

**THE EVALUATION OF THE INFORMATION SYSTEM
SUCCESS OF MARTYR AND VETERANS FOUNDATION
BY DELONE & MCLEAN SUCCESS MODEL**

Ebrahim Normohammadi (corresponding author)*

Maziar Shajari**

Abstract

The present study evaluates the information success of martyrs and veterans foundation as one of the pioneer organizations in using information systems in Iran by DeLone & McLean success model. The study is applied in terms of purpose and descriptive-survey in terms of method. The study population is all managers and employees in BA and above of main office of martyr and veterans foundation of Isfahan province. The study population by Cochran's formula is 100, of which all 100 people are respondents. The study measure is a standard questionnaire based on the model evaluating the factors of information quality, system quality, user application, user satisfaction regarding system success evaluation. Face validity of this questionnaire is supported by supervisor. After data collection, their analysis is performed at descriptive and inferential levels by SPSS and Excel software. Regression is used for hypothesis test in this study. After final analysis we found that martyr foundation information system was successful one and based on the statistics, we found that in this organization, system quality led to high application of user and users satisfaction led into high influence. The results of the study can be used as a model for managers and designers of information systems that which factors can lead to high success of information systems as existing organization and investment in this regard should be applied with which method and goals.

Keywords: Information system, Information quality, System quality, User application, User satisfaction

* *MA student of administrative management, Information systems, Islamic Azad University of Dehaghan branch*

** *Lecturer of Islamic Azad University of Dehaghan branch*

Introduction

Today, based on the development and variety of products and services of organizations and serious competition among them, the organizations are exposed to changes and the final success and even the survival of organizations depends upon the organization ability to absorb and use new information and technologies to create advantage in organization. Thus, organizations attempt for suitable management of information systems to achieve new technologies and information timely and apply them optimally (Ramezani and Basaghzade, 2011).

Information system collects, processes, stores, analyzes and disseminates information for specific purpose. Like any other system, information system has input and output. By some technologies as computer, this system processes the inputs and sends outputs via electronic networks to users or other systems (Ramezani and Basaghzade, 2011).

Four main applications of information systems include financial management and accounting, materials control and inventory, receiving and fulfilling order, sale force automation (Haghighnasab and Taghavi, 2012).

Private sector has been pioneer compared to public sector to use information systems to achieve strategic advantage and achieving financial benefits and business but there are some signs of the changes of conservative approach of public sector in using information systems. Considerable development of information systems in organizations has caused that modern systems by higher software and hardware applications are replaced by traditional information systems. In addition, the emergence of communication technologies as internet had effective results. These progresses have guided the organizations to evaluation of effectiveness of information systems. For more than two decades, the survey of the success of information systems has received much attention from the studies. Some studies aimed to identify the effective factors on success of information systems and others evaluated the success of information systems. Generally, the studies refer to various dimensions of information systems success and we can refer to the quantitative criteria as profitability, qualitative criteria as effectiveness and improvement of decision making or considering different beneficiaries as managers and employees. Each beneficiary has his own success criteria. Some of the studies show the great importance of organizational factors in implementation of computer-based information systems (Ang et al., 2001).

To decide in current organizations, managers are encountered with many challenges. If we accept the view of Herbert Simon regarding the equality of “management” and “decision making”, according to some of theorists who believe a good decision is the one 80 to 90% dependent upon information and 10 to

20% dependent upon skill, power and experience of manager, the importance of information is defined (Movahedi and Asebi, 1998).

By clarification of the importance of information, the important position of information systems in organizations is revealed clearly. At first, some of the concepts in IT are necessary from the view of some of the theorists (Strassmann, 2009). Information systems are introduced the systems including hardware, software, communication software, data or information, people and procedures or work processes.

In another definition, management information system is defined as environmental data are collected and transaction data and organizational operation are registered and then, they are filtered, organized and selected and are presented as information to managers and provide tools for managers to produce required information (Pai et al., 2011).

Other researchers introduce management information system as integrated system composed of user and machine to present information to support operation, management and decision making in organization and this system applies computer hardware and software, guidance, instructions, some models for analysis, planning, control and decision making and a database (Azeemi et al., 2013). Despite various definitions of information system, for the purposes of this study, information system is referred to a computer-based system presenting required information of users in a definite organizational field (Livari, 2005).

