



Shu-Te University

College of Informatics

Graduate School of Information Management

Master Thesis

Evaluate Benefit of Education Management Information
System in Vinh Phuc High Schools

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Adviser : Dr. To Chang

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June 2011

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Shu-Te University Authorization Document of Thesis

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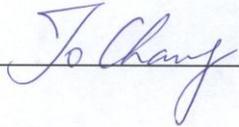
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Department of Information Management, Shu-Te University

Evaluate Benefit of Education Management Information System
in Vinh Phuc High Schools

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Adviser : Dr. To Chang

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Abstract

The purpose of this research is to evaluate the benefit of education management information systems at high schools in Vinh Phuc province, Vietnam, in order to find out the benefits of using the system and its limitations to improve the system and use it efficiently and to analyze important factors of the model affecting the use of the education management information system in high schools in Vinh phuc province.

The thesis is the result of the quantitative method and the empirical research process using survey form to examine the usefulness and understanding of the users of education management information system (EMIS).

The result in this research is to increase the understanding of many people about how to evaluate and develop successful models of education management based on EMIS.

This study is based on the EMIS which has been successfully developed and the structure of the elements presented in the IS Success Model of Delone & McLean (2003). And it helps education management based on the EMIS to operate more effectively. It also has a major impact on improving the quality of education in Vietnam in general and at high schools in Vinh Phuc in particular.

Keywords: EMIS, Evaluate the Benefit, Vinh Phuc High Schools in Viet Nam

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Tran Thi Tan

Shu-Te University

2011, June

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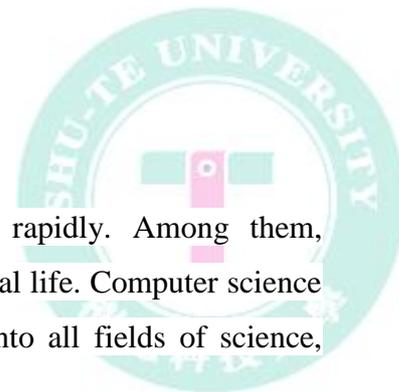
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Chapter 1 Introduction



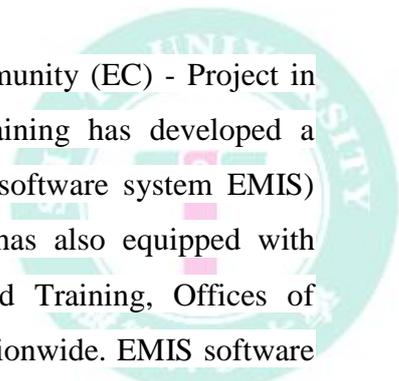
1.1. Research Background

Nowadays, science and technology are developing rapidly. Among them, information technology has been widely applied in human social life. Computer science has developed with a high speed, penetrating more deeply into all fields of science, technology, economics, society, government management etc...

In education management, the information system is an important part of the management system. The education management information system contributes to improve the quality of education, directly decides the operational quality of education system.

The role of the education management information system is very important; therefore, the Party and the Government have issued policies and guidelines to supervise this. The Resolution of the 2nd Conference of the Party Central Committee VIII (1996) developed the strategy for education progression in the period of industrialization and modernization of the country. That is to develop science and technology and apply in education management, especially the use of information system in education and training; Directive 58 - CT / TW dated October 17, 2000 of the Ministry of Politics on promoting application and development of information technology (IT) to serve the career of industrialization and modernization, in the part of the solutions mentioned "The committees, party organizations supervise promptly to build of necessary information systems to serve the public interest of the people, serve the leadership of the Party, manage government; early complete, upgrade frequently and use effectively the broad information network of the government..."

Recently, September 30, 2000, the Ministry of Education and Training issued a Directive on enhancing teaching, training and applying IT in education sector in the period 2008-2012. School year 2008-2009 is "the year to promote IT application, renewal of financial management and building friendly school, active students". The requirements for schools including general education have to promote application of IT in innovating teaching methods, administration and school management.



Since 2000, with the assistance of the European Community (EC) - Project in support of MOET-SMOET, Ministry of Education and Training has developed a software system used in the statistical work (often called a software system EMIS) managing data on the Informix database. SMOET project has also equipped with computer equipment for the Departments of Education and Training, Offices of Education and Training office in most cities and provinces nationwide. EMIS software system has the function of collecting, processing, and summing up statistics of preschools and general schools. Statistical information of EMIS includes information about schools and classrooms, students, staff, facilities and training effectiveness.

From the final version of EMIS as 2.0 was released in December 2004, there are now many legal documents on education and training having been issued so this version is no longer suitable. Therefore, the project of supporting and renewing education management (SREM) is upgrading the system.

The system built uses the application architecture Client-Server based on advanced technology, which has the following benefits:

- Manage pupils and students effectively
- Support multiple-system training model with different training models and levels
- Provide management tools and evaluate training results
- Manage finance, human resource, and fixed assets

From the above benefits, EMIS software is widely used in the Departments of Education and Training in the country. For the education sector of Vinh phuc, Vietnam the education management information system in high schools has been operating and actively contributing to the management of schools. The operation of the EMIS system has helped the management go very smoothly compared to other traditional forms. Specifically, reporting management data from school-level to department - level is often directly through the school office staff. This method is expensive, time consuming, the information delivery is slow. When the EMIS software is applied, the schools' mailbox is set up and management information is updated regularly and promptly. From then, activities of the schools are more active, more effective. However, the operation of

education management information for high schools in Vinh phuc still has many shortcomings such as:

- Awareness of staff on managing the information system is limited, tend to maintain information management in traditional way, afraid to renew.
- Lack of standard in the processing and using of information data.
- Facilities for education management information system are not synchronized.
- Ability to exploit and access to education management information is weak.
- Management mechanism of the Department, schools has not yet adapted to the information management in the time of industrialization.

To meet the requirement by the State management for the education management in high schools in Vinh phuc province today, assessing the effectiveness of the education management information system in high schools in Vinh phuc is needed.

1.2. Research Motivation

The main motivation of this study is to find out the key factors affecting the effectiveness of the users of the education management information system in high schools in Vinh phuc province and then the result may help to identify models and effectiveness of the education management information system in the Departments of Education and Training in Vietnam.

Propose solutions to enhance the management, use and exploitation of EMIS (SREM) in the future to be more successful in high schools in Vinh phuc province in particular, and the Departments of Education and Training in Vietnam in general.

1.3. Research Purposes

Research the effectiveness of the education management information system in high schools in Vinh phuc province with the following specific objectives:

- Design effective research model of the education management information based on theory of information system model.
- Analyze important factors of the model affecting the use of the education management information system in high schools in Vinh phuc province.
- Discuss the results of the impact of the findings from EMIS (SREM).

• Propose how to use effectively the education management information system in general.

1.4. Research Questions

- What is the model to study the effectiveness of the users of the education management information system based on theory of information system model?

- What are the important factors of the model affecting the use of the education management information system in high schools in Vinh phuc?

- What are the results of the impact of the findings from the education management information system?

- What are the general proposals for the effective use of the education management information system?

