QL2: Quality of facilities (computers...) has positive impact to use IS
	• Connections across Website on the Internet	QL3: The connections with other LANs via leased lines across Website on the Internet influences positively to the users satisfaction
Users Satisfaction	• Positive attitude evaluation	US1: Most of users have a positive attitude evaluation towards the Information System function.
	• Satisfied and ready to use	US2: Most of users are satisfied with the Information System and they are always ready to use Information System in working or in the learning process.
	• Useful	US3: Most of users believe that using Information System is useful for all staff and students.

3. Data analysis

The survey yielded 270 responses, among them, 250 were usable for analysis representing a response rate of 92.5 percent. The personal

characteristics of sample are detailed in Table 2 representing the number of administrative staff and students at University of Dalat using IS for their working or studying.

Tablet 2: Sample profile

Measure	Item	Frequency	Percentage (%)
Gender	Male	96	38.4
	Female	154	61.6
Age	From 18 to 25	174	69.6
	From 25 to 40	65	26.0
	Over 40	11	4.4
Position	Staff	70	28.0
	Student	180	72.0
Majors at University	IT	40	16.0
	Natural science	62	24.8
	Social sciences & humanities	101	40.4
	Others	47	18.8

For the descriptive statistics on measurement items, the criteria for system quality assessment are through the Information System SQ1, SQ2, SQ3, SQ4, SQ5. The user satisfaction on the system quality component is relatively high with the average scores from 3.53 to 3.65 on 5-point Likert scale items. The standard deviation is in a range from 0.829 to 0.878 which is acceptable.

The criteria for assessing information quality by indicators IQ1, IQ2, IQ3, IQ4, IQ5 have shown its average score from 3.54 to 3.60 on 5-point Likert scale items which indicate the

relative satisfaction. Standard deviation values are from 0.866 to 0.960. This means the highest value is 0.960 for the difference between the highest point and the lowest point of the participant.

The criteria for assessing service quality of the information system shown by indicators SSQ1, SSQ2, SSQ3 are also at high average score with the lowest at 3.73 points on 5-point Likert scale items, which indicate that the users are generally satisfied with the service quality. The standard deviations of these variables come

from 0.795 to 0.831 indicating an acceptable difference in the rating of the informants.

The criteria for quality assessment system through the Quality of LAN: QL1, QL2, QL3 are relatively high with average scores from 3.51 to 3.60 on 5-point Likert scale items. Standard deviations are from 0.872 to 0.915 which is generally good.

Factor analysis was used to determine the structure of the relationship between the responses by examining the correlation between the answers. With factor analysis, we can determine the specific size of the structure and then determine the extent to which each variable is explained by size. Once the size and explanation of each variable is determined, we can reduce the synthesis and processing data.

According to Hair et al. (1998) a target is an important factor if the load is greater than 0.5. In the result of the research all 19 targets have their load factor > 0.5 so we see that the effect of construction and structural indicators of these factors will ensure the validity and high reliability.

4. Findings

To check the reliability of the structure of the targets, to ensure that the measurement scale for the design of our questions was appreciated and it is representative of each variable, using Cronbach α . And these are the results: System Quality: 0.737, System Service Quality: 0.723, Information Quality: 0.783, Quality of LAN: 0.712, User Satisfaction: 0.716. Therefore all of the values of Cronbach showed a value above the threshold point of 0.7. It means that the building the five averaging constructs from the 19 original items is acceptable (Hair et al., 1998). In other words, the items in each group

could be seen as measuring the same construct and the structure is highly reliable.

Hypothesis test: In this study, using regression analysis to examine the relationship between independent variables and dependent variable aims to test the hypothesis of our research.

In the correlation model linear regression to test H1 hypothesis of research at the test, user satisfaction is the dependent variable and systems quality is the independent variables. Model is:

$$US = b_0 + b_1 * SQ \Rightarrow US = 3.160 + 0.448 * SQ$$

In the correlation model linear regression to test H2 hypothesis of research at the test, user satisfaction is the dependent variable and systems service quality is the independent variables. Model is:

$$US = b_0 + b_1 * SSQ \Rightarrow US = 0.995 * SSQ$$

In the correlation model linear regression to test H3 hypothesis of research at the test, user satisfaction is the dependent variable and information quality is the independent variables. Model is:

$$US = b_0 + b_1 * IQ \Rightarrow US = 3.170 + 0.453 * IQ$$

In the correlation model linear regression to test H4 hypothesis of research at the test, user satisfaction is the dependent variable and quality of LAN is the independent variables. Model is:

$$US = b_0 + b_1 * LQ \Rightarrow US = 3.511 + 0.724 * LQ$$

With the significance level is under 0.05, the hypotheses H1, H2, H3 and H4 were accepted and all factors namely system quality, information quality, service quality and quality of LAN have positive impact to the user satisfaction shown in Table 3.

Table 3: Testing results of hypotheses by regression analysis

Construct	Unstandardized coefficients β	Standardized coefficients β	t value	R ²	Adjust R ²	F value
System Quality	0.448***	0.681***	14.634	0.463	0.461	214.158***
Information Quality	0.453***	0.766***	18.779	0.587	0.585	352.655***
Service Quality	0.995***	0.995***	154.475	0.990	0.990	23862.642***
Quality of LAN	0.724***	0.799***	19.594	0.608	0.606	383.930***

***P < 0.001

5. Conclusion and implication

The study attempts to examine the user satisfaction of EDUSOFT information system applied to manage students' data at the University of Dalat via exploring the factors contributing to users' satisfaction with the information system and applying IS success model. The findings show that all the factors

including system quality, information quality, service quality, and quality of LAN have positive impact to the user satisfaction indicated in Figure 2. Furthermore, the research findings accepted the four hypotheses proposed regarding the positive attitude of users towards the system quality, information quality, service quality, and quality of LAN.

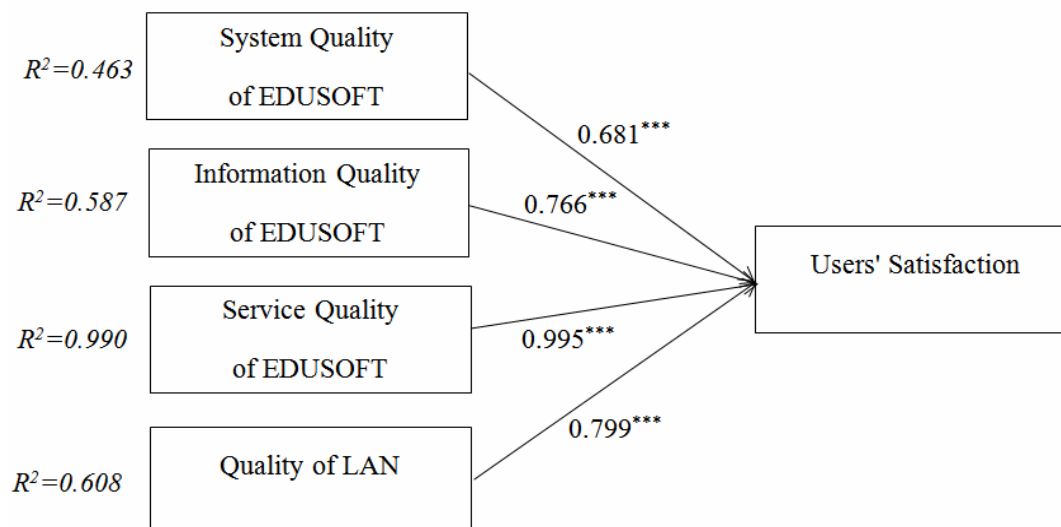


Figure 2: Summary of Estimation Results by Regression Analysis.

Therefore, research result is one of special interest for academic administrative managers, professional training management staffs who are experiencing and supporting to institution to accepting a newly way to use IS in managing data, more over there showed that IS support organizations satisfactions to users (staff or

students) and technology satisfactions to business are approved.

This study can help to understand staff and students' feelings, desires and expectations in the information system currently applied at the University of Dalat. Improving user satisfaction will bring benefits to staff, students, and the

working environment of the university. It helps to build a more effective and friendly working environment. This helps to improve working and studying quality through managing students' data.

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Đánh giá sự hài lòng của người sử dụng về hệ thống thông tin Edusoft trong quản lý dữ liệu sinh viên ở Trường Đại học Đà Lạt

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Tóm tắt: Ở Việt Nam trong những năm gần đây, việc ứng dụng hệ thống thông tin trong quản lý giáo dục, đặc biệt ở các trường phổ thông cũng như các trường đại học việc quản lý dữ liệu của học sinh, sinh viên đã trở nên ngày càng quan trọng. Sự hài lòng của người sử dụng là một yếu tố không thể thiếu trong việc ứng dụng hệ thống thông tin một cách có hiệu quả ở các tổ chức giáo dục. Bài viết này đánh giá mức độ hài lòng của người sử dụng về hệ thống thông tin dựa trên hệ thống EDUSOFT đã được ứng dụng trong việc quản lý dữ liệu sinh viên tại Trường Đại học Đà Lạt. Bằng phương pháp nghiên cứu định lượng với mô hình thành công qua 270 nhân viên và sinh viên để xem xét mức độ hài lòng đối với việc sử dụng hệ thống thông tin trong quản lý dữ liệu. Các kết quả nghiên cứu cho thấy rằng tất cả các yếu tố xem xét trong nghiên cứu này bao gồm chất lượng hệ thống, chất lượng thông tin, chất lượng dịch vụ và chất lượng của mạng LAN có tác động tích cực đến sự hài lòng của người sử dụng.

Từ khóa: Hệ thống thông tin, sự hài lòng của người sử dụng, hệ thống thông tin trong giáo dục, EDUSOFT, mô hình thành công hệ thống thông tin, Trường Đại học Đà Lạt.