In a varied, dynamic and competitive environment, organizations try to increase efficiency and effectiveness. To achieve this goal, information systems are considered considerably and organizations accept heavy investment to create and develop these systems (Seddon, 2001). Thus, evaluation of the success of information systems to perceive the value and efficiency of information systems and justification of considerable volume of investment in creation and development of these systems is of great importance.

The most comprehensive study on success evaluation of these systems is success model of information systems of Delone and Mclean (Delone and Mclean , 1992). These two authors state that various studies have been conducted in the past decade regarding effective factors on success of information systems. Various researchers have considered different aspects of success and this made comparison as difficult. These two researchers presented a comprehensive classification for organizing various studies and presenting comprehensive view of information system success. This classification considers six dimensions as important in success of information systems as system quality, information quality, application, user satisfaction, individual and organizational effects. Then, by considering these dimensions, these two researchers evaluated about 180 empirical and conceptual papers and they

classified them based on the dimensions of this classification and presented a comprehensive model. In the present model of these two researchers, the system quality and information quality were effective alone and together on application and satisfaction of user. In addition, the application amount can be effective on user satisfaction positively or negatively and vice versa. User satisfaction and application are direct results of individual impact and finally this effect on individual performance should have organizational effect. Figure 1 shows main model and reference model of Delone and Mclean.

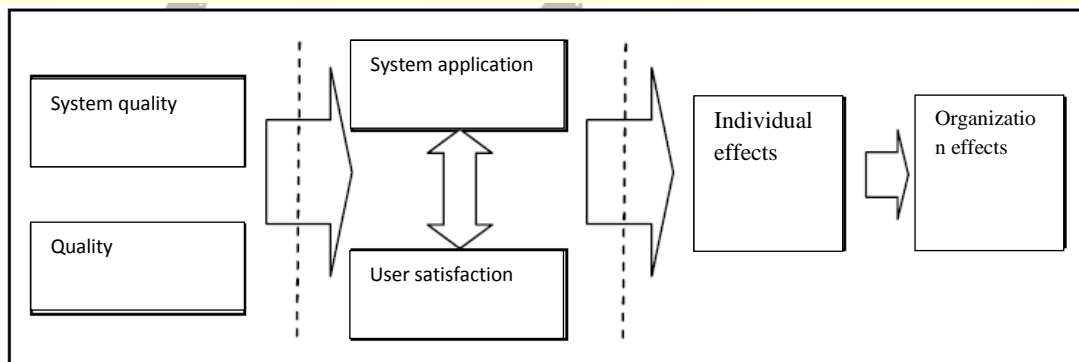


Figure 1- Delone and Mclean model

Study hypotheses

First hypothesis: Quality of information system of martyr and veteran foundation is effective on high application of user.

Second hypothesis: Quality of information system of martyr and veteran foundation is effective on high satisfaction of user.

Study method

Based on the study issue “evaluation of information system success of martyr and veteran foundation, by Delone and Mclean model”, descriptive-survey method is used. The study population is including all employees of main office of martyr and veteran foundation of Isfahan province as 150 people. The sampling is random. The sample size is independent from population volume and depends upon available resources and accuracy. We can say varied populations (the populations with high changes) need great sample size. The study population is 100 obtained by Cochran’s formula. For data collection and measuring study variables, Delone and Mclean standard questionnaire is used. The questionnaire is composed of two parts, first section includes general demographic information regarding the users of

information system of martyr and veteran foundation and second section is about the questions of studied dimensions, information quality, system quality, system application, user satisfaction and individual and organizational effects. Three components of model are used as “system application, user satisfaction, system quality”. The questions of these two dimensions in questionnaire include as: System quality: questions 1-2-3-4-5, information quality: questions 6-7-8-9, user application: questions 10-11-12-13-14-15-User satisfaction: questions 16-17-18-19-20, Cronbach’s alpha is calculated in two stages. At first in pre-test, Cronbach’s alpha is designed for questionnaire and is calculated for 15 respondents and 37 questions. Due to overlapping of some of questions, they are excluded. The questionnaire is tested in main test with 100 subjects and 20 questions. The results of pre-test alpha and final test are shown in the following Table.