1.5. Research Procedure

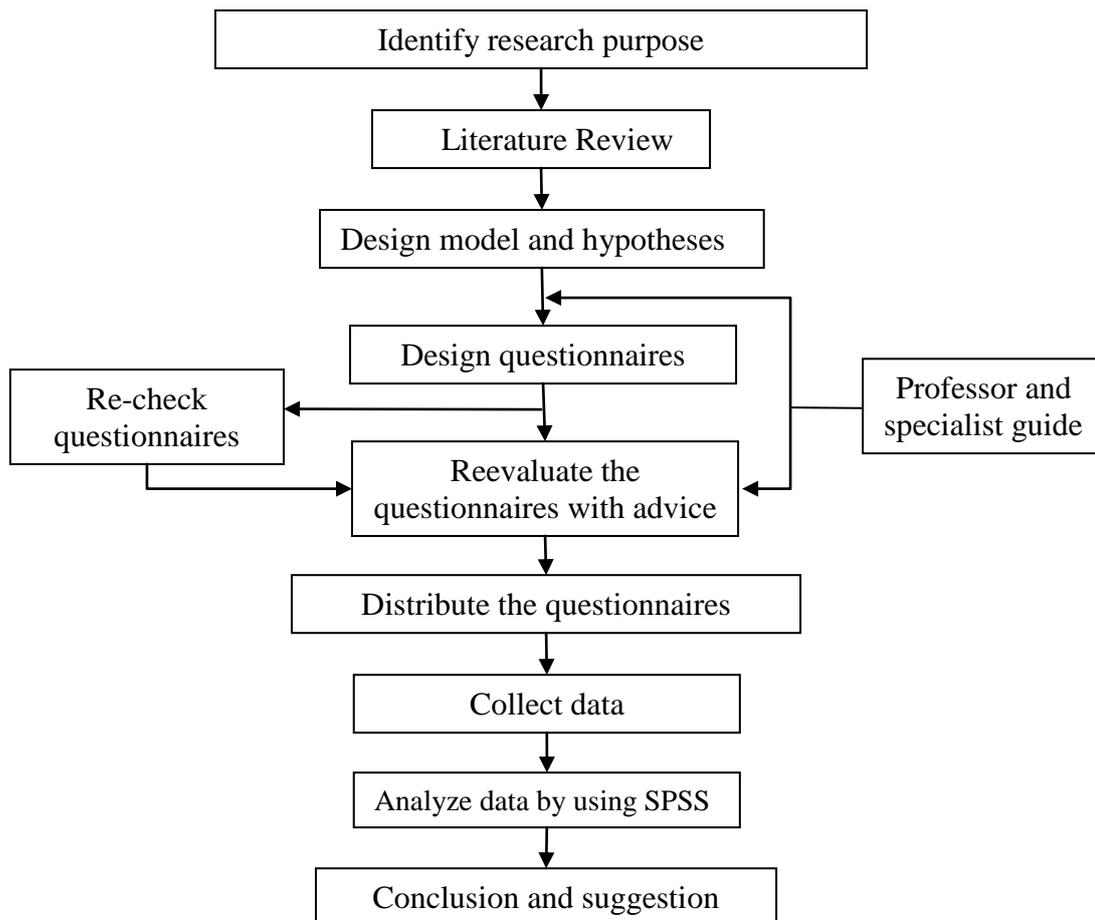
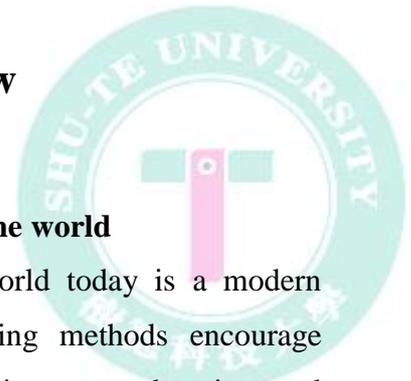


Figure 1. Research Procedure

Chapter 2 Literature Review



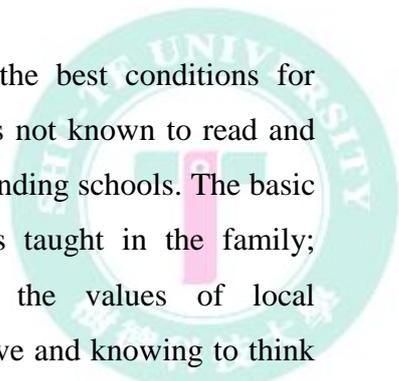
2.1. Education Management System

2.1.1. The education management system in the world

The education management system in the world today is a modern educational system and highly standardized. Learning methods encourage independent thinking, creativity and innovation to improve education and develop individual skills to help improve work efficiency throughout the independent and collective environment. For example, in the education system in the UK, all children from 5 to 16 years old must attend school, either public or private school and have to pay. Originally, that is a kindergarten, an elementary school, then secondary school, also known as mixed high schools with many different learning programs and time. Children from 7 to 13 years old will attend boarding schools, known as secondary schools and will move up to high schools when they reach to the age of 11 to 13. Students will study many subjects to prepare for graduation certification for secondary education (GCSE) or Scottish Standard Grade certificate in the age of 16. After completing the courses, the students can study a next course to get certificate A (A-level), study preparatory college or study for two years (not compulsory) in vocational education schools also known as the "6th form" schools before entering a college. Usually, studying university in the UK is for 3 years, students will receive a Bachelor of Social Sciences (BA) for such sectors as language, arts, social sciences; Bachelor of Science (BSC) for subjects of Science and Bachelor of Engineering (BEng) for sectors related to engineering and technology.

Besides, the U.S. and China are two powerful countries that had a modern and advanced education

American general education is divided into two levels: primary school from grade 1 to grade 6; intermediate school from grade 7 to grade 12; intermediate school level is divided into secondary school including grades 7, 8 and high school Grades 9 to 12. Americans are very proud of their school



system and everyone wants their children to enjoy the best conditions for education. Currently, around 1% of the population has not known to read and write. Over 99% of children aged 6-13 are currently attending schools. The basic objectives of education include: expanding the skills taught in the family; strengthening cultural exchange while preserving the values of local communities; training children to be self - made, creative and knowing to think as a basis for the development of science and technology later. Many agreed that the training levels as high as MBA, PhD, research and professional training, the universities in the United States are one of the best places in the world. Meanwhile, in some areas of general education and higher education, the results do not match. Therefore, in the late 80th decade, early 90th decade, many universities have evaluated the outcomes of education and seek to improve efficiency inside and the spirit and the responsibility of the schools.

And what do you know about modern education in China?

Modern education in China was started before the elimination of the feudal examinations in 1905, but the comprehensive development and scale of the entire population of Chinese education only began when the new Chinese nation was founded in 1949. For over 50 years, the Chinese government continues to promote the tradition focusing on the development of education since ancient times. Each year, the financial budget for education accounts for almost 14% of the total state financial expenditure, or almost 3% of GDP. The Chinese primary schools teach languages, mathematics, history, art, music, nature, basic knowledge, sports, foreign languages, ethics, ... The secondary schools teach languages, foreign language, math, history, geography, biology, physics, chemistry, philosophy, politics, sports, ... By early 2002, China had 1,911 universities and colleges with 1,388,200 teachers, of which universities and colleges were 1,255 schools with 1,214,400 teachers. Universities and colleges enroll about 2.7 million students every year. People in the colleges and universities are accounted for 11% of the youth at the same age.

Along with that, Vietnam education is on the development and integration with world education.

2.1.2. The education management system in Vietnam at present

Following Uncle Ho's teaching "For the sake of ten years we plant trees, for the sake of 100 years we educate people", so, documents of the Congress Party is considered a top national policy about education. Documents of the 3rd Party Congress has identified:

"From the awareness to care for people, for society as the responsibility of whole society, each unit, each family and as the cause of the Party, the State and the entire population, we advocates solving social problems in the spirit of *socialization* in which the State holds a pivotal role ... The cause of Revolution is the cause of the people, by the people and for the people. The State and the people work together, all things have to rely on people ... it's views and experiences in the history of people's war into 10 years of innovation that needs to be held and developed to create resources to solve problems on people and society in the current period "

"Quoted from the document of the National Party Congress VIII – the National Political Publishing House, Hanoi, 1996, p. 32"

According to the Education Law of the Socialist Republic of Vietnam, 2005 (Chapter II of the national education system), the general education in Vietnam, including all educational levels: primary school level implemented in the school year, from grade 1 to 5, elementary school pupils starting in grade 1 is 6 years old and completing primary school at the age of 11; next level is secondary school which will be in four years, from grade 6 to grade 9 (6,7,8,9), in this level pupils begin in grade 6 is 11 years old and graduated from lower secondary school level after completing the ninth grade program at the age of 15; upper secondary school is done in three years, from grade 10 to grade 12 , pupils aged 15 to 18 years. Basic education lengthens in 12 years and graduated pupils will be 17-18 years old.

Ministry of Education and Training (MOET) is an agency of state management of education and training. The MOET directs the entire program, textbooks, specify the subject and time, the volume of basic knowledge of each grade, the professional activities of teaching and learning, organizational support conditions for the development of local education. And series of normative documents were issued on education in general, high schools education in particular, for example:

- **Decision No. 65/1998/QĐ-BGDĐT dated 18/12/1998 by the Minister of Education and Training** on the issuance of "Regulations of examining and selecting national gifted students at grade 12 high school"

- **Decision No. 08/1999/QĐ-BGDĐT dated 02.27.1999 by the Minister of Education and Training:** on the issuance of the "Regulations on admissions to secondary and high schools" .

- **Decision 1232/QĐ-TTg dated 24/12/1999 by the Prime Minister:** To approve the list of communes with special difficulties and border communes under the Programmed of socio-economic development in exceptionally difficult mountainous and remote communes.

- **Circular No. 08/TT dated 21/3/1988 of Ministry of education:** guidelines for the reward and discipline for high school students.

Normative documents showed that Institutions of education in Viet Nam have improved. Those are also the concern and the need of society for education in general

In each province has Department of education and training (DOET) is an agency which in charge of education management in province areas.

The education management agency in district is Bureau of Education and Training (BOET). And lowest level of education system is school including kindergarten, primary, and secondary school. The structure of Vietnam education is showed in the following table:

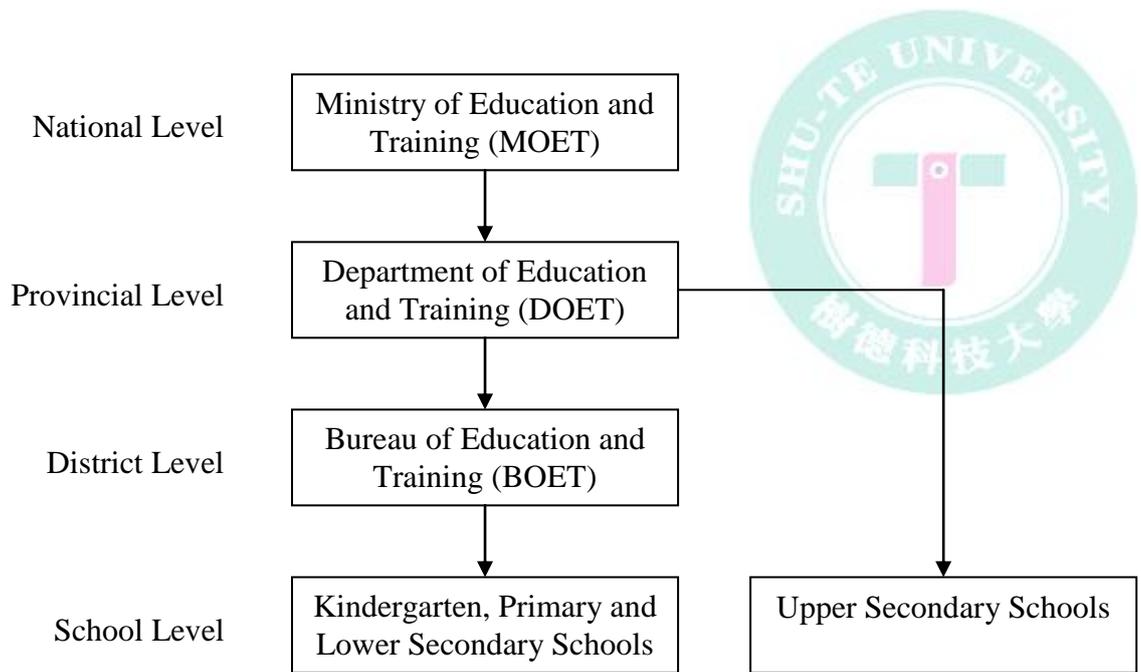


Figure 2. Educational agencies in Vietnam

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 from school, down 0.05% compared to last year (MOET, 2010).

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

Table 1. The scale of education

	Level of Education	Age	Number of schools	Number of pupils	Number of teachers
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
	Grand total:		39,630	18,517,419	981,221

Source: MOET, 2010

In the recent years, Vietnam's education has grown in both size in schools and the number of pupils at all educational levels. The education quality has been increasingly enhanced. Society is very interested in education; there are many articles, reviews, discussions about improving the quality of education as:

"Renewing Vietnamese Education can start from the smallest thing"

Author: Dr. Dang Huynh Mai, the former Deputy Minister of Education and Training (No. 198, dated 11/12/2010)

In the article, Mr. Huynh Mai pointed out the requirements of renewal namely the renewal of teachers, including activities, goals; practice, innovation of activities and goals. He gave details of renewing from traditional activities into very specific innovative activity. His article has helped change the thinking of Vietnamese education in the new era.

And **"Shares on renewing education management"** - (No. 61 issued on 16/4/2011)

- Dr. Huynh Cong Minh, Director of Ho Chi Minh City Education and Training Department stated "Building advanced institutions for modern school

- Dr. Nguyen Thanh Binh, Director of An Giang Education and Training Department pointed out the criteria: "To enhance training managers and teachers and improve education management efficiency

However, in disadvantaged areas, the scale of quantity and quality is still limited. The education management information system, Vietnam

Before 2000, the almost agencies of education in Vietnam had use hand tools such as calculator, electronic spreadsheets ... for data collecting at all levels for education management purposes. For 3 time data collecting in each year, education system needs about 3 months and many of labor for collecting sufficient data of nationwide.

Aware of the problems mentioned above, MOET has focused to invest for developing a educational management information systems (called 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.

To deploy EMIS, MOET has established a project named Support to the Ministry of Education and Training (called SMOET) from 2000 with about 3 million euro which sponsored by European Commissions (EC). Up to 2006, MOET had established a new project The Support to the Renovation of Education Management project (SREM) which has a mission to upgrade the EMIS to newer version for increasing ability of data collecting, interchange and analyzing for education management purposes. Now this new version of EMIS has applying to all educational agencies around the country.

There are 4 modules of EMIS: EMIS for school, EMIS for BOET, EMIS for DOET and EMIS for MOET. The EMIS module to study in this thesis is the version for DOET, a case in Vinh phuc Department of Education and Training.

The components of EMIS are:

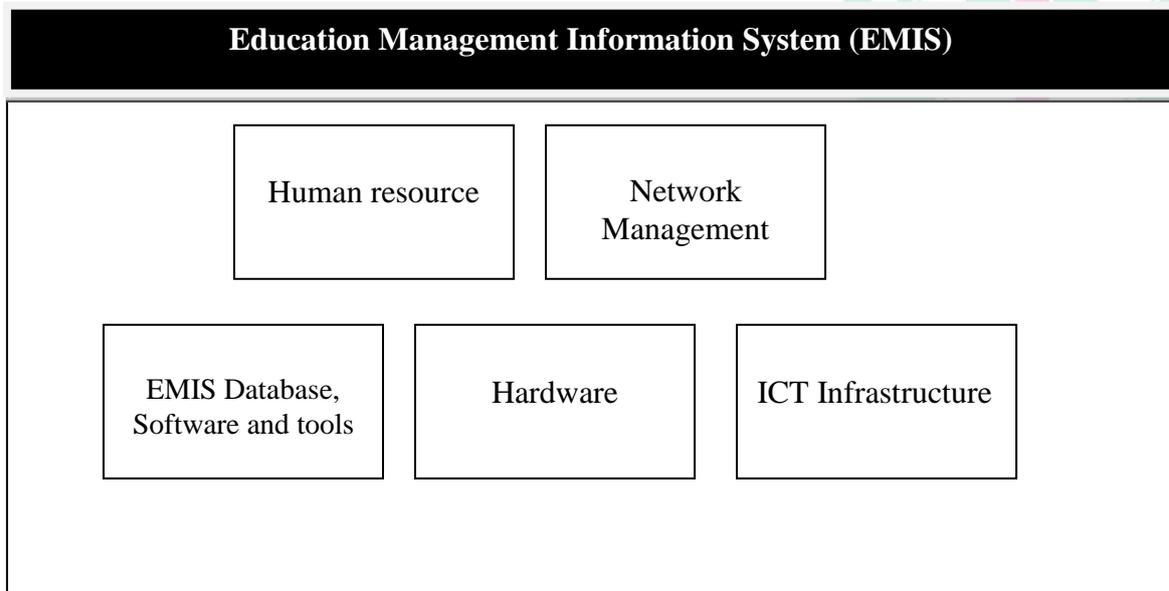


Figure 3. The components of EMIS

The purpose of EMIS system is to use for collecting data from schools and integrated data from lower educational agencies up to higher educational agencies (for example collecting data from school and send to BOET and DOET also). After that, EMIS system will analyze data and provide education information for management in all levels.

2.2. Education Management Information System

2.2.1. Education Management Information System in Vietnam

From 2000, with the assistance of the European Community, the Ministry of Education and Training, Project "Support to the Ministry of Education and Training" (SMOET) has developed a software system used in the statistical work (often called software system EMIS), data management based on Informix database. SMOET project has also equipped with computer equipment for the Departments of Education and Training and the Offices of Education and Training in most provinces/ cities in the country.

Stated, EMIS is also a part of the project funded by the EC for education and training sector in Vietnam (other programs include contents related to institution, innovation of teacher's methodological evaluation, personnel management ...).

Total EC's funding for the programs is up to 7.6 million Euros. And according to the EC representative, the funding to put EMIS into use is not out of the purpose "appropriate amount of information must be provided early before the authorities issue the decisions of career development." Therefore, after the conference (lasting for 2 days, 25 and 26 October), from the comments of the Departments of Education and Training in the country, EMIS's defects when used on a large scale will continue to be perfected, improved and put into use officially.

The EMIS software system has the function of collecting, processing, generalizing statistics of the education levels of Kindergarten and High Schools. Statistical information of EMIS includes information on schools and classrooms, students, staff, facilities and training effectiveness.

From the final version of EMIS 2.0 released in December 2004, there are now many legal documents on Education and Training issued so this version is no longer relevant. Therefore, support project to reform of education management (SREM) starts to upgrade the system. This system was applicator by MOET of Vietnam in all 63 provinces in 2003.

2.2.2. Education Management Information System in High School in Vinh phuc

Table 2. Scale of Vinh Phuc Education

	1997	2000	2005	2008
Number of high schools	23	25	39	44
Number of high school classes	401	762	855	1058
Number of High School students	20748	39453	45838	48176
Average number of high school students per class	51.7	51.7	47.5	45
Enrollment rate in grade 10 high school	62%	68%	72 %	75.42 %
Number of continuation education centers	8	8	10	9
Number of vocational schools	7	7	11	12

*(Source from the office general department of Education & Training
Department of Vinhphuc province)*

The construction and development of the contingent of teachers and educational administrators:

To implement seriously Directive 40 - CT / TW of the Party Central Committee and the plan 87 - KH / TU of the provincial committee on building and improving the quality and capacity of teachers and educational administrators, the contingent of administrators and teachers has increased both in quantity and quality. Sector of Education and Training has focused on building the plan of developing the contingent, with the solution to ensure sufficient quantity and balance of the structure of teachers. The majority of teachers are dedicated, responsible overcoming difficulties to complete the task. Up to date, the percentage of teachers per class at high schools is 2.15. Each public high school has at least 1 to 2 Informatics teachers. The percentage of

teachers meeting standards is high, the percentage of teachers above standards increases continuously over the years.

Table 3. Sum up the situation of development of qualified teachers in 2000, 2005, 2008

	2000	2005	2008
Total high school teachers	906	1202	1373
Rate of high school teachers meeting standard (%)	94.5	95.5	99.7
Rate of high school teachers above standard (%)	8	9.5	15

(Source from the office general department of Education & Training Department of Vinh phuc province)

“School year 2010-2011, with the continued implementation of the campaign "Study and follow the moral example of Ho Chi Minh" and the stimulation campaigns and movements in the industry. Education in Vinh Phuc province focuses on the theme "Innovating management, improving the quality of education". Stimulation movement of good teaching and good learning has been encouraged to develop extensively. More and more teachers have demonstrated their responsibility, dedication, striving to self study to raise the professional level, striving for good teaching. Students are excited with learning well and self improving, striving to become good students, which becomes the natural beauty of the young generation of Vinh Phuc today.

With new requirements and missions, the education and training industry has been active in the management, organization, directing to build the movement of good teaching - good learning, promoting the capacity of teachers, creative potential of students, and self-control capacity of the school. The emulation movement has been maintained and developed throughout the province, in all learning levels and branches.

School year 2010-2011, the education sector continues to gain more remarkable results. The number and quality of gifted students of the province continue to be stable at a high level, extended in many student subjects, many

educational activities and have excellent, outstanding performance shown in the following specific items:

High School level: provincial exam for gifted students is held with 10 subjects as math, physics, chemistry, biology, informatics, literature, history, geography, English and French. Specific results:

- Grade 10: 1001/2108 students won prizes, accounting for 47.5% including 46 first prizes, 131 second prizes, 308 third prizes and 516 consolation prizes.
- Grade 11: 1127/2119 students won prizes, accounting for 53.2%, including 57 first prizes, 169 second prizes, 375 third prizes and 526 consolation prizes.
- Grade 12: 1032/1792 students won prizes accounting for 57.6%, including 45 first prizes, 194 second prizes and 330 third prizes and 463 consolation prizes.

The exam of math solution on calculators for secondary school, high school and continual high school, the province has 302/536 students winning prizes making up 56.3%, which included: 16 first prizes, 61 second prizes, 106 third prize and 119 consolation prizes.

The national exam for gifted students at Grade 12 school year 2010-2011, the province has 60 students attending in 10 subjects. There are 58 students winning prizes, accounting for 96.67% of the total number of students tested, including: 18 second prizes, 28 third prizes and 12 consolation prizes. Vinh Phuc ranked No. 1 on the proportion of students awarded over a total of 70 participant units in the country. There are eight out of 10 subjects tested, 100% of the students in the team won prizes, seven students were tested round 2. The strength of the quality of Vinh Phuc gifted students continue to be asserted as one of the provinces and cities having higher number and quality of prizes nationwide.

The exam of math solution on Casio calculator in the area of plain provinces held in Ninh Binh, Vinh Phuc had 19 students winning prizes,

including: two first prizes, four second prize, 7 third prize and 6 consolation prizes, the team stood at the third position.

At the competitions solving math in newspapers and magazines last year: Vinh Phuc had 16 students winning prizes of Newspaper of Mathematics and Youth, which had an excellent prize, a second prize, 3 third prizes and 11 consolation prizes. Excellence Award is by Nguyen Manh Quan Grade 12 specialized math, Vinh Phuc gifted high school. Yen Lac High School, Yen Lac district is the unit having good movement in the competition and had five students winning prizes accounting for 60% of the province. Notably in this contest, the movement of self-learn to improve knowledge has become routine in many schools. Many schools, many students of all levels have booked newspapers regularly to solve math in the newspapers and magazines. It is also a way to learn, improve independent thinking, creativity of the school youth in Vinh Phuc.

Over the past six years, under the invitation of the Singapore Mathematical Society through the Mathematical Society of Hanoi, Vinh Phuc province has consecutively sent delegation of intermediate school students (secondary and high schools) to attend the Singapore Open Mathematical Olympiad States for the countries in Southeast Asia. This is a regional exam (International) having characteristics and requirements of international integration so subjects and tasks of all students are in English. In this school year, Vinh Phuc had 5 / 10 winning medals (4 silvers, 1 bronze). In recent years, the number of pupils and students of Vinh Phuc has gained more and more scholarship for studying abroad. The result confirms the progress in access to educational integration of the province. It is a motivation for a number of key high schools toward teaching natural science subjects: Mathematics-Physics-Chemistry-Biology-Informatics in English.

With the investment on the collaboration, discovery and fostering gifted students cultural subjects; the educational industry is also interested in the discovery and fostering athletic and art ability, which has achieved many results;

In the school year, the industry has organized many sports, art tournaments; selecting gifted students and establishing teams attending national competition in 2012 and music competition nationwide in 6 / 2011.

Especially, in April 2011, in the Milo Football Cup Zone I consisting of 15 Northern provinces, the team of Vinh Phuc high school students won the first prize, the secondary school football team won the second prize and allowed to attend the National Final Round in 6 / 2011.

The results confirmed the discovery and fostering gifted students of Vinh Phuc have been implemented with high efficiency and quality”.

Quoted from: Hoang Minh Quan- Director of Vinh Phuc Education and Training Department – on May 2011

Overall assessment: In the recent years, the quality of education has changed sharply. The basic indicators of the province's educational development have been significantly improved to contribute effectively to serve the socioeconomic development of Vinh phuc Province.

2.3. Information Systems Success Model

2.3.1 What is the Information Systems Success Model

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 (Aladaileh, 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.

According James at el. (1996), the subject of information systems 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. Otherwise, IS effectiveness is defined as the extent to which a given information system actually contributes to achieving organizational goals, i.e. its effect on organizational performance (Hamilton & Chervany, 1981). However, there is no consensus among IS researchers on the conceptualization and operationalization of IS effectiveness (DeLone & McLean, 1992; Goodhue, 1992; Hamilton & Chervany, 1981; Ives & Olson, 1984; Miller & Doyle, 1987; Shirani et al., 1994; Srinivasan, 1985; Symons, 1991; Zmud, 1979).

To provide a common and comprehensive definition of IS Success including different views of evaluation information system, DeLone and McLean reviewed the current definitions of IS success and their relative measures, and classified them into six major categories. Thus, they created a multi-dimensional measurement model with interdependence between different types of success (DeLone & McLean 1992).

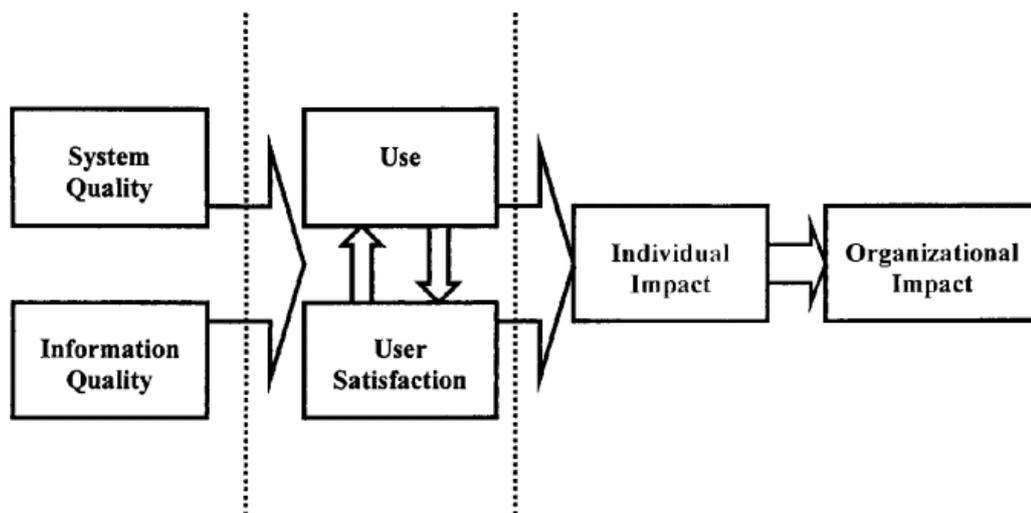


Figure 4. IS Success Model (Delone and Mc Lean, 1992)

This is the one of the most commonly cited models for IS success which 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.

The ideal of this IS success model is reflected in the organization impact; the organization impact is influenced by the individuals 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.

Based on research contributions for original of IS success model paper, and based on changes in the role and management of information systems, DeLone & McLean had an updated model from the original success model by the newer model as following:

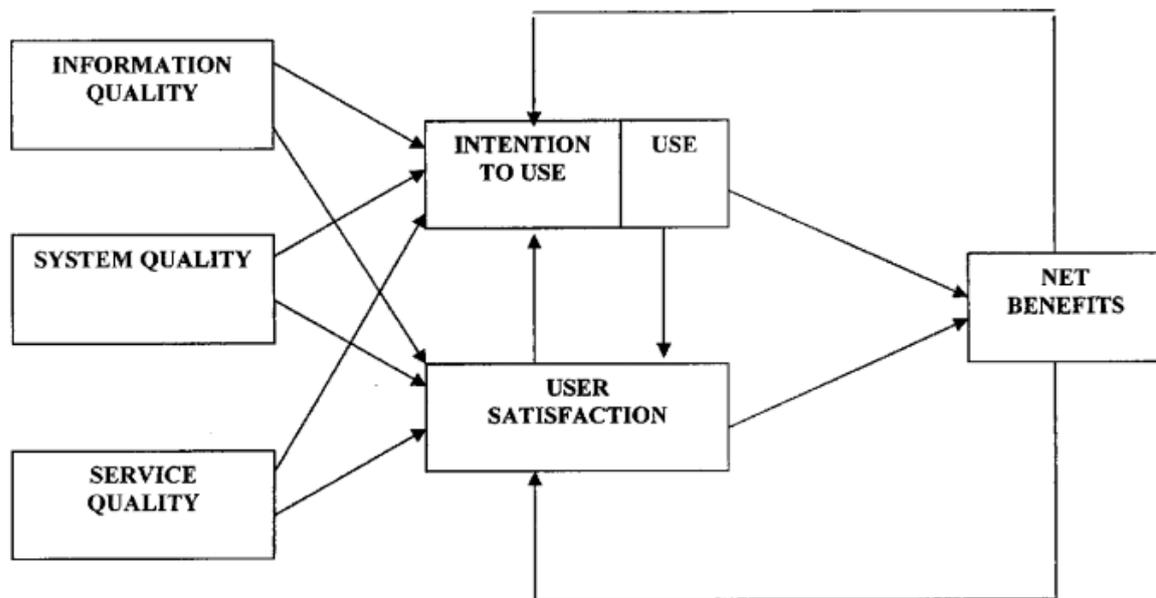


Figure 5. Updated IS Success Model (DeLone & McLean 2003)

In the next session will be describes on detail of components of IS success model.

2.3.2. 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. Information quality is the characteristic of the product provided by the ISs, such as timeliness and completeness (DeLone & McLean,

2003). Huh et al. (1990) defined four dimensions of information quality: accuracy, completeness, consistency, and currency.

2.3.3. System Quality

System quality is measured by attributes such as ease of use, functionality, reliability, data quality, legibility, and integration (DeLone and McLean, 2003). System quality includes: response time, convenient access and use the language of the character, meet the requirements of users, troubleshooting, data and system security model, procedure documentation, and the integrity of the system (according to the study 1997 of Eldon).

In the modified IS success model (DeLone & McLean, 2003), the measure of the system quality has been included adaptability, feel the usefulness, reliability, response time and feel the ease of use. In this study, based on previous studies, the variables involved in electronics were viewed as very important. System quality has been included response time, reliability, data accuracy, completeness, flexibility, ease of use and latest information.

2.3.4. Services Quality

Service quality has been defined as the degree of discrepancy between customers' normative expectations for service and their perceptions of service performance. The seminal work on service quality is that of Parasuraman et al. (1988), which 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. According Pitt et al (1995), the service quality construct was measured by four indicators: reliability, responsiveness, assurance, and empathy.

According Kettinger & Lee (1994) and Pitt et al (1995), Service quality of information system is service measure related to recipients of information and quality of human services that staff provides through information systems. In 2003, DeLone and McLean introduced the concept of quality of service as support of users by relevant IS, and measured by reliability, responsiveness and understanding of support organizations.

2.3.5. User Satisfaction

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.

2.3.6. Organizational Impact

Organizational impact represents the firm-level benefits received by an organization because of IS applications.

Several authors have developed constructs to measure IT impacts on organizations. Mahmood and Soon (1991) studied IT impacts on organizational strategic variables at two levels: the organization and its parent industry. At the organizational level, IT impacts organizations by affecting competitive forces (Porter, 1985). IT impacts the industry in which the firm competes by changing its markets, products and services or the economics of production (Mahmood and Soon, 1991).

In the present context, a process model has three components: the creation a system, the use of the system, and the consequences of using this system. Each of these step is a necessary condition, but not enough to result. For example, without using the system, there may be no consequences or benefit. However, the use of the system, even widely used, it is inappropriate and or lack of information may be no benefit. Therefore, to understand fully the dimensions of IS success, an incorrect model is needed.



The creation of the D&M IS Success Model was promoted by knowledge of the process of information systems and their impacts. Otherwise, as Seddon (1997) has found, the application of our model to make experimental research requires a specification that is not the context of the model. There are 3 parts in here, too: the first is production, the second is use and the third is net benefits. As discussed before, it now seems suitable to add a third dimension, QUALITY of SERVICE, with two features of the original system, QUALITY of SYSTEM and QUALITY of INFORMATION. In contrast, as discussed before, it appears more parsimonious to combine individual and national impacts into a single variable, NET BENEFITS.

This new single variable, NET BENEFITS, sets out three issues immediately that must be taken into account: what qualifies was seemed a “benefit”? For whom? And what level for analysis? In the original construction of the D&M Model, the term “impact” was used. Seddon (1997) used “consequence” and “net benefit” in his characterization of the result. We prefer “NET BENEFITS” ourselves because our original IMPACTS may be positive or negative, this leads to a confusion that may be make a good results or a bad results. Moreover, the inclusion of “net” in NET BENEFITS is important because no result is completely positive without any negative consequences. Therefore, “net benefits” may be the most accurate descriptor of the final success variable.

The second issue which is concerned is: benefits for whom – the designer, the sponsor, the user, or others? Different actors or players may have different ideas as to what makes their benefit. Therefore, it’s too difficult to define these NET BENEFITS without first defining the context or frame of reference. In fact, D&M Model that does not define this context is a detail matter, not oversight. The focus of any proposed research has to be defined. Our model may be useful for Microsoft and the consumer community. However, each model may have a very different definition of what makes net benefits and thus IS success.

Quoted from: Information Systems Success Revisited- William H. DeLone Kogod -College of Business American University, Ephraim R. McLean -Robinson College of Business Georgia State University



2.4. Model of Education Management Information Success in High Schools in Vinh Phuc Province

Education management information system in Vinh Phuc province has been built and grown with the development of education management system. Activity of education management information is one of many important tasks for the management, planning of Department of Education and Training and schools including high schools.

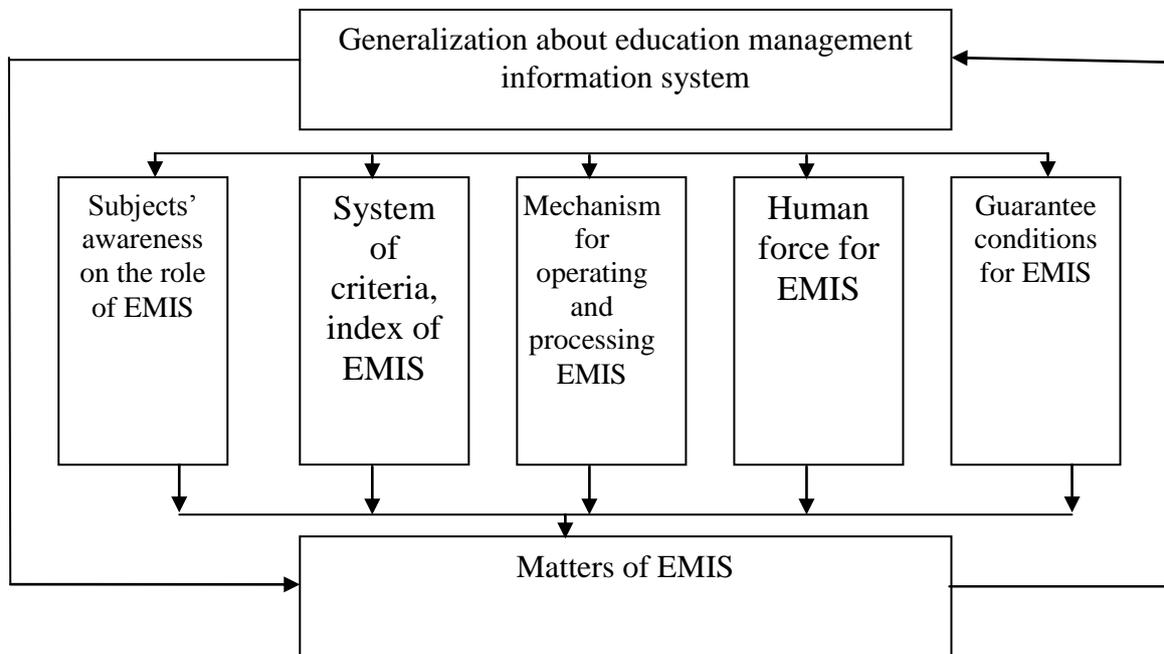


Figure 6. Logic study the state of EMIS in high schools in Vinh phuc Province

- Unifying the entire education management information of Department of Education and Training, responsible for collecting, processing, storage and dissemination of information.

- Supervising the building of a complete EMIS of the province's entire education sector, standardizing information operation and applying IT in the work of

education management information from the Department to units and Offices of Educations.

- Guiding and speeding up the work of statistics and reports for school units in the form of periodical official statistics of the Ministry.

- Organizing and participating in research projects to improve the work of the education management information of the whole sector.

- Coordinating with other departments and organizations within and outside the province to collect and exchange data on education and training and other data relating to the province's education.

However, since there is no consensus, the sources of data are not verified. As different requirements of departments, providing information from the grassroots level is heterogeneous.

Division of Information Management in high schools is responsible for:

- Collecting, making education statistical report and submitting to the Department of Education and Training, education management superior agencies and relevant agencies in districts.

- Attending organizing professional training courses by the Department.

- Storing Education & Training data of the school.

With the decentralized management structure as above, the information channels operating in the province's education management system follow two directions: from the top down and bottom up. For example: all documents, suggestions ...are bottom up, all decisions and directions documents are from the top down.



Chapter 3 Research Methodology

3.1. Research Framework

First, it is too emphasized that this research focuses on education management information system (EMIS). And I was considered the model of success information system in the context of management information system in line with the culture of Vietnam.

To measure the success of EMIS in Vietnam, system quality, information quality and service quality are three very important variables. It was also considered the most important thing to make the system successful is the benefit and satisfaction of users. For EMIS in particular, benefit and satisfaction of users is education and training sector.

Update DeLone and McLean IS success model DeLone and McLean (1992) extensively reviewed IS success literature and proposed the six dimensions of IS success model. The six dimensions for measuring IS success are system quality, information quality, user satisfaction, IS use, individual impact and organization impact. But in this research we just use system quality, information quality, and service quality.

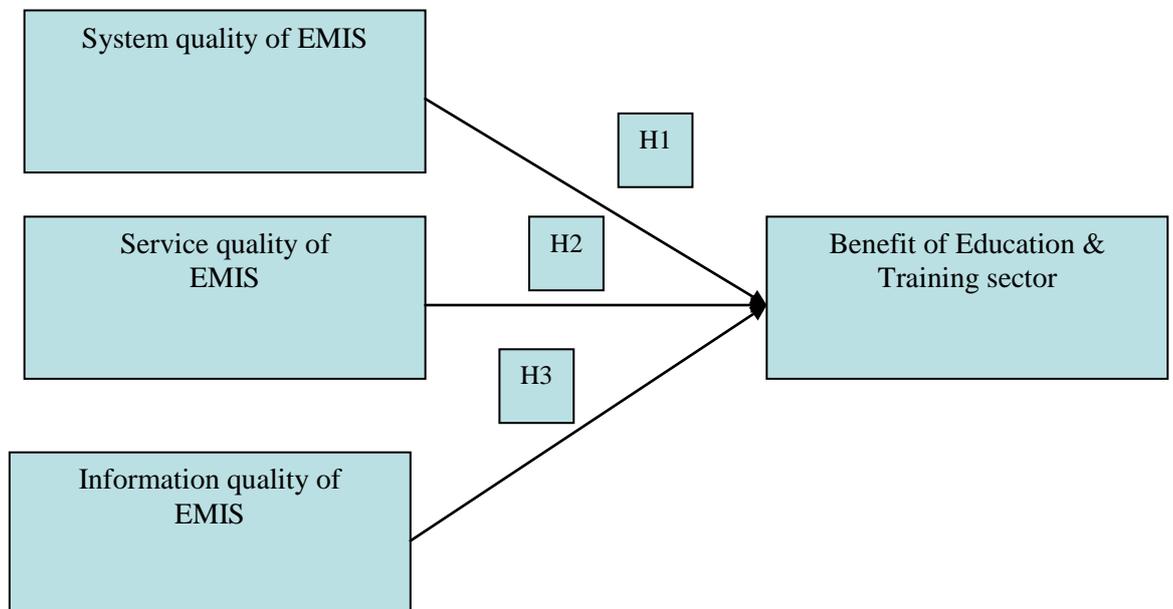


Figure 7. Research Framework



3.2. Research Hypothesis

H1: The system quality of EMIS has positive impact on the Benefit of Education & Training sector.

H2: The service quality of EMIS has positive impact on the Benefit of Education & Training sector.

H3: The information quality of EMIS has positive impact on the Benefit of Education & Training sector.

3.3. Measuring Variables

Table 4. Measuring variables

Variable	Measurement	Questions
System quality of EMIS	Design is friendly (SQ1)	Design of the EMIS is user-friendly
	Suitability for users (SQ2)	The EMIS is suitable for users
	Quick response (SQ3)	The EMIS has quick feedback
	Easy search information (SQ4)	The EMIS makes searching very easy
Service quality of EMIS	Reliability (SV1)	Information of EMIS is highly reliable
	Highly secured service (SV2)	Information of EMIS meets users' needs well
	Meet the specific needs of users (SV3)	Information of EMIS provides the best monitoring service
	Provide monitoring service (SV4)	EMIS provides monitoring service
Information quality of EMIS	Specific (IQ1)	Information of EMIS is specific and precise
	Fully and involved (IQ2)	Information of EMIS is full and involved
	Rich information (IQ3)	Information of EMIS is very rich and diverse
	Easy to understand (IQ4)	Information of EMIS is easy to understand
Benefit EMIS	Updated regularly (IQ5)	Information of EMIS is updated regularly
	Positive attitude in evaluation (BF1)	I have a positive attitude evaluation towards the EMIS system function
	Perceived utility (BF2)	I think that the perceived utility about the system is high

Satisfied with the EMIS system (BF3)	I am satisfied with the system. I am always ready to use in the learning process and research
Positive attitude (BF4)	I always have a positive attitude when system used in study and research



3.4 Data Collection

3.4.1. Measurement scale

We use 5-point scale Likert to analyze:

5-point scale Likert includes: "1" = strongly disagree, "2" = disagree, "3" = no comment, "4" = agree, "5" = strongly agree

3.4.2. Sampling method

Choose random samples of system users. That's the way of how to choose people from the main set of questionnaires to 210 schools' managers, teachers and officers. The random sampling can be carried out according to the way of sampling without replacement or by sampling with replacement. The result of this selection is the random sample and when the survey was completed, 160 questionnaires were collected.

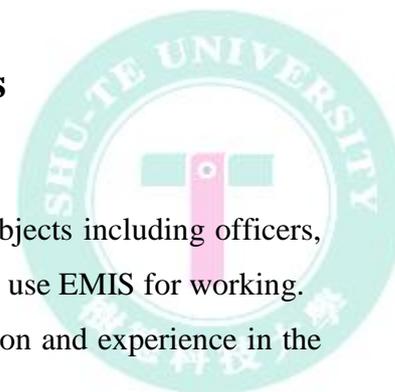
3.4.3. Pilot survey

There will be having a pilot survey before conducting the main survey.

Purpose: Check whether the proposed models are well developed and suitable for analysis of EMIS Success. It also examines the appropriateness of questionnaire designed for respondents to answer the questions.

The questionnaires are sent to individuals who have used the EMIS for working, they are schools' managers, teachers and officers.

Chapter 4 Research Results



4.1. Sample Description

The research survey was conducted on the groups of objects including officers, teachers and managers of Nguyen Viet Xuan High School, who use EMIS for working.

The survey information includes: gender, age, occupation and experience in the use of EMIS.

Table 5. Description of samples

Measure	Item	Frequency	Percentage (%)
Gender	Male	59	36.9%
	Female	101	63.1%
Age	From 18 to 25	92	57.5%
	From 25 to 40	57	35.6%
	Over 40	11	6.9%
Experience of computers	<10 years	70	43.8%
	>= 10 years	90	56.3%

Look at Table 5, we see that the male gender is 59 people accounting for 36.9% while the female is 101 people accounting for 63.1%.

On Age, the number of people under 25 is 92, accounting for 57.5%. The people aged from 25 to 40 are 57, accounting for 35.6% and the remaining number of people aged greater than 40 is 11, accounting for 6.9%.

On experience in using the EMIS system: the number of people who has less than 10 year experience using the software is 70, accounting for 43.8%, the remaining number of people who has more than 10 year experience using the software is 90, accounting for 56.3%.

4.2. Descriptive Statistics of Research Variables

The data are statistical analyzed though table 6. The norms measure about system quality of EMIS though norms: SQ1, SQ2, SQ3, SQ4 also concentrate measure at relative high level, reach average score from 3.59 to 3.74 in total of 5.

The norms measure about information quality though norms: IQ1, IQ2, IQ3, IQ4, IQ5. The standard deviations have value from 0.749 to 0.787.

The norms measure about system service quality of EMIS though norms SV1, SV2, SV3, SV4 also reach high average score, the minimum is 3.65 in total of 5, as a whole is good.

Table 6. The statistical descriptive norms of variables Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
SQ1	160	1	5	3.68	0.755	0.571
SQ2	160	1	5	3.68	0.755	0.571
SQ3	160	1	5	3.59	0.812	0.659
SQ4	160	2	5	3.74	0.738	0.544
SV1	160	2	5	3.70	0.742	0.551
SV2	160	1	5	3.66	0.761	0.579
SV3	160	1	5	3.65	0.771	0.594
SV4	160	2	5	3.68	0.721	0.520
IQ1	160	2	5	3.70	0.767	0.589
IQ2	160	1	5	3.61	0.785	0.616
IQ3	160	1	5	3.60	0.787	0.619
IQ4	160	1	5	3.66	0.760	0.577
IQ5	160	2	5	3.71	0.749	0.561
BF1	160	2	5	3.70	0.767	0.589
BF2	160	1	5	3.60	0.787	0.619
BF3	160	1	5	3.69	0.779	0.606
BF4	160	1	5	3.65	0.762	0.581
Valid N (list wise)	160					

4.3. Factor Analysis

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

First, to assess effectiveness and determine the structure of each factor, with VARIMAX Rotation is used to analyze factors, examining the value when building a factor with the relevant targets. In other words, it must show a relatively high correlation between the targets (convergent validity) and low correlations between items of construction that are expected to be different. The Table shows the results of the VARIMAX Rotation on 17 initial targets limited by four factors.

Table 7. Results of the rotated VARIMAX of norms

Factor-Loading					
No	Item	System Quality	Service Quality	Information Quality	Benefit
1	SQ1	0.940			
2	SQ2	0.940			
3	SQ3	0.881			
4	SQ4	0.907			
5	SV1		0.687		
6	SV2		0.939		
7	SV3		0.617		
8	SV4		0.580		
9	IQ1			0.942	
10	IQ2			0.639	
11	IQ3			0.917	
12	IQ4			0.841	
13	IQ5			0.941	

14	BF1				0.942
15	BF2				0.917
16	BF3				0.838
17	BF4				0.917
% of Variance		25.836	22.639	18.272	17.426

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

Table 7 shows that all 17 targets have the values of their coefficients > 0.50 so we see that the effect of construction and structure of targets of these factors will ensure the effectiveness and reliability.

4.4. The Reliability and Validity of the Variables

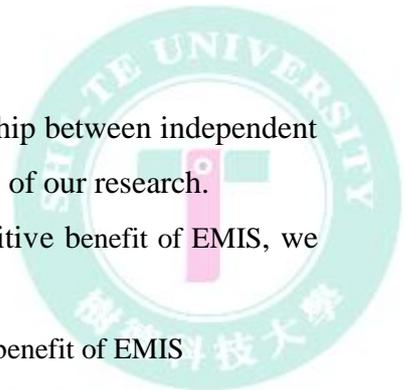
To check the reliability of the structure of the targets, to ensure that the measurement scale for the design of our questions is highly appreciated and it is representative of each variable, using Cronbach α , the reliability evaluation includes: system quality, information quality, service quality and performance.

Construction with Cronbach α under 0.7 will be deleted. Cronbach of α (alpha) is the coefficient of reliability. It is often used to check the structure of each element in a sample questionnaire. During testing, we found that the Cronbach α were all greater than 0.7, that means that the structure is highly reliable.

The results are shown in Table 8.

Table 8. Results of the reliability of factors

Factors	Items	Cronbach α
System Quality	4	0.779
Service Quality	4	0.794
Information Quality	5	0.825
Benefit	4	0.715



4.5. Regression Analysis

In this study, I use linear regression to examine the relationship between independent variables and dependent variables in order to test the hypothesis of our research.

To test the effect of system quality (SQ) having a positive benefit of EMIS, we use the hypothesis H1 as one of the research objectives.

H1: The system quality of EMIS system has a positive benefit of EMIS

H2: The service quality of EMIS information has a positive benefit of EMIS

H3: The information quality of EMIS service has a positive benefit of EMIS

Regression analysis for Testing Hypothesis H1, H2, H3

The dependent variable is: Benefit. And the independent variable is: System quality, Service quality, Information quality

Table 9. Results of testing hypothesis H1, H2, H3

Construct	Unstandardized Coefficients B	Standardized Coefficients B	t value	R ²	Adjust R ²	F value
(Constant)	-0.056		-0.521			
System Quality	0.084***	0.352	7.745	0.889	0.887	416.254***
Service quality	0.116**	0.121	2.836			
Information quality	0.561***	0.565	14.645			

Dependent variable: Benefit

*** P < 0.001, ** p < 0.01, * p < 0.05, + p < 0.1

The final model shown in Table 9 has a good fit (F = 416.254, p = 0.000). And at the level of significance of 0.05, hypothesis H1, H2, H3 is vindicated specific: the System quality, Service quality, Information quality has a positive benefit of EMIS.

Multiple regression models are:

$$BF = 0.084 * SQ + 0.116 * SV + 0.561 * IQ$$

We can see in the table R² value is 0.889, meaning that the explanation ability is good for our dependent variable, benefit. In detail: 88.9% effect to benefit of EMIS

system is because of 3 factors in model: EMIS system quality, information quality and system service quality, the rest 11.1% is from external factors.

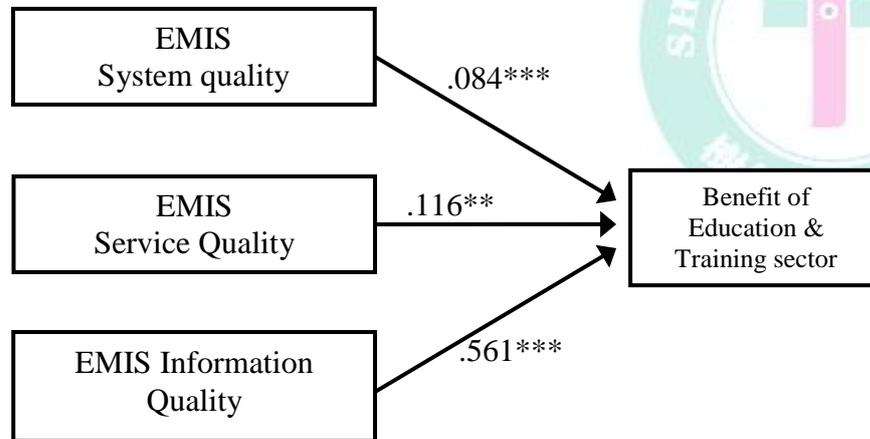


Figure 8. Coefficients of the research model

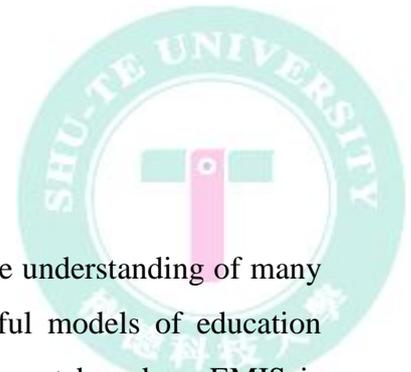
4.6. Discussion

The objective of this research is to study the satisfaction of EMIS users in Nguyen Viet Xuan High School. To assess performance, researchers have studied and developed the research models from the model of information system success (Delone & McLean, 1992, 2003) with the factors including quality system, information quality, service quality and performance. After the research model is designed, research questions are made, including 18 questions of four factors above and have conducted many surveys on various topics. Researchers have compiled the survey results and used the software SPSS 15 for data counting and analyzing, determining the reliability and accuracy for the success of the research model. All the hypotheses were tested by the field survey data and analysis that are fully reflected above. Results of the research hypotheses are shown in the Table below.

Table 10. Results of testing hypothesis

Research Hypotheses	Results
H ₁ : The EMIS system quality has a positive effect to Benefit	Supported
H ₂ : The EMIS Service quality has a positive effect to Benefit	Supported
H ₃ : The EMIS Information quality has a positive effect to Benefit	Supported

Chapter 5 Conclusions



5.1. The Findings and Contributions

The main contribution of this research is to increase the understanding of many people about how to identify, evaluate and develop successful models of education management based on EMIS. Success in education management based on EMIS is defined as a polyhedron that can be built and evaluated based on four factors include: system quality, information quality, service quality and efficiency of users, ...Every success factor is defined as a measure that is measured by collecting assessments of a number of factors obtained through surveys. The overall success of education management based on EMIS can be evaluated by the factors. A low score for any success criteria that means deficient in that and suitable efforts can be used to overcome the low scores.

5.2. Suggestions

Through analyzing the research model above, to measure educational management system based on EMIS that has been successfully developed and the structure of the factors presented in DeLone and McLeans (2003) also confirmed that in the current context in Departments of Education of the provinces in Vietnam, to apply the education management system based on EMIS is successful.

This study also makes the management education based on EMIS more effective. The research results have emphasized the importance of hypothesis, multi-dimensional analysis approach. System quality, information quality, service quality and benefits of using belong to the effective level of impact (DeLone and McLeans 2003). Results of the study have encouraged EMIS education management based on the evaluation of system quality, information quality, service quality and users' benefits. It is based on current technical assessment of individuals on success system EMIS.

The influence of the education management system EMIS has a major impact on innovation and improving the education quality of Vietnam in general and high schools in Vinh Phuc province in particular. In Vinh phuc, semi-public high schools

have just been changed into public ones so the management of the Department of Education will meet many difficulties because the knowledge of information technology is asynchronous. Therefore, the presence of EMIS is really a solution of the schools as the EMIS will be the means for supporting, exchanging and updating information between the schools and the Department of Education most effectively.

After the success of this research, I'd like to contribute an important part so that education administrators in Vietnam and especially high schools in Vinh Phuc province can deploy the EMIS system effectively to improve the quality of education.

5.3. Research Limitations

Although having proven the successful model of the research, the research has still some limitations, such as:

Firstly, our sample study is mainly officials, teachers and workers in the high schools in Vinh Phuc province so the research results primarily suit for administrators, teachers and workers in the high schools in Vinh Phuc province. Therefore, the research results may not match the reality in primary and secondary schools in some districts of the province because the level and condition of approaching and exploiting the system are not synchronous.

Secondly, the studies do not control the samples that do not actually use the EMIS for document reference, exchange of experience, method improvement,...in the management of teaching and learning in schools. The people taking part in answering questions have not used the system, the accuracy is not high. And also for reason of time, for not being single-minded, ticking questions and samples is just perfunctory.

5.4. Proposing Future Research

The research has given some certain results. However, to research and to develop successfully the management system EMIS in high schools in Vinh Phuc province in particular and Departments of education and training throughout the country in general still need to pay more attention by researchers to find out strengths, eliminate weaknesses, unnecessary points to find out more comprehensive and complete elements, making a decisive contribution to the successful implementation of EMIS management system in Vietnam's education sector.

Future studies can use multiple methods (focus group, expert interviews) on how to approach to determine the relationship between system quality, information quality, service quality and EMIS users, identify the most appropriate solution to implement the management system EMIS at the educational establishments in Vietnam.

The study will be tested on different groups of object: administrators, teachers, and office staff, at school levels nationwide so that there will be a comprehensive view and analysis to ensure feasibility for the implementation of the practical application of the management system EMIS.

We shall continue to study further and consider development measures in order to have a richer range of insurance for scale structure.

In conclusion, the statistical results indicated that the test of the measurement model including convergent and discriminate validity measures was satisfactory.

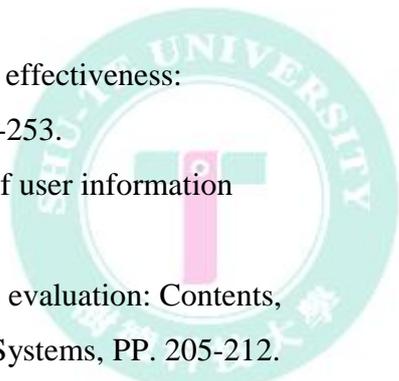
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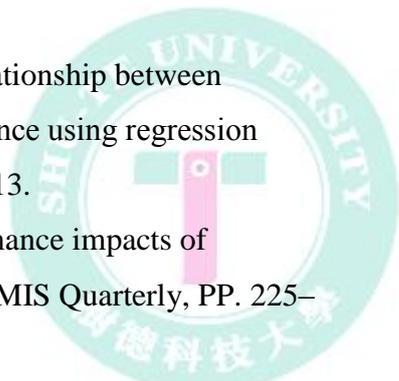


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SURVEY FORM

EDUCATION MANAGEMENT INFORMATION SYSTEM IN VINH PHUC HIGH SCHOOLS



Title: Assessing the effectiveness of education management information system in Vinh Phuc high schools"

PART 1: GENERAL INFORMATION:

This section includes some of your personal information. Please check the box corresponding to your personal choice

1 Gender Male Female

2. Age: Between 18-25 Between 25-40 Over 450

3. How long have you used the education management information system?

Less than 10 year Over 10 years

PART II: EDUCATION MANAGEMENT INFORMATION SYSTEM

Please circle the number corresponding to your personal choice, the criteria with the symbol "1" = strongly disagree, "2" = disagree, "3" = no comments, "4" = agree, "5" = strongly agree

No	Item	Strongly Disagree	Disagree	No comments	Agree	Strongly Agree
I.	System quality					
1	Design of the EMIS is user-friendly	1	2	3	4	5
2	The EMIS is suitable for users	1	2	3	4	5
3	The EMIS has quick feedback	1	2	3	4	5
4	The EMIS makes searching very easy	1	2	3	4	5
II.	Information Quality					
5	Information of EMIS is specific	1	2	3	4	5
6	Information of EMIS is full and involved	1	2	3	4	5
7	Information of EMIS is very rich	1	2	3	4	5
8	Information of EMIS is easy to understand	1	2	3	4	5
9	Information of EMIS is updated regularly	1	2	3	4	5
III	Service quality					
10	Information of EMIS is highly reliable	1	2	3	4	5
11	Information of EMIS meets users' needs well	1	2	3	4	5
12	Information of EMIS provides the best monitoring service	1	2	3	4	5
13	EMIS provides monitoring service	1	2	3	4	5
IV	Benefit of EMIS					
14	I have a positive evaluation towards system function	1	2	3	4	5
15	I think that perceived utility about the system is high	1	2	3	4	5
16	I am ready to use in the learning process and research	1	2	3	4	5
17	I always have a positive attitude when system used.	1	2	3	4	5

Thank you very much