



Shu-Te University  
College of Informatics  
Graduate School of Information Management

Master

Identifying Factors Influencing on Effectiveness of School  
Management Information System (SMIS) - An Example of  
Upper Secondary Schools in Vietnam

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Advisor: Dr. Tung-I Tsai

June, 2011

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Secondary Schools in Vietnam

Student: Nguyen Son Hai  
Advisor: Dr. Tung-I Tsai

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For the Degree of  
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Thesis Title: Identifying Factors Influencing on Effectiveness of School Management Information System (SMIS) - An Example of Upper Secondary Schools in Vietnam

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Student: Nguyen Son Hai

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### Abstract

SMIS is one of the most popular software which used in schools, Vietnam. SMIS is produced by MOET via SREM project and funded by European Commission. SMIS has been piloting to 100% upper secondary schools in Vietnam and will be deployed to all primary and lower secondary school as well in coming years.

The main purpose of this study is to research the factors which may be affected to effectiveness of SMIS use in school. Otherwise, the study also recommended to MOET and SMIS producer some useful suggestions for how to upgrade and deploy SMIS software to server schools better in the future. Specifically, this study examines the relationship between Information quality, System quality, Services quality, User satisfaction and Effectiveness of SMIS factors each others. In order to examine proposed research model, the author conducted a survey by delivering and sending email questionnaires to 255 users from 85 upper secondary schools. After eliminating poor quality responses, there was left 233 effective samples. The results indicated four factors Information quality, System quality and Services quality has positively related to User satisfaction and then User satisfaction has positively related Effectiveness of SMIS use in the schools.

Keywords: Vietnam Education, Information Systems, Information Systems in Schools, User Satisfaction, IS Success Model

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## Abbreviations

BOET	Bureau of Education and Training (district level)
DOET	Department of Education and Training (provincial level)
ICT	Information Communications Technology
IT	Information Technology
IMSS	Information Management Software System in School which is a software system manages all of information from all of educational management activities in a school.
MIS	Management Information System
MOET	Ministry of education and Training, Vietnam
SMIS	School Management Information System – the name of the software for school management
SREM	The Support to the Renovation of Education Management project which belong to the Ministry of Education and Training, Vietnam



# Chapter 1 Introduction

## 1.1 Research Background

Vietnam is a developing country, located in the southeastern Asia, with a land area is about 331.698 km<sup>2</sup> and a population is 89,571,130 people (estimated to July 2010), capita income in 2009 reached \$ 1,021.48. Speed of economics growth in recent years achieved so well: in 2007 - 8.5%, 2008 - 6.2%, 2009 - 5.3% and 2010 is 6.5% (GOS, 2010).

Education and training is a one of priority field which the State has been more invested, approximately 12-13% of annual GDP, respectively in 2009 reached 12.85% (GOS 2009). In recent years, the quality of education has gradually improved, in particular: the end of the 2009-2010 school year, the graduation rates of pupil in high school is 92.6% (previous year was 83.8%) ; pupil dropout in the 2009-2010 school year has decreased, there were 75.7 thousand students drop out of school, down 0.05% compared to last year (MOET, 2010).

The structure and scale of education system in Vietnam will be described as Table 1:

Table 1. The structure and scale of education

#	<i>Level of Education</i>	<i>Age</i>	<i>Number of schools</i>	<i>Number of pupils</i>	<i>Number of teachers</i>
1	Kindergarten	Age 3 to 5	12,190	3,305,391	183,443
2	Primary: Grades 1 to 5	Age 6 to 11	15,051	6,745,016	345,505
3	Lower Secondary: Grades 6 to 9	Age 12 to 15	9,902	5,515,123	313,536
4	Upper Secondary: Grades 10 to 12	Age 16 to 18	2,487	2,951,889	138,737
	<b><i>Grand total:</i></b>		<b><i>39,630</i></b>	<b><i>18,517,419</i></b>	<b><i>981,221</i></b>

Source: MOET, 2010



Educational agencies in Vietnam are showed as figure 1:

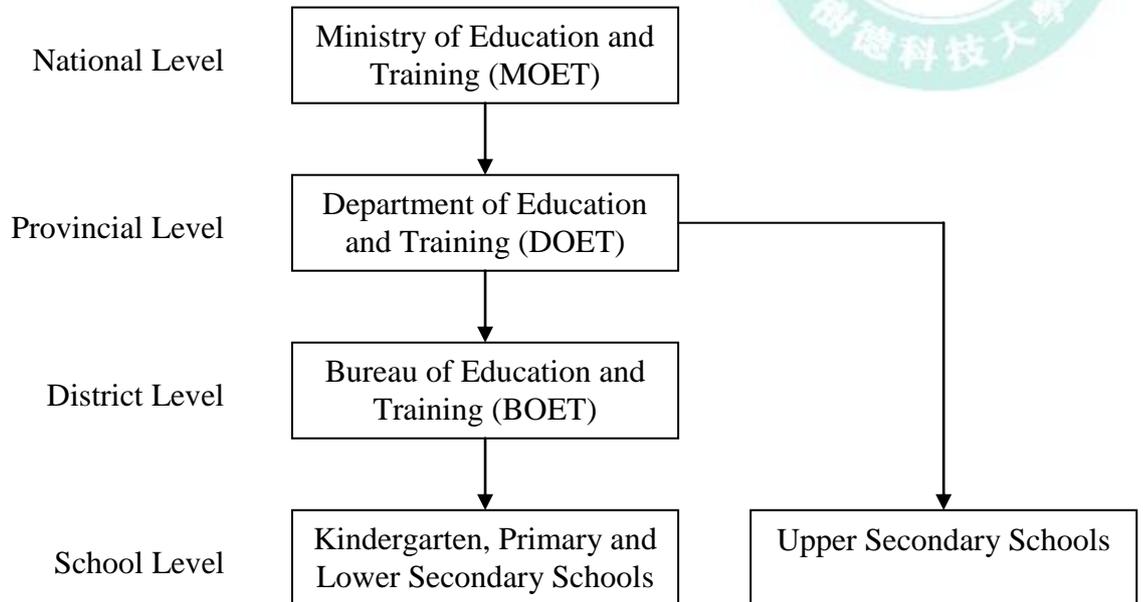


Figure 1. Educational agencies in Vietnam

Before 2009, the almost agencies of education and training in Vietnam have to use hand tools such as calculator, electronic spreadsheets, ... to perform collecting educational information at all levels for education management purposes. Each year, MOET need three times that request schools must provide updated data and educational information management to MOET, each time it took about 3 months for collecting sufficient data of nationwide. However, since data were collected by the manual method, so not only don't guarantee timely but also data quality was not good; this may affect negative to management decisions in educational agencies.

Aware of the problems mentioned above, MOET has focused to invest for developing a educational management information systems (EMIS) at all levels of education management through deploying the software systems for management at all educational agencies to enhance capacity management in educational institutions such as improve the quality information more accurate, timely response and useful for



educational management purposes. The software which will be used at schools level has been built by MOET, named School Management Information System (here by called SMIS).

The Support to the Renovation of Education Management project (SREM) started in the beginning of April 2006, as the results of the Financing Agreement between the European Community and the Vietnam government of the Socialistic Republic of Vietnam. This agreement - AIDCO/VNM/2004/016-841 is the regulatory framework for the implementation of SREM, which completed by April 2010. One of SREM objective is Improving capacity of education management at MOET, DOET, BOET and school levels. Thereby, the Project will develop the software system for all of educational agency levels. One of the software is SMIS.

SMIS objectives are assisting the school (including primary and secondary school) in education management on (1) pupil management; (2) teacher management; (3) financial management, (4) library management; (5) facilities management; (6) making the school reporting system for school management purposes in schools.

By the end of 2009-2010 school year, SMIS software was piloted on a range of 2,487 (100%) upper secondary schools in whole country. Based on the result of this pilot, MOET will has an appropriate plan for software correction such as upgrade and deploy SMIS to lower secondary schools and primary schools in whole country in the coming years.

## **1.2 Research Motive**

SMIS is very popular education software in Vietnam but there has not been any research as well as study on SMIS;

After pilot SMIS in upper secondary school in whole country, MOET had the plan to deploy SMIS to all secondary schools and primary schools. The studying as well as examining SMIS carefully is necessary for MOET before the plan conducted.



### **1.3 Research Purposes**

The purpose of this thesis is to research the factors which may be affected to effectiveness of SMIS use in school base on researching the user satisfaction on SMIS which has been using in 85 upper secondary schools.

The results of this thesis could help the project manager, the software company (producer), schools and education manager as well has more understand on the status and capabilities of applying SMIS in school. Therefore, the research could help them determine the suitable plan for errors correction, upgrade and deploy SMIS in the broader scope.

### **1.4 Research Procedures**

To conduct this thesis, the author has been applying follow procedures:

*Step 1:* Determine research purpose

*Step 2:* Literature review

*Step 3:* Design framework & hypotheses

*Step 4:* Design questionnaires and pilot test

*Step 5:* Distribute questions to participants

*Step 6:* Gather data from participants

*Step 7:* Data Analysis

*Step 8:* Definition success factors and model

*Step 9:* Finding, conclusions and suggestions

# Chapter 2 Literature Review



## 2.1 Management in School, Vietnam

School, which is used in this thesis is the upper secondary school in Vietnam, its mission is to organize teaching and learning activities for pupils from grade 6 (12 years old) to grade 9 (15 years old) following the education programs which is approved by MOET. This section (2.1) will explain the organization and educational management activities in school which stipulated by Decision No. 07/2007/QĐ-BGDĐT dated April 02, 2007 by MOET on promulgating regulations of lower secondary schools, upper secondary schools and schools which have mixed primary and secondary education.

### 2.1.1 School Organization

School is an educational agency which could be owned by the State or private, is the where to organize teaching and learning activities as well as other educational activities following the objectives and education programs. Organization in schools can be described as figure 2:

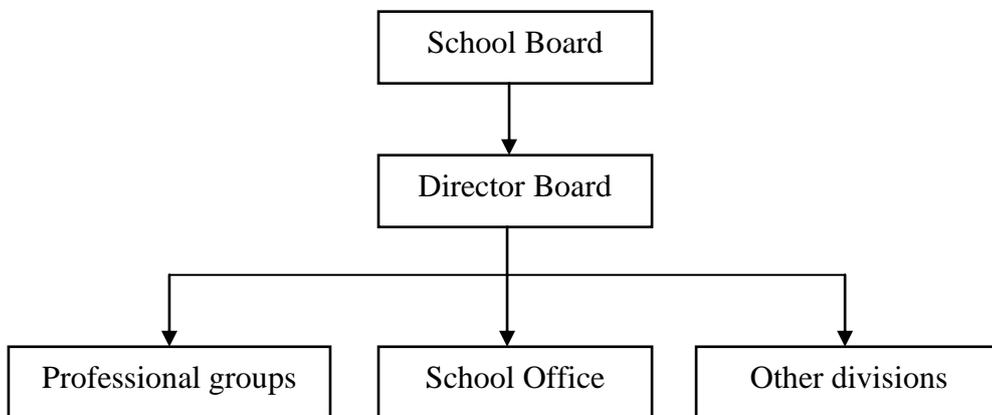


Figure 2. Organizational chart of school

School board is a highest level in school which including an important group of people has a mission to decide on the objectives, project, plans and directions of development of school. Normally, the chief of school board also is the director of school.

Director board includes director and vice directors. Director is a chair man of school who is responsible for managing all of school activities, by state agencies



authorized to appoint and recognize. Vice directors are the person who assists director in monitoring and implementing education activities in school.

A professional group includes set of teachers similar to object or research field to exchange professional activities for improving professional qualification as well as sharing experience in teaching activities, for an example, Natural Sciences Group is a professional group which includes math, physic, chemistry, ICT teachers in school. Each professional group has a chief of group who has the responsibility being monitoring and making annual report on quality of teaching and learning in the group's objects.

School office is a unit which includes officers working in administration of school such as accountant, pupil management officer, personnel officer, security guard, medical personnel, library officer, etc.

Otherwise, school has more divisions like Youth Union, Cross Union and other political and social union.

### **2.1.2 Educational Management Activities in School**

To organize teaching and learning activities in school, the director has to implement many of educational management activities. In the scope of the research of this thesis, we only mention on basic activities but plays important role in teaching and learning management in school such as (i) - Pupil management, (ii) - Personnel management, (iii) - Financial management, (iv) - Library management (vi) - and making school report for management purposes.

Pupil management is the most important process in school management which includes the managing and monitoring information of pupil enrollment, pupil studying, pupil health and pupil graduation. The professional process of pupil management converges three sub-processes as following: (i) - Pupil profile management; (ii) - Score and study progress management; (iii) - Exam management.

Personnel management includes the managing human resource for deploying teaching as well as management activities in school. This process includes 4 sub-processes such as: (i) - Personnel profile management; (ii) - Academic progress



management; (iii) - Salary progress management; (iv) - Personnel reward and discipline management.

Financial management activities include managing of revenue, expenditures under the current regulations of the state over the school.

School library management activities include the managing books, newspapers and magazines in the library and monitor the borrowing and returning books of pupils and teachers in schools.

## **2.2 School Management Information System**

### **2.2.1 Management Information System**

Information Systems (IS) can be defined as a set of interrelated and interacted elements or components that collect, store, process, and report data and information that can be used to enhance the process of decision making (Al-adaileh, 2008). Kettinger (1995) argued that Information system function can be defined as production and service activities performed by a centralized information system department in the organization. IS has gone through many phases. In the 1960s data processing was a backroom function with little customer interaction. The main purpose at that time was to develop and maintain a highly reliable transaction-based system. In the 1970's, the role of IS was a distributive computing and decision support technology, which requires an increased level of user interaction and participation. In the 1980's the IS was known to be decentralized with nine sub-functions: delivery system, system development, support center, information center, R&D, technology diffusion, planning, internal auditing, and administration. Recently, IS has come to handle business transactions between IS service providers and customers. Therefore, IS roles have changed from manufacturing activity to distribution and technology transfer that require higher levels of user interactions and service delivery. It is wise for IS developers to refer to the corporate business plan and corporate culture before developing MIS (Adhikari, 1994) as IS is related to the business strategic plan (Lewis, 1999).

Generally, IS can be express as the following:



ISs are a foundation for conducting business today. In many industries, survival and even existence is difficult without extensive use of IT. ISs have become essential for helping organizations operate in a global economy. Organizations are trying to become more competitive and efficient by transforming themselves into digital firms where nearly all core business processes and relationships with customers, suppliers, and employees are digitally enabled. Businesses today use ISs to achieve six major objectives: operational excellence; new products, services, and business models; customer/supplier intimacy; improved decision making; competitive advantage; and day-to-day survival.

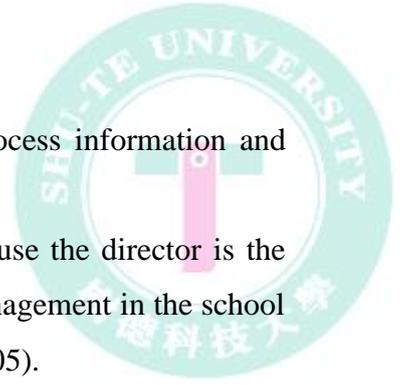
From a technical perspective, an IS collects, stores, and disseminates information from an organization's environment and internal operations to support organizational functions and decision making, communication, coordination, control, analysis, and visualization. ISs transform raw data into useful information through three basic activities: input, processing, and output. From a business perspective, an IS provides a solution to a problem or challenge facing a firm and provides real economic value to the business.

An IS represents a combination of management, organization, and technology elements. The management dimension of ISs involves leadership, strategy, and management behavior. The technology dimensions consist of computer hardware, software, data management technology, and networking/telecommunications technology (including the Internet). The organization dimension of ISs involves the organization's hierarchy, functional specialties, business processes, culture, and political interest groups.

### **2.2.2 Information Management Software System in School**

Information Management Software System in School (IMSS) is a set of modules of software system to help manage the information of the educational management activities in a school (as mentioned in the contents of 2.1.2) efficiently.

When IMSS applied in a school, the role of director and technical staffs just simply are as the end-users. They only have to enter data into the system through the



interface of software, operating functions of the software to process information and making the output reports for management education in schools.

The director, who have benefited most from IMSS, because the director is the only person who is responsible for all activities as well as the management in the school by the higher management level of education (Education Law, 2005).

SMIS is one of IMSS in schools which is very popular in Vietnam. It was built by the MOET (through SEM Project) and was piloted in upper secondary schools, coming years next, MOET will deploy extensive SMIS to all primary and lower secondary schools at across the country.

Those are some information on the SMIS:

<i>Investor (Owner)</i>	Ministry of Education and Training, Vietnam ( <a href="http://moet.gov.vn">http://moet.gov.vn</a> )
<i>Managed by:</i>	SREM Project ( <a href="http://www.srem.com.vn">www.srem.com.vn</a> )
<i>Producer</i>	National IT Institute, Vietnam ( <a href="http://www.ioit.ac.vn">www.ioit.ac.vn</a> )
<i>Dated released:</i>	2009
<i>Tools for development:</i>	Microsoft .NET 2.0; Visual Basic .NET 2005; Crystal Report 9.2
<i>Database:</i>	Microsoft SQL Server Express 2005

### **2.3 Information Systems Success Model**

According to CHAOS report (1994) and based on a study the involved 365 companies with a total of 8,380 IS applications under development, IS project is considered as successful if it is completed on time and budget, with all features and functions as specified. Only 16.2% of projects fell in this category. In addition, IS project is considered as a partial failure if the project was completed, but was over cost, over time, and/or lacking all of the features and functions that were originally specified.

52.7% of all studied projects fell into this category. Finally, IS project is considered as complete failure if the project was abandoned or cancelled at some point and thus became total losses. A disturbing 31.1% of all studied projects fell into this category.

However, the failure of ISs is still a major concern for organizations. In targeting this failure, evaluation of IS success emerges as a prerequisite to increase the rate of success in future ISs initiatives. In today's customer-oriented organizations, users' perception can be considered as a major determinant of the success of any IS project as the IS is mainly intended to enhance users' ability to perform better and produce more. Through developing and testing an evaluation criterion for IS success, this study is considered as an attempt to target this important end.

One of the most commonly cited models for IS success is the one developed by DeLone & McLean (1992). Their model proposed six interrelated variables to measure the success of IS including: system quality, information quality, system's use, user satisfaction, organizational impact, and individual impact which described on figure 3 as following:

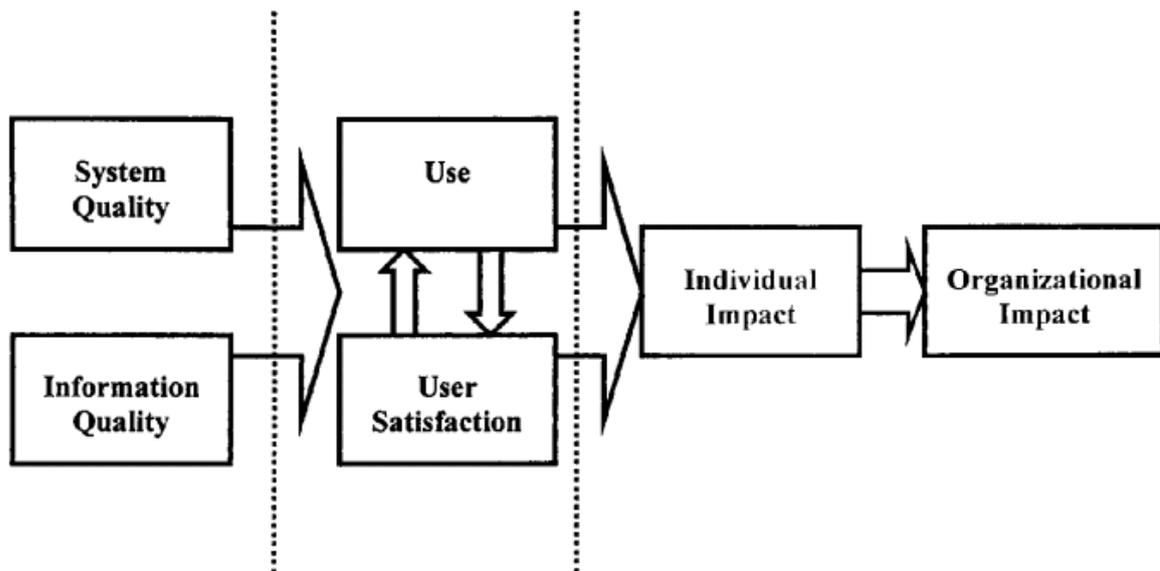


Figure 3. Information systems success model (DeLone & McLean 1992)

The principle of above model is: the IS success is reflected in the organization impact; the organization impact is influenced by the individual's impact in the



organization; and individuals in the organization who are affected directly from the IS through independent factors such as systems quality and information quality which provided by the system.

System quality is measured in terms of ease-of-use, functionality, reliability, flexibility, data quality, portability, integration, and importance. In this case, Individual impacts were measured as quality of work environment and job performance.

Information quality is measured in terms of accuracy, timeliness, completeness, relevance, and consistency. In this case, Individual impact was measured in terms decision-making performance, job effectiveness, and quality of work.

Briefly, the diagram which showed on Figure 3 could be expressed as Figure 4 as:

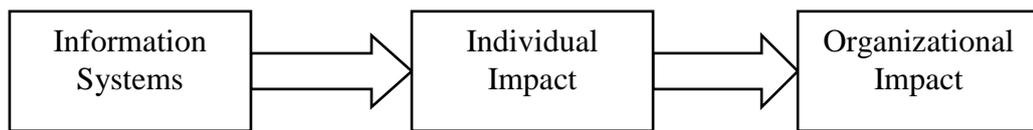


Figure 4. Brief of information systems success model (from DeLone & McLean 1992)

Based on research contributions for origin of IS success model paper, and based on changes in the role and management of information systems, DeLone & McLean have updated the original success model by the newer as Figure 5.

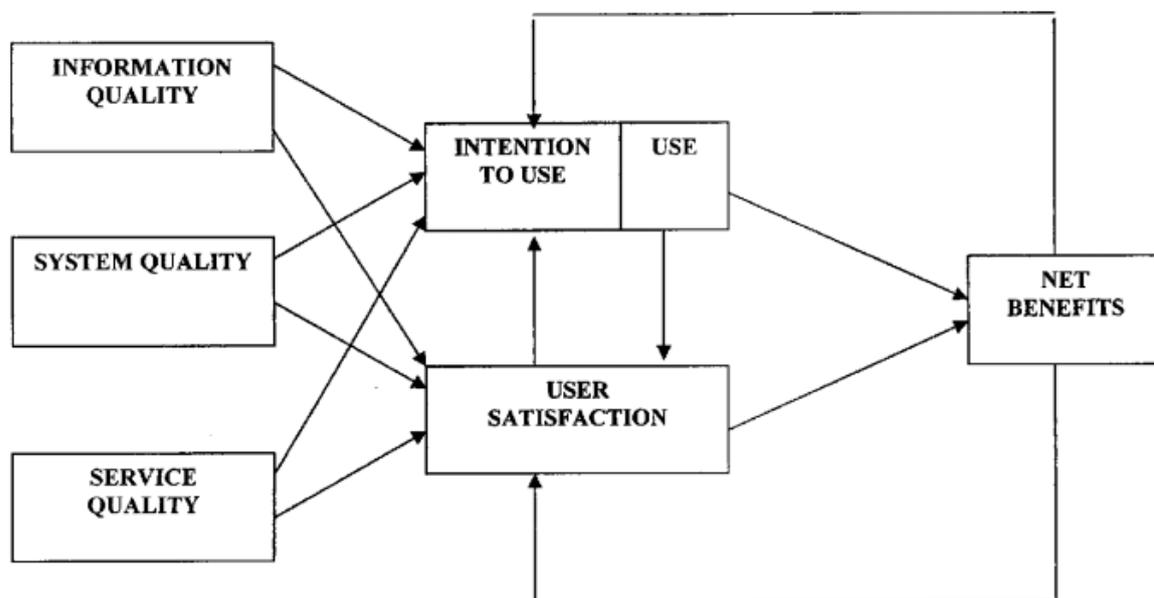
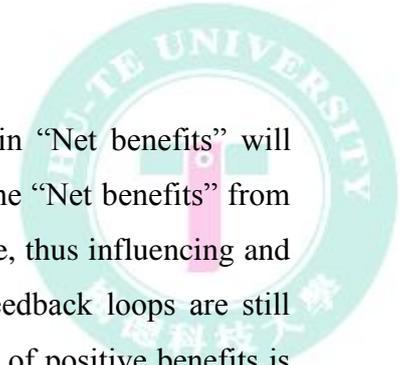


Figure 5. Updated IS success model (DeLone & McLean 2003)

Therefore, except 2 independent factors are “Information quality” and “System quality” from the original model as showed in Figure 2, based on results of researchers who have argued that “Service quality” be added to the success model have applied and tested the 22-item SERVQUAL measurement instrument from marketing (Kettinger & Lee, 1995; Pitt; Watson, & Kavan, 1995) to an IS context. This instrument uses the dimensions of tangibles, reliability, responsiveness, assurance, and empathy to measure service quality. Three major dimensions “Information quality”, “Systems quality” and “Service quality” each should be measured - or controlled for - separately, because singularly or jointly, they will affect subsequent “Use” and “User satisfaction.”

“Intention to use” may be a worthwhile alternative measure in some contexts. “Intention to use” is an attitude, whereas “use” is a behavior.

As was true in the original formulation of the D&M Model, “Use” and “User satisfaction” are closely interrelated. “Use” must precede “User satisfaction” in a process sense, but positive experience with “Use” will lead to greater “User satisfaction” in a causal sense. Similarly, increased “User satisfaction” will lead to increased “Intention to use,” and thus “Use”.



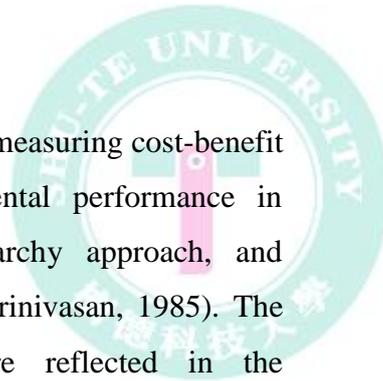
As a result of this “Use” and “User satisfaction,” certain “Net benefits” will occur. If the IS or service is to be continued, it is assumed that the “Net benefits” from the perspective of the owner or sponsor of the system are positive, thus influencing and reinforcing subsequent “Use” and “User satisfaction.” These feedback loops are still valid, however, even if the “Net benefits” are negative. The lack of positive benefits is likely to lead to decreased use and possible discontinuance of the system or of the IS department itself. The challenge for the researcher is to define clearly and carefully the stakeholders and context in which “Net benefits” are to be measured.

## **2.4 Effectiveness of School Management Information System in Vietnam**

### **2.4.1 Information Systems Effectiveness**

The subject of IS effectiveness has been widely discussed in the IS literature and its importance cannot be underestimated. There are theoretical, empirical, and practical reasons to support this. Theoretically, the construct of IS effectiveness is at the centre of IS research models, i.e. all conceptualizations of the nature of IS have embedded in them notions of the nature of effective IS, and the difference that exists between effective and ineffective IS. Empirically, IS effectiveness is the ultimate dependent variable in IS research. Practically, practitioners are always faced with the need to evaluate effectiveness of IS in the organization. However, despite the importance of IS effectiveness, there is no universally accepted model of IS effectiveness. Further, IS research has often been criticized for lack of theoretical grounding (Alavi et al., 1989; Ives & Olson, 1984; Keen, 1980) resulting in the inconsistent use of IS theoretical constructs, non comparability across studies and an inability to build on a common theoretical base.

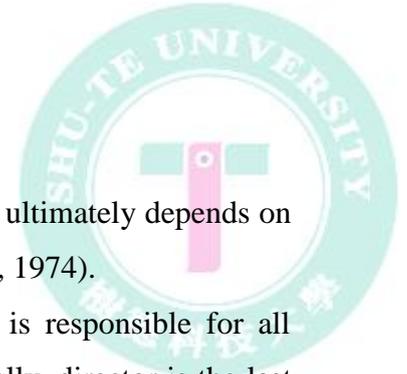
Otherwise, Hamilton and Chervany (1981) argued IS effectiveness is defined as the extent to which a given IS actually contributes to achieving organizational goals, i.e. its effect on organizational performance. However, there is no consensus among IS researchers on the conceptualization of IS effectiveness (DeLone & McLean, 1992; Goodhue, 1992; Hamlmiton & Chervany, 1981; Ive & Olson, 1984; Milner & Doyle, 1987).



In previous researches, IS effectiveness was expressed by measuring cost-benefit analysis, system usage estimation, user satisfaction, incremental performance in decision-making effectiveness, utility analysis, analytic hierarchy approach, and information attributes examination (King & Rodriguez, 1978; Srinivasan, 1985). The difficulties with measuring organizational effectiveness are reflected in the conceptualization and measurement of IS effectiveness. Similarly, it is pointless to search for a precise measure or set of measure of IS effectiveness that will be common across all organization. In a single organization, the effectiveness criteria can vary with changing value structures of the people involved in evaluation, organization levels, and phases in organizational growth (Miller, 1989).

James & Chee-Sing (1996) argued user satisfaction could be examined for its suitability as a measure of IS effectiveness. User satisfaction may be the best "omnibus" measure of IS success (Seddon & Kiew, 1994). Further, Powers and Dickson (1973) argue that user satisfaction is the most important criterion in measuring IS success and failure.

User satisfaction may be defined as the extent to which users believe the information system available to them meets their information requirements (Ives et al., 1983). In the IS literature, the user satisfaction construct has been referred to as "felt need", "system acceptance", "perceived usefulness", "feelings about the information system", "MIS appreciation", "perceptions", and "beliefs" (Ives et al., 1983; Swanson, 1982). The concept of user satisfaction is based on Cyert and March's (1963) suggestion that if an information system meets the requirements of the users, the users' satisfaction with the information system will increase. Conversely, if the information system does not provide the needed information, the users will become dissatisfied. Evans (1976) also suggests that there is a lower bound to satisfaction below which the users will discontinue use of the information system. Thus, user satisfaction is a perceptual or subjective measure of IS effectiveness. It can also be an adequate substitute for objective measures of IS effectiveness. A "good" system perceived by its users as a "poor" system is a poor system.



### **2.4.2 User Satisfaction**

Nolan & Seward (1974) argued the system usage, success ultimately depends on how well the IS has supported decision-making (Nolan & Seward, 1974).

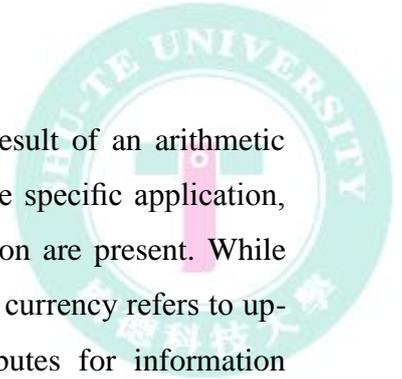
Indeed, according to Education Law 2005, the director is responsible for all activities in schools and educational outcomes of schools, especially, director is the last one who take every decisions related to the school. Moreover, with the goal of SMIS software is to provide powerful tools for director in the management of education in schools. Therefore, we can say, the satisfaction of director plays important role in the success of SMIS in school management.

Otherwise, when applying SMIS software into school for educational management, the school has to got at less a technician who is assigned by the director for administration, operation and use SMIS software for managing all of educational activities in school as well as serving the demand for management information of director. With their mission, technician shall: (1) get information from many sources such as class books, school books and information forms, (2) directly operations, using the functionality of the software to enter data, process information and making output information service needs of the school management as well as the director, (3) contact software suppliers for using training, resolve technical issues while using the software and to receive and perform the software update after the errors fixed.

Therefore, the user satisfaction in the use of SMIS software means (1) the software has to meet the required information for the management purposes of director and (2) the satisfaction of technician who was assigned to director for administration, operation and using the software to serve the educational management purposes of director satisfied.

### **2.4.3 Information Quality**

Information quality refers to the quality of outputs the information system produces (DeLone and McLean, 1992), which can be in the form of reports or online screens. Huh et al. (1990) defined four dimensions of information quality: accuracy, completeness, consistency, and currency. Accuracy is agreement with an attribute about



a real world entity, a value stored in another database, or the result of an arithmetic computation. Completeness is to be defined with respect to some specific application, and it refers to whether all of the data relevant to that application are present. While consistency refers to an absence of conflict between two datasets, currency refers to up-to-date information. Researchers have used a variety of attributes for information quality.

Nelson et al. (2005) have used the constructs of accuracy, completeness, currency, and format for information quality; the additional construct used by these authors – format – is related to the presentation layout of information outputs.

Narasimhaiah et al. (2010) have appended two factors into the construct of information quality are content and format. Information content measures the relevance of the information presented to the user in the report/inquiry screens and the accuracy and completeness of the information. Information format measures the style of presentation of information and whether information is provided in an easy-to-understand format.

Actually, the construct of SMIS's information quality should include: accuracy, completeness, consistency, currency, content and format.

#### **2.4.4 System Quality**

System quality represents the quality of the information system processing itself, which includes software and data components, and it is a measure of the extent to which the system is technically sound. Seddon (1997) notes that “system quality is concerned with whether there are bugs in the system, the consistency of user interface, ease of use, quality of documentation, and sometimes, quality and maintainability of program code”. System quality is measured by attributes such as ease of use, functionality, reliability, data quality, flexibility, and integration (DeLone and McLean, 2003). A comprehensive instrument for system quality was developed and validated by Sedera and Gable (2004), which resulted in nine attributes ease of use, ease of learning, user requirements, system features, system accuracy, flexibility, sophistication, integration, integration, and customization.



Actually, with SMIS system, system quality should include System flexibility (the system easy to learn, flexible to make changes easily), System sophistication (applied modern technology, well integrated, user friendly, good document, response in short time in data processing, good security)

#### **2.4.5 Service Quality**

Parasuraman et al. (1988) has been defined the construct of service quality as the degree of discrepancy between customers' normative expectations for service and their perceptions of service performance. The seminal work on service quality is culminated in the development of the SERVQUAL instrument. Cronin and Taylor (1994) presented the SERVPERF instrument, which measures only customer perception of quality, as a sufficient measure of value.

In the SMIS, the service quality is defined by the degree of discrepancy between technician expectations for service including training to use SMIS and up-to-date services of the software from the company which producing the software.

## Chapter 3 Research Design and Methodology



### 3.1 Research Framework

The purpose of this study is to identify influencing on effectiveness of school management information system (SMIS) on user satisfaction (including director satisfaction and technician satisfaction in school). Specifically, this study explores the relationship between the SMIS software (including information quality, system quality and service quality) and user satisfaction, as well as the relationship between user satisfaction and the effectiveness of SMIS when deploying it in the upper secondary schools. According to the literature review, this study builds a research framework as shown in Figure 6.

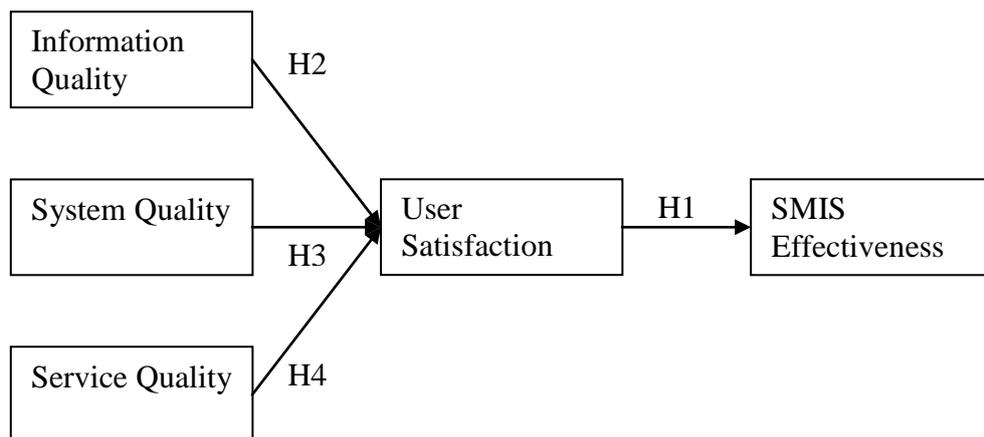


Figure 6. Research framework

### 3.2 Research Hypotheses

As the research framework of this study has been established and based on study purposes as well as literature review, the hypotheses of this study have developed.

According to the Decision No. 07/2007/QD-BGDDT dated April 02, 2007 by MOET on approval the regulations of schools to specify the duties and powers of the director in school are: (1) Planning and implementing the tasks for each schools year for school; (2) Management of teachers, staffs, teaching professional management, work



allocation, checking and evaluation, ranking of teachers and staffs, implementation of reward and discipline for teachers and employees in accordance with the management recruitment of the State and Laws, (3) Management of pupils profile and pupils activities which organized by schools, review assessment results and grading pupils, the certification transcripts, certifying completion of secondary education program and has decided to reward and discipline pupils accordance MOET's rules, (4) Financial management and assets of the school whereas SMIS software is a powerful tool to support the management activities of the school. Therefore, the director is especially important role in determining the success or the success of SMIS software depends on how the ability of SMIS's service for the management of director in schools.

Otherwise, accordance to the regulations of SMIS software used in a school, the director will assign a responsible technician for install, administer and operate the software to serve the educational management purposes in school. The technician will be the manager and interact directly with the SMIS software. Therefore technician satisfaction on SMIS software has an important role in determining the effectiveness of the SMIS software.

Therefore, this study derives the following hypothesis which expressed the relationship between user (including director and IT technician in the school) and SMISS Effectiveness for educational management in the school as following:

**H1: User Satisfaction on using SMIS is positively related to SMIS Effectiveness.**

The aim of SMIS software is to support school in information management all of activities in school. The output of this software is the reporting systems, evaluation forms on all areas of quality management in schools, generally they are educational management information in schools to facilitate the decision-making education management at all levels as well as evaluating the management activities take place in schools.

As discussed above, the director is responsible for all management activities in schools, so educational management information plays the most important role in



supporting the director on decision making. Therefore, the quality of information supplied by SMIS software is especially important role to the satisfaction of the director on the effective use of such software. The second hypothesis of this study has expressed as the following:

**H2: Information Quality from SMIS is positively related to User Satisfaction.**

As assigned by director, technician is an end-user who use SMIS software in schools, and who interact directly with the software by entering the data, perform the functions of software to process information and making the output results as well as reporting to the director for educational management purposes. Therefore, the system quality of SMIS also plays an importance role on satisfaction and behavior of users. Therefore, the third hypothesis of the research proposed as:

**H3: System Quality of SMIS is positively related to User Satisfaction.**

Moreover, the technician is the administrator and is trained to use SMIS software as well as receiving fixed-errors patch and upgrading the SMIS software from the manufacturer. Therefore, 4th hypothesis of the study is stated as:

**H4: Service Quality from SMIS producer is positively related to User Satisfaction.**

### **3.3 Operational Measurement for the Research Constructs**

There are five variables concerned in this study: Information Quality, System Quality, Service Quality, User Satisfaction, and SMIS Effectiveness. This sector will discuss the operational measurement approaches to those constructs.

#### **3.3.1 Information Quality of SMIS**

By adopting from the references which responses well to the objectives of this research, this study summarizes the items and measurements as those in the Table 2.



Table 2. Items of information quality

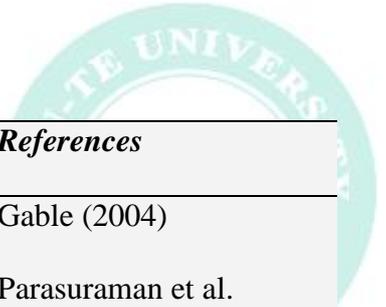
#	Variables	Questionnaires	References
1	Precise	<ul style="list-style-type: none"><li>• Does the SMIS provide the precise information you need?</li></ul>	Parasuraman et al. (1988)
2	Complete	<ul style="list-style-type: none"><li>• Does the information content meet your needs?</li><li>• Does the system provide reports that seem to be just about exactly what you need?</li></ul>	Parasuraman et al. (1988)
3	Timely	<ul style="list-style-type: none"><li>• Do you get the information you need in time?</li></ul>	Parasuraman et al. (1988)

### 3.3.2 System Quality of SMIS

By adopting from the references which related to system quality and appropriate to the objectives of this research, this study summarizes the items and measurements as those in the Table 3.

Table 3. Items of system quality

#	Variables	Questionnaires	References
1	Design	<ul style="list-style-type: none"><li>• Is the system easy to use?</li><li>• Is the system user friendly?</li><li>• Equipped only with useful features and functions</li></ul>	Parasuraman et al. (1988) DeLone and McLean (2003) and Sedera and



#	Variables	Questionnaires	References
			Gable (2004)
2	Navigation	<ul style="list-style-type: none"> <li>Is SMIS software easy to learn?</li> </ul>	Parasuraman et al. (1988)
3	Flexibility	<ul style="list-style-type: none"> <li>Flexible to make changes easily</li> </ul>	Wang and Strong (1996) and Nelson et al. (2005)
4	Responding time	<ul style="list-style-type: none"> <li>Short time lag between data input and output for batch processing</li> </ul>	Bailey and Pearson (1983)

### 3.3.3 Service Quality of SMIS

By adopting from the references which related to service quality and appropriate to the objectives of this research, this study summarizes the items and measurements as those in the Table 4.

Table 4. Items of service quality

#	Variables	Questionnaires	References
1	Tangibles	<ul style="list-style-type: none"> <li>Can SMIS run on various popular operating systems like MS 2000, XP, Vista, Windows7?</li> </ul>	Parasuraman et al. (1988)
2	Reliability	<ul style="list-style-type: none"> <li>The SMIS to perform the promised service dependably and accurately</li> </ul>	Parasuraman et al. (1988)
3	Responsiveness	<ul style="list-style-type: none"> <li>The willingness to help customers and provide prompt service</li> </ul>	Parasuraman et al. (1988)



#	Variables	Questionnaires	References
4	Assurance	<ul style="list-style-type: none"> <li>• Training to use the SMIS software is satisfied to users</li> </ul>	Parasuraman et al. (1988)
5	Empathy	<ul style="list-style-type: none"> <li>• Provide good conditions for user to use SMIS software</li> </ul>	Parasuraman et al. (1988)

### 3.3.4 User Satisfaction from SMIS

By adopting from the references which related to user satisfaction as a director (indirect end-user) and IT technician (direct end-user) of a school (William, 1988) and appropriate to the objectives of this research, this study summarizes the items and measurements as those in the Table 5.

Table 5. Items of IT technician satisfaction form SMIS

#	Variables	Questionnaires	References
1	Information Satisfy	<ul style="list-style-type: none"> <li>• Are you satisfied with the output information from SMIS system?</li> </ul>	Parasuraman et al. (1988)
2	System satisfy	<ul style="list-style-type: none"> <li>• Are you satisfied with the accuracy of the system?</li> <li>• Are you satisfied with the interface of the system?</li> </ul>	Own developed
3	Services satisfy	<ul style="list-style-type: none"> <li>• Are you satisfied with the technical support from the provider?</li> </ul>	Own developed



### 3.3.5 SMIS Effectiveness

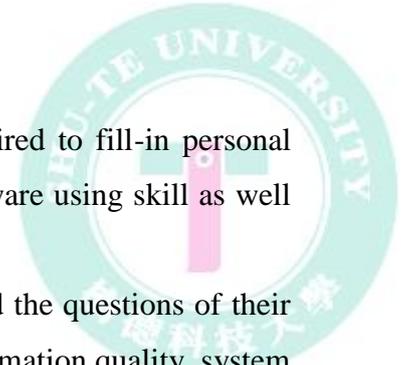
To appropriate to the objectives of this research, this study own develop items and measurements for SMIS Effectiveness as those in the Table 6.

Table 6. Items of SMIS effectiveness

#	<i>Variables</i>	<i>Questionnaires</i>	<i>References</i>
1	Education quality	<ul style="list-style-type: none"> <li>The applying SMIS into school brings higher quality of education?</li> </ul>	Own developed
2	Cost	<ul style="list-style-type: none"> <li>The applying SMIS into school brings the less cost for educational management activities?</li> </ul>	Own developed
3	Time	<ul style="list-style-type: none"> <li>The applying SMIS into school brings less time for educational management activities?</li> </ul>	Own developed

### 3.4 Sampling Process

To investigate user satisfaction on SMIS software, directors and IT technicians (the participants) from upper secondary schools which have piloted SMIS software were asked how SMIS satisfy them. The survey adopted a sample frame of director and IT technician in 85 upper secondary schools along side of Vietnam. The participants sample shares similar characteristics, position job in school. Research variables were gathered through questionnaires. For the convenience of filling-in and understanding of contents, this questionnaire is written in Vietnamese. The questionnaires were delivered directly and through e-mail to participants. Data collection lasted one week.



In the session one of the survey, participants were required to fill-in personal information in order to understand their gender, age, SMIS software using skill as well as their position in school and SMIS.

In the next part of the survey, the participants were asked the questions of their feeling, expressed thought, evaluation to SMIS software on: information quality, system quality, service quality, satisfaction of director, satisfaction of IT technician and SMISS effectiveness for educational management in the school.

A total of 255 questionnaires were delivered to participants from upper secondary schools along side of Vietnam (120 directly and 80 through e-mail), 243 questionnaires were returned. After eliminating poor quality responses signified by inattention to the reverse question and visually identifiable response patterns, we were left 233 effective samples.

### **3.5 Research Methodology**

To test the hypotheses of this study, software SPSS 17.0.1 package is used for analyzing instrument. The statistical analysis methods adopted are as follows:

#### **3.5.1 Descriptive Statistics**

The detail description of the respondents' personal data, such as gender, age, job position in the school, the time has been using SMIS software, and so on will be analyzed. Every construct of the data will be analyzed in percentage, frequency distribution in order to know the sample distribution.

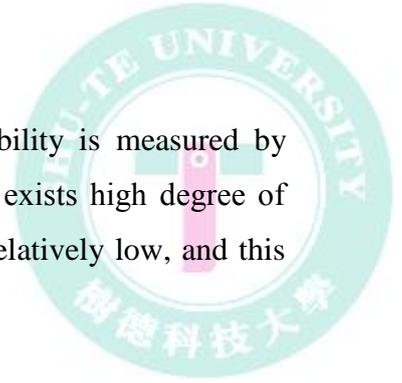
#### **3.5.2 Factor Analysis**

Factor analysis is a technique used to identify factors that statistically explain the variation and co-variation among measures. Factor loading of an item has to be greater than 0.5. Eigenvalue needs to be greater than 1; the difference between two eigenvalue has to be greater than 0.3.

#### **3.5.3 Reliability Analysis**

Reliability applies to a measure when similar results are obtained over time and across situation. Broadly defined, reliability is the degree to which measures are free

from error and therefore yield consistent results. Usually reliability is measured by Cronbach's  $\alpha$ ; if it is greater than 0.7, then it means that there exists high degree of reliability, if less than 0.35, then it means that the reliability is relatively low, and this coefficient needs to be deleted.



#### **3.5.4 Regression Analysis**

The purpose of regression analysis is to create a linear equation, in order to analyze the relationship between dependent variables and independent variable. The hypotheses in this study can also be tested by this method.

## Chapter 4 Data Analysis and Result



### 4.1 Descriptive Analysis of Sample Demographics

Questionnaires were sent to 85 upper secondary schools, which are piloting SMIS, there are 255 questionnaires have delivered (each school sent 3 questionnaires: 1 for school director and 2 for IT technicians). In 233 effective respondents, there is 55.8% of female and 44.2% of male. Moreover, the percentage of the respondents for age between 20-40, 41-50, and older than 50 are 44.6%, 15.9%, and 22.7%, respectively, so most of the respondents in this study are at young age, under 40 years old (more than 44%). This is consistent with the fact that most of IT technician are young from 20 to 40 years old and most of school director are in more than 50 years old.

Also from the descriptive statistics of these samples, we can see that most of our respondents have time experiences in used SMIS for 1 to 2 years (38.7%), 2 to 3 years (55.6%) and more than 3 years (25.7). This is similar with the fact the SMIS software have deployed to upper secondary school from 2008, so most users used this software is for 3 years.

Table 7. Characteristics of sample demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Male	Male	103	44.2	44.2	44.2
	Female	130	55.8	55.8	100.0
	Under 20	39	16.7	16.7	16.7
Age	Between 20 and 40	104	44.6	44.6	61.4
	Between 41 and 50	37	15.9	15.9	77.3
	Older than 50	53	22.7	22.7	100.0
Time Used SMIS	Between 1 to 2 years	90	38.7	38.7	38.7
	Between 2 to 3 years	83	35.6	35.6	74.3
	More than 3 years	60	25.7	25.7	100.0



Above table showed that samples collected met the diversity: all of ages, sexes, and working experiences. Otherwise, I assessment rates of variables in the questionnaires are as follows:

Table 8. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Qoi1	233	1	5	3.71	1.170
Qoi2	233	1	5	3.52	1.317
Qoi3	233	1	5	3.35	1.244
Qoi4	233	1	5	3.27	1.239
Qosy1	233	1	5	3.60	1.094
Qosy2	233	1	5	3.90	1.203
Qosy3	233	1	5	3.74	1.176
Qosy4	233	1	5	3.38	1.281
Qosy5	233	1	5	3.60	1.094
Qosy6	233	1	5	3.90	1.203
Qose1	233	1	5	3.58	1.072
Qose2	233	1	5	3.82	1.199
Qose3	233	1	5	3.74	1.124
Qose4	233	1	5	3.33	1.273
Qose5	233	1	5	3.24	1.234
Us1	233	1	5	3.77	1.238
Us2	233	1	5	3.90	1.144
Us3	233	1	5	3.80	1.216
Us4	233	1	5	3.74	1.124
Es1	233	1	5	3.90	1.144
Es2	233	1	5	3.80	1.216
Es3	233	1	5	3.74	1.124
Valid N (listwise)	233				



In there, the assignment of the items in questionnaires is 5 level:

1 Strongly disagree

.

2 Disagree

.

3 Neutral

.

4 Agree

.

5 Strongly agree

.

Thus, average value (Mean) of variable and corresponding assessment is as follows:

- If Mean is bigger than or equal to 3.5, satisfaction is high.
- If Mean is from 2.5 to 3.49, satisfaction is fair.
- If Mean is less than or equal to 2.49, satisfaction is low.

(Sekaran, 2004).

Therefore, the result in table 8 and table 9 showed that the samples which collected facilitate the analysis of study results.

#### **4.2 Factor Analysis**

From the research model of this study, we used the Factor analysis method to check the appropriateness of the factors: Information quality, System quality, Service quality, User satisfaction and Effectiveness of SMIS. After used SPSS software to analyze factors, the results are shown on Table 9.



Table 9. Factor structure matrix of loading and cross-loading

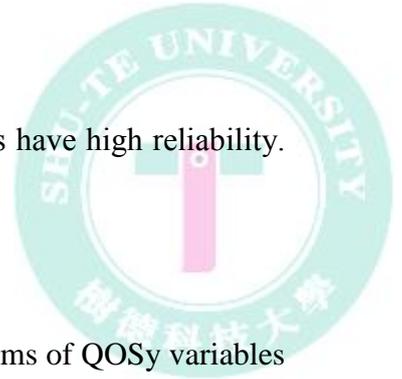
Qoi1	QOSY	QOSE	QOI	US	ES
Qoi1			.726		
Qoi2			.647		
Qoi3			.802		
Qoi4			.597		
Qosy1	.820				
Qosy2	.830				
Qosy3	.733				
Qosy4	.564				
Qosy5	.820				
Qosy6	.830				
Qose1		.748			
Qose2		.791			
Qose3		.736			
Qose4		.655			
Qose5		.618			
Us1				.595	
Us2				.777	
Us3				.793	
Us4				.787	
Es1					.782
Es2					.813
Es3					.825

On the Table 9, there are all of items have factor loading are greater than 0.5, thus, according Hair et al. all of items are significant.

### 4.3 Reliability Analysis of the Variables

In this study, I used the Cronbach's  $\alpha$  to measure the reliability of the measurement for five constructs, including information quality, system quality, service quality, user satisfaction, and SMIS effectiveness for ensuring that the measurement scale we designed for our questionnaire are highly representative of each variable.

Cronbach's  $\alpha$  is used to test whether the measures are free from error. Constructs with Cronbach's  $\alpha$  below 0.5 will be deleted. Throughout the test we find out that all of



the Cronbach's  $\alpha$  are greater than 0.7, meaning that the constructs have high reliability. The result is shown in the following session.

#### 4.3.1 Quality of SMIS System (QOSy)

Table 10. Determination of the reliability of assessment items of QOSy variables

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.865	6

#### Item-Total Statistics on QOSy variables

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Qosy1	18.51	21.354	.691	.	.834
Qosy2	18.21	20.161	.735	.	.824
Qosy3	18.37	21.287	.633	.	.843
Qosy4	18.73	22.153	.476	.	.874
Qosy5	18.51	21.354	.691	.	.834
Qosy6	18.21	20.161	.735	.	.824

As the result showed in table 10, we found  $\alpha = 0.862 > 0.6$ . According Nunnally J. C. at el (1994) the assessment items of QOSy variables guarantee the reliability. Therefore, QOSy variable can be reduced to:

$$QOSy = \text{Mean}(QOSy1, QOSy2, QOSy3, QOSy4, QOSy5, QOSy6).$$

#### 4.3.2 Quality of SMIS Information (QOI)

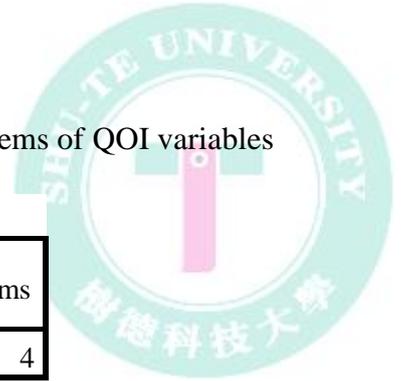


Table 11. Determination of the reliability of assessment items of QOI variables

<b>Reliability Statistics</b>		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.710	.711	4

<b>Item-Total Statistics</b>					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Qoi1	10.14	8.122	.560	.419	.610
Qoi2	10.34	7.785	.505	.354	.642
Qoi3	10.50	8.182	.492	.331	.649
Qoi4	10.58	8.555	.433	.247	.684

As the result showed in Table 11, we found  $\alpha = 0.710 > 0.6$ . According Nunnally J. C. at el (1994) the assessment items of QOI variables guarantee the reliability. Therefore, QOI variable can be reduced to:

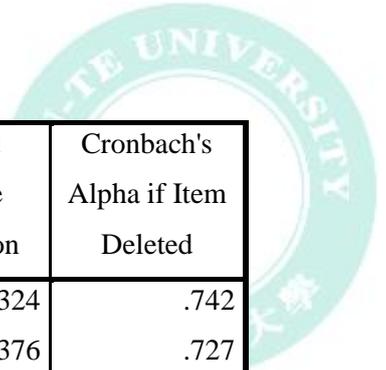
$$QOI = \text{Mean}(QOI1, QOI2, QOI3, QOI4).$$

#### 4.3.3 Quality of SMIS Services (QOSe)

Table 12. Determination of the reliability of assessment items of QOSe variables

<b>Reliability Statistics</b>		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.782	.784	5

#### Item-Total Statistics



	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Qose1	14.14	13.182	.557	.324	.742
Qose2	13.90	12.219	.597	.376	.727
Qose3	13.99	12.573	.606	.415	.726
Qose4	14.39	12.075	.562	.338	.740
Qose5	14.48	12.940	.474	.246	.770

As the result showed in Table 12, we found  $\alpha = 0.782 > 0.6$ . According Nunnally J. C. at el (1994) the assessment items of QOSE variables guarantee the reliability. Therefore, QOSE variable can be reduced to:

$$QOSE = \text{Mean}(QOSE1, QOSE2, QOSE3, QOSE4, QOSE5).$$

#### 4.3.4 User Satisfaction of SMIS (US)

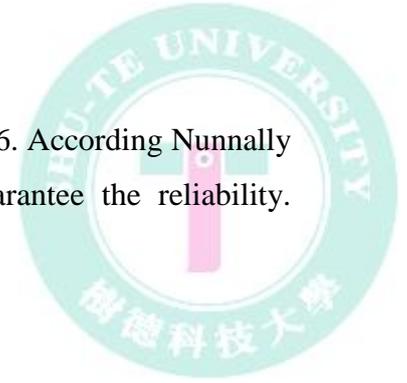
Table 13. Determination of the reliability of assessment items of US variables

##### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.725	.727	4

##### Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Us1	11.44	7.911	.401	.181	.732
Us2	11.31	7.594	.528	.288	.656
Us3	11.40	6.906	.602	.379	.609
Us4	11.47	7.638	.536	.346	.652



As the result showed in Table 13, we found  $\alpha = 0.725 > 0.6$ . According Nunnally J. C. at el (1994) the assessment items of US variables guarantee the reliability. Therefore, US variable can be reduced to:

$$US = \text{Mean}(US1, US2, US3, US4).$$

#### 4.3.5 SMIS Effectiveness (ES)

Table 14. Determination of the reliability of assessment items of ES variables

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.732	.733	3

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Es1	7.54	4.198	.513	.264	.694
Es2	7.64	3.750	.570	.333	.629
Es3	7.70	4.013	.585	.346	.611

As the result showed in Table 14, we found  $\alpha = 0.732 > 0.6$ . According Nunnally J. C. at el (1994) the assessment items of ES variables guarantee the reliability. Therefore, ES variable can be reduced to:

$$ES = \text{Mean}(ES1, ES2, ES3, ES4).$$

#### 4.3.6 Reliability Analysis of all Variables

Based from the result of Table 10 to 14, the reliability analysis of all variables are shown on following Table 15:

Table 15. Reliability test for all variables



Factors	Items	Cronbach's $\alpha$
System Quality of SMIS (QOSy)	6	.862
Information Quality of SMIS (QOI)	4	.710
Service Quality of SMIS (QOSe)	5	.782
User Satisfaction on SMIS (US)	4	.725
Effectiveness of SMIS (ES)	3	.732

From data in Table 15 shows that Cronbach's  $\alpha$  of all factors are greater than 0.7, meaning that the constructs have high reliability (Nunnally J. C. at el, 1994).

#### 4.4 Hypothesis Testing

In this study, linear regression was adopted to examine the relationships between independent variables and dependent variables to test our research hypotheses.

Otherwise, ANOVA test also is used to analyze whether different segment of the samples will have different reaction on the variable.

##### 4.4.1 Linear Regression Analysis for User Satisfaction

Based on the hypotheses shown in Figure 6 and the reliability of variables determined (item 4.2) of this study, we will test 3 hypotheses (H2, H3 and H4) by linear regression analysis for User Satisfaction (US) on SMIS software in the school. In there, System quality (QUSY), Information Quality (QOI) and Service quality (QUSE) are independent variables. User satisfaction is a dependent variable. After use linear regression analysis by SPSS, we have got the result as Table 15:

Table 16. Linear regression analysis for testing H2, H3 and H4 hypotheses

Constructs	Factors	St. coefficients $\beta$	t value	Sig.	R <sup>2</sup>	Adj-R <sup>2</sup>	F value
------------	---------	--------------------------	---------	------	----------------	--------------------	---------



QUSY, QOI and QOSE positive affect to US	QUSY	0.177**	3.437	0.001			
	QOI	0.446***	8.187	0.000	0.412	0.404	53.448***
	QOSE	0.258***	4.750	0.000			

Dependent variable: US (User Satisfaction)

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05

According to the result shown in the Table 16 we found  $R = 0.642$ ,  $R^2 = 0.412$ , Adjusted  $R^2 = .404$ , Sig = 0.000,  $F = 53.448^{***}$  shows the high correlation between variables QUSY, QOI, QOSE and US.

Since the relation between QUSY and BIU has  $t = 3.437$ , Sig=0.001, beta = 0.177\*\*, thus, H2 is supported.

Since the relation between QOI and BIU has  $t = 8.187$ , Sig=0.000, beta = 0.446\*\*\*, thus, H3 is supported.

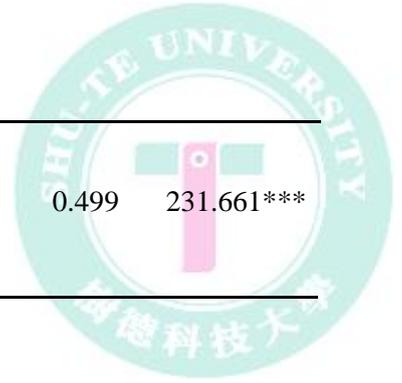
Since the relation between QOSE and BIU has  $t = 4.750$ , Sig=0.000, beta = 0.258\*\*\*, thus, H4 is supported.

#### 4.4.2 Linear Regression Analysis for SMIS Effectiveness

Based on the hypotheses shown in Figure 6 and the reliability of variables determined (item 4.2) of this study, we will test hypotheses H1 by linear regression analysis for SMIS Effectiveness (ES) on SMIS software in the school. In there, User satisfaction (US) is an independent and SMIS Effectiveness is a dependent variable. After use linear regression analysis by SPSS, we have got the result as Table 17:

Table 17. Linear regression analysis for testing H1 hypothesis

Constructs	Factors	St. coefficients $\beta$	t value	Sig.	$R^2$	Adj- $R^2$	F value
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US positive affect to ES	US	0.708***	15.220	0.000	0.501	0.499	231.661***
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Dependent variable: ES (Effectiveness of SMIS)  
 \*\*\*p<0.001, \*\*p<0.01, \*p<0.05

According to the result shown in the Table 17 we found  $R = 0.708$ ,  $R^2 = 0.501$ , Adjusted  $R^2 = 0.499$ ,  $Sig = 0.000$ ,  $F = 231.661***$  shows the high correlation between variables US and ES.

Since the relation between US and ES has  $t = 15.220$ ,  $Sig=0.000$ ,  $beta = 0.708***$ , thus, H1 is significant supported.

From data in Item 4.3, the study model proves relations as follows (Figure 7):

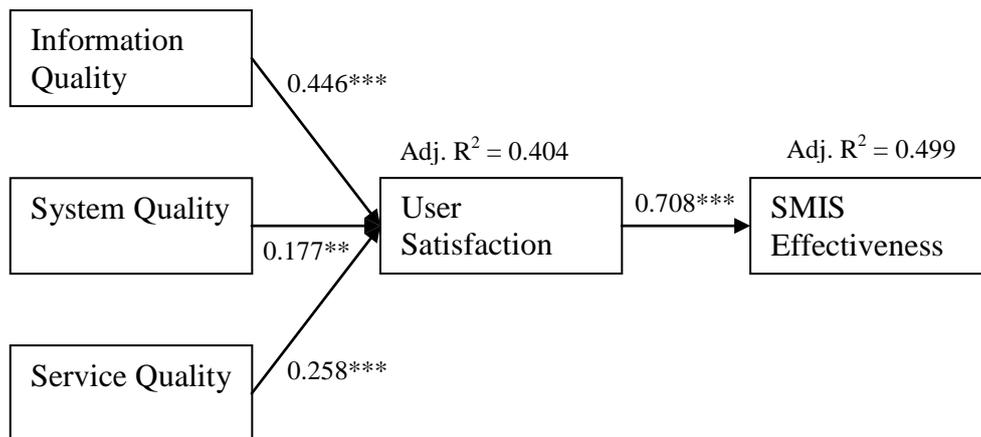


Figure 7. Model on relations among Information Quality, System Quality, Service Quality, User Satisfaction and SMIS Effectiveness variables

Based on the 4 hypotheses are built up and supported by users of this study, it may be concluded that the Information Quality, System Quality, Service Quality of SMIS Software cause an influent indirectly via User satisfaction on SMIS effectiveness. The study results are quite in line with those studies on the IS Success that we knew previously.



## Chapter 5 Conclusions and Suggestion

### 5.1 Conclusions

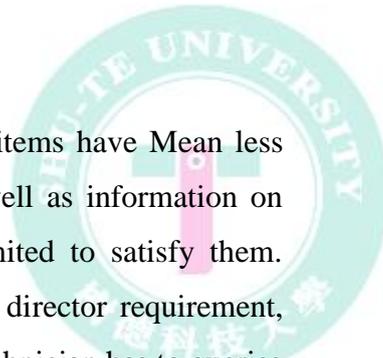
The purpose of this thesis is to research the factors which may be effected on User satisfaction through out Quality of Information, Quality of System and Quality of Service, and then effected on Effectiveness of SMIS use in school. The study has been proposed the research framework with 5 factors and 4 hypotheses. Base on the survey to 85 upper secondary schools with 255 participants, the thesis has used SPSS software to analysis all of items, factors and hypotheses. The result is all of four hypotheses are supported by users:

Table 18. Research hypotheses and results

Research Hypotheses	Results
H1: User Satisfaction on using SMIS is positively related to SMIS Effectiveness	Supported
H2: Information Quality from SMIS is positively related to User Satisfaction	Supported
H3: System Quality of SMIS is positively related to User Satisfaction	Supported
H4: Service Quality from SMIS producer is positively related to User Satisfaction.	Supported

Otherwise, the result of this study (in SMIS case) is consistent with previous studies on Information Quality, System Quality, and Service Quality are positively related to User Satisfaction as well as User Satisfaction is positively related to the Effectiveness of Information System.

Based on the study as well as the result of the survey, all of questionnaire's items are accepted by users (all of Mean of items is between 3.24 and 3.90). But we found some issues should be taken into consideration in the implementation of SMIS in the next plans better:



*On the Information Quality:* we found QOI3 and QOI4 items have Mean less than 3.5. Actually, the school director wants many reports as well as information on demand for their management purpose. But the SMIS still limited to satisfy them. Otherwise, since the report system of SMIS is not meet school director requirement, thus, some of information which school director request, the IT technician has to queries directly from SMIS database (by SQL statement), and then sometimes, the school director get information not in time. Therefore, the study recommend to MOET such as SMIS producer have to review all information need for school director and upgrade SMIS report system for satisfy more the education management purpose in school.

*On the System Quality:* Item QOSY4 has Mean is  $3.38 < 3.5$ . Actually, the SMIS database is used Microsoft SQL Server Express 2005. This is freeware software provided by Microsoft. In the case there are less than 3 users using, the SMIS running well. But there are more than 3 users using, the system is to need more time for processing data batch. Therefore, the study recommend to SMIS producer has to design the SMIS running on the other database system like My SQL (freeware) or SQL Server, those are better database in data processing.

*On the Service Quality:* Item QOSE4 and QOSE5 has Mean is less than 3.5. Actually, some pilot schools are in disadvantage areas on economic; their IT infrastructure is poor as well as IT human resource also limited. That's why QOSE4 and QOSE5 items has Mean less than 3.5. Therefore, the study recommend to MOET as well as DOET need to provide more annual budget for IT development as well as implementation more training courses for schools in disadvantage areas.

## **5.2 Implications**

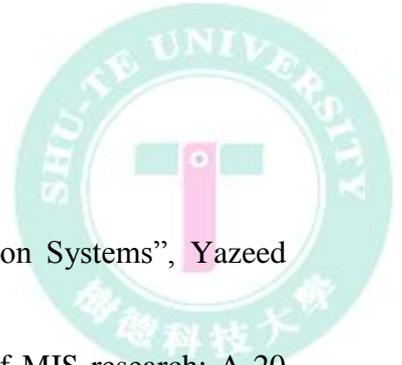
On the SMIS software, this is the first study which research SMIS Effectiveness. In the future, we hope to have many studies continuous research may be on other side of SMIS software and this study could contribute some things for that.

Otherwise, with the basic factor including Information Quality, System Quality and Service Quality, the study has contribute for educational manager in MOET, DOET, BOET and school also on the status of SMIS software implementing in upper secondary

schools. The study shown that, most of SMIS features have met school requirement. Otherwise, the study has explained some issues when deploying SMIS software actually. Finally, the study has recommended some resolution for MOET as well as SMIS producer on how to upgrade SMIS software for more convenient for education management purpose in school.

### **5.3 Limitations**

This study just research SMIS Effectiveness through out User Satisfaction on Information Quality, System Quality and Service Quality. Actually, there are many other factors which may affect SMIS Effectiveness such as education background, age, sexual, budget, policy, ICT infrastructure and so on. Thus, there should have more study on other factors like above to investigate overall factors effect on SMIS Effectiveness. Therefore, MOET, DOET, BOET as well as SMIS producer has suitable plan for developing and implementing SMIS more effectiveness in school for bringing more education quality.



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## Appendix 1 Research Questionnaire

### Part 1 : Introduction about yourself

Firstly, please let we know about your own information.

1. Participant gender:       Male                       Female
2. Age:                       Under 20                       between 20 and 40  
                                  Between 41 and 50       Older than 50
3. Your experience time used SMIS:  
 Between 1 and 2 years       Between 2 and 3 years       More than 3 years

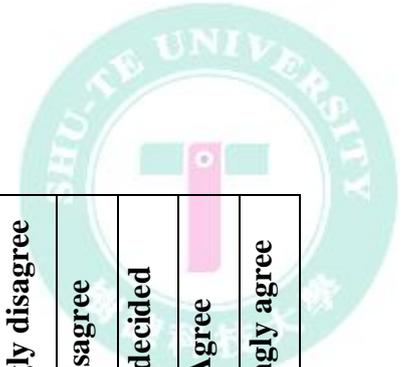
### Part 2: Answer the questionnaire on experience of SMIS software

Based on the using School Management Information System (SMIS) in your school, please answer these questions in the bellow. Each question, you have to choose one of criteria by circle your opinion.

#### 5-point Likert Scale:

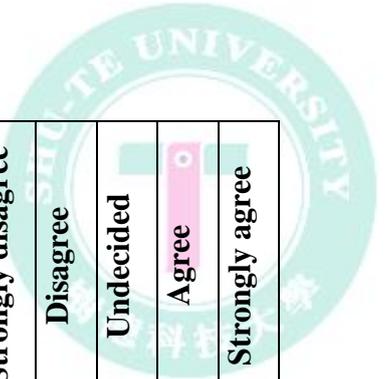
- |                      |            |                   |
|----------------------|------------|-------------------|
| 1. Strongly disagree | 3. Neutral | 5. Strongly agree |
| 2. Disagree          | 4. Agree   |                   |

Example: 1 2 4 5 (3)



There are the questions:

	<b>Questions</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Undecided</b>	<b>Agree</b>	<b>Strongly agree</b>
	<b>SMIS Quality of Information</b>					
1	(QOI1) Does the SMIS provide the precise information you need?	1	2	3	4	5
2	(QOI2) Does the information content meet your needs?	1	2	3	4	5
3	(QOI3) Does the system provide reports that seem to be just about exactly what you need?	1	2	3	4	5
4	(QOI4) Do you get the information you need in time?	1	2	3	4	5
	<b>SMIS Quality of System</b>	1	2	3	4	5
8	(QOSy1) Is the system easy to use?	1	2	3	4	5
9	(QOSy2) Is the system user friendly?	1	2	3	4	5
10	(QOSy3) Equipped only with useful features and functions	1	2	3	4	5
11	(QOSy4) Short time lag between data input and output for batch processing	1	2	3	4	5
12	(QOSy5) Flexible to make changes easily	1	2	3	4	5
12	(QOSy6) Is SMIS software easy to learn?	1	2	3	4	5
	<b>SMIS Quality of Services</b>	1	2	3	4	5
13	(QOSe1) Can SMIS run on various popular operating systems like MS 2000, XP, Vista, Windows7?	1	2	3	4	5
14	(QOSe2) The SMIS to perform the promised service dependably and accurately	1	2	3	4	5
15	(QOSe3) The willingness to help customers and provide prompt service	1	2	3	4	5



	Questions	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
16	(QOSe4) Training to use the SMIS software is satisfied to users	1	2	3	4	5
17	(QOSe5) Provide good conditions for user to use SMIS software	1	2	3	4	5
	<b>IT Technician Satisfaction on SMIS</b>	1	2	3	4	5
18	(US1) Are you satisfied with the output information from SMIS system?	1	2	3	4	5
19	(US2) Are you satisfied with the accuracy of the system?	1	2	3	4	5
20	(US3) Are you satisfied with the interface of the system?	1	2	3	4	5
21	(US4) Are you satisfied with the technical support from the provider?	1	2	3	4	5
	<b>SMIS Effectiveness for school</b>	1	2	3	4	5
22	(ES1) The applying SMIS into school brings higher quality of education?	1	2	3	4	5
23	(ES2) The applying SMIS into school brings the less cost for educational management activities?	1	2	3	4	5
24	(ES3) The applying SMIS into school brings less time for educational management activities?	1	2	3	4	5

Thank you for your cooperation!