Table 1- Cronbach’s alpha for each of six dimensions of Delone and Mclean model in this study

Total	User satisfaction	User application	Quality of system	Quality of information	Test
0.69	0.73	0.72	0.69	0.56	Initial alpha value
0.76	0.75	0.73	0.76	0.79	Final alpha value

In terms of validity of measure, content, structural and concurrent validity are used.

The data entered SPSS 16 software after collection and then are analyzed by software and descriptive indices including frequency, mean, standard deviation and inferential indices as covariance analysis. The hypotheses are tested by regression. Indeed, regression analysis of statistical technique is used for modeling the relation between variables.

Study findings

1- Descriptive statistics

Descriptive findings of study show that 74% of respondents are men and 26% women. The age of 35% of respondents is ranging 41-50 years, 32% ranging 31-40 years, 23% ranging 20-30 years and 10% above 51 years old. Regarding the education of respondents, we can say 51% of respondents are BA, 18% MA and 16% Diploma and 3% PhD. The work experience of respondents based on information: 43% of respondents with the experience 21-30 years, 29% ranging 11-20 years, 19% ranging 5-10 years and 5% above 30 years and 4% below 5 years.

2- Inferential statistics

First hypothesis: Quality of information system of martyr and veteran foundation is effective on high application of user.

H0: Quality of information system of martyr and veteran foundation is not effective on high application of user.

H1: Quality of information system of martyr and veteran foundation is effective on high application of user.

Table 2- General components of regression analysis of first hypothesis

Adjust R Square	R Square	R	Sig	t	Beta	Regression coefficient	Variables	Model
0.454	0.459	0.678	0.000	3.852	-	3.418	Constant	1
			0.000	9.123	0.678	0.601	Information system quality	

The above table shows regression coefficient of information system quality of martyr and veteran foundation and high application of user of system. The correlation coefficient between these two variables is 0.678 and with high significance level (P=0.000). Thus, the relationship between two variables is supported. Based on coefficient of determination R²=0.459, about 46% of high application of user of system are explained by information system quality of martyr and veteran foundation.

The above results show that information system quality of martyr and veteran foundation has positive impact on high application of user of system. The above results show that there is a strong relation between the quality of information system of martyr and veteran foundation and high application of user of system. It means that the higher the quality of information system of martyr and veteran foundation, the higher the application by user and about 46% of entire application of user of system are created by information system quality of martyr and veteran foundation.

Second hypothesis: Quality of information system of martyr and veteran foundation is effective on high satisfaction of user.

H0: Quality of information system of martyr and veteran foundation is not effective on high satisfaction of user.

H1: Quality of information system of martyr and veteran foundation is effective on high satisfaction of user.

Table 3- General components of regression analysis of second hypothesis

Adjust R Square	R Square	R	Sig	t	Beta	Regression coefficient	Variables	Model
0.123	0.131	0.362	0.000	6.296	-	5.660	Constant	1
			0.000	3.850	0.362	0.257	Information system quality	

The above Table shows regression coefficient of information system quality of martyr and veteran foundation and high user satisfaction of system. Correlation coefficient between these two variables is 0.362 and with very high significance level (P=0.000). The relationship between two variables is supported. Based on the coefficient of determination $R^2=0.131$ about 14% of high satisfaction of user of system are explained by information system quality of martyr and veteran foundation. The above results show that information system quality of martyr and veteran foundation has positive impact on high user satisfaction of system. The above items can be interpreted as: There is an average relations between quality of information system of martyr and veteran foundation and high user satisfaction of system. It means that, the higher the quality of information system of martyr and veteran foundation, the higher the high application of user of system. About 14% of high user satisfaction is created by information system quality of martyr and veteran foundation. Based on the increase of competition in current world and increasing environmental confusion, the managers are encountered with many challenges for decision making in current organizations. If we accept the view of Herbert Simon regarding the equality of “management” and “decision making”, according to some of theorists who believe a good decision is the one 80 to 90% dependent upon information and 10 to 20% dependent upon skill, power and experience of manager, the importance of information is defined.

To take decision in organization and coordination of various sectors, managers need timely and high quality information and suitable information system is necessary for current organizations. Thus, information systems have received much attention and organizations accept high investment to create and

develop these systems. Thus, evaluation and identification of success factors of information systems is of great importance to perceive value and efficiency of information systems and justification of great investment volume in creation and development of these systems. Various factors are identified in success of information systems of organizations and in this study, we attempted to evaluate one of the highly applied models in martyr and veteran foundation.

In this section, at first we conclude the results of hypotheses and then the results are compared with the other statistical results of similar studies. Then, we investigate the solutions and some recommendations based on the results.

1- The evaluation and comparison of the results of hypotheses

The evaluation of the results of first hypothesis shows the information system quality of martyr and veterans and high application of user of system. Correlation coefficient between two variables is 0.678 with significance level very high ($P=0.000$). Thus, the relation between two variables is supported. Based on the coefficient of determination $R^2=0.459$, about 46% of high application of user of system is explained by quality of information system of martyr and veteran foundation. The results show that information system quality of martyr and veteran foundation has positive impact on high application of system. The above items can be interpreted as: There is a strong relation between quality of information system of martyr and veteran foundation and high application of user of system. It means that the higher the quality of information system of martyr and veteran foundation, the higher the application of user of system. Also, about 46% of total high application of user of system is created by information system quality of martyr and veteran foundation. The results of this hypothesis are consistent with the study of Hayrey and Lang (2002), Livary (2005) and Wang Livav (2007).

The evaluation of second hypothesis results shows the quality of information system of martyr and veteran foundation and high satisfaction of user. The correlation coefficient between two variables is 0.362 with very high significance level ($P=0.000$). Thus, the relationship between two variables is supported. Based on the coefficient of determination $R^2=0.131$, about 14% of high satisfaction of user are explained by quality of information system of martyr and veteran foundation. The above results show that the quality of information system of martyr and veteran has positive impact on high satisfaction user of system. The above items can be interpreted as: There is an average relation between the quality of information system of martyr and veteran foundation and high user satisfaction of system. It means that the higher the quality of information system of martyr and veteran foundation, the higher the application of system by user and about 14% of high user satisfaction of system are created by quality of information system of martyr and veteran foundation. The results of the investigation of this hypothesis are consistent

with the findings of Mcgil (2003), Roldan and Lil (2003), Hobs and Klobas (2003), Lin et al., (2007), Almotayri (2005) and Wang Liao (2007).

Table 4- The statistical results of hypotheses

Result	R2	P	Correlation coefficient	Hypothesis	No.
Supported	46%	0	0.678	Quality of information system of martyr and veteran foundation is effective on high application of system.	1
Supported	14%	0	0.362	Quality of information system of martyr and veteran foundation is effective on high satisfaction of user.	2

- New form of model based on the statistical results of hypotheses

After the evaluation of the statistical results of hypotheses, we reach new form of Delone and Mclean model with all main dimensions of model. However, some of the relations between the dimensions are excluded due to the results of hypotheses and new form of model is achieved based on statistical results in organization.

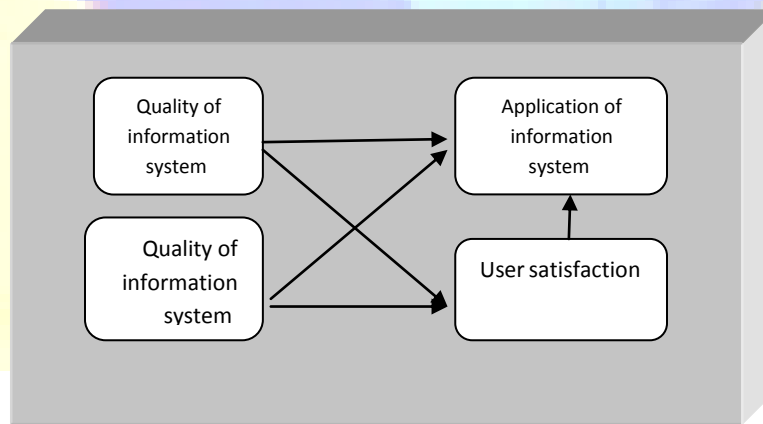


Figure 2- New model based on adjusted model of Delone and Mclean based on statistical results of hypotheses

- The investigation and comparison of descriptive and inferential statistics

As mentioned in previous sections, our questionnaire is composed of 2 questions, descriptive and inferential and its statistical results are explained in section 4. Based on the results of statistical hypotheses and its comparison with descriptive results, which analysis is performed and how is it interpreted?

As shown in charts of descriptive statistics at the beginning of chapter 4, 74% of respondents are men. Also, about 67% of respondents are ranging 31 to 50 years old and 72% have academic education of above BA and 72% have work experience of above 10 years and about 67% have formal employment. Based on the results of inferential statistics, three hypotheses are rejected regarding individual influence. It can be said, as most of participants are men with academic education and work experience above 10 years and formal employment, the employees of this organization have less individual influence of various dimensions of success model and only regarding individual satisfaction of information system are affected and this issue shows that most of employees of this organization have similar gender, age, work experience, education and employment type and have less influence of various dimensions of information system. It seems natural that they are affected by system when they are satisfied of it.

- Recommendations based on the statistical results of hypotheses

Based on the results of study and evaluated results in present study and analyses for applied use of findings, we can present some recommendations as follows:

Based on the positive relation between system quality and user application, increasing capacity of responding information system of martyr and veteran foundation to new demands of work place and increasing system-based communication is associated with other information systems of other relevant organizations associated with each other. Some of the solutions of quality improvement of information system foundation are reduction of time for data processing by information system of martyr and veteran foundation and including mistake correction in this system and reduction of mistakes in system-based programming of martyr and veteran foundation. In addition, it seems that simplification of system by users can help improving its quality. By increasing information system quality of foundation, dependence of users to system and its daily application can be increased. Also, using suitable and updated hardware with suitable speed and quality, can play important role in high application of users of system.

Based on the positive relation between system quality and user satisfaction, we can say improving information system quality of foundation leads to the increase of its user's satisfaction. Thus, general satisfaction of user is increased if information system can meet the new work demands and better

interaction with other information systems. In addition, easy use of mentioned system and increasing processing and reduction of mistakes in designs and system plan can improve general satisfaction of user.

As there is a positive relation between quality of system information with high application of user and improving comprehensiveness, accuracy, validity, reliability, update and suitability of information system of foundation reports can lead to the increase of information quality of this system. As there is a positive relation between user satisfaction and individual effects and direct relation between user satisfaction and high application of system. Thus, indirect methods of improving information quality can lead to the increase of users satisfaction and this increase leads to the increase of individual effects as productivity and effectiveness. Thus, by increasing users satisfaction of information systems of martyr foundation can be influenced by individual factors and they feel real need to their systems. For those users having access to martyr and veteran foundation information system, but not using this system, it is required that this foundation provides suitable mechanism for suitable application of investment. To develop the use of information system of martyr foundation, it is proposed to emphasize on the results of application of this system for users. In addition, it is attempted that middle managers for example the deputies of martyr and veteran foundations and high level managers like deputies of staffs of martyr and veteran foundation and chiefs of offices in towns emphasize on using this system.

- **Researcher recommendations**

- 1- Creating competitive space for organizations and managers as establishing and using management information system are considered as competitive advantage.
 - 2- Considering the ability of managers regarding the application of information system in selection of manager.
 - 3- Creating a supervisory system for suitable evaluation of decisions and performance of managers to avoid using traditional decision making methods.
 - 4- Encouraging private sector for qualitative and quantitative development of services in designing and implementation of management information system.
 - 5- Regulations of subordinate offices to implementation of information systems at appropriate time with exact planning
 - 6- Presenting clear view of organization after implementation of management information system
 - 7- Using the major efforts regarding development of scientific and document planning in the country and using new information technologies in decision making instead of personal experience by managers and employees via holding conferences and scientific workshops regarding the information systems management to be familiar with the benefits of using information systems.
- Recommendation to the future researchers

This study has been conducted in main office of martyr and veteran foundation of Isfahan province. It is proposed to future researchers to conduct similar studies at state offices of other provinces and compare the results of their study with the present study results.

- 2- Based on the existing differences between private and state organizations in terms of legal limitations and authorities, this study can be conducted for other organizations and private companies.
- 3- It is proposed to evaluate the outcomes of establishing management information system in state organizations and offices.
- 4- The identification of weaknesses and strengths of management information systems can be done in state offices.
- 5- The comparison of the management condition of information systems in private and state sector
- 6- Comparison of management of information systems in Iran with other countries.
- Limitations of study

In this study by some measurements as questionnaire, without mentioning the name of respondents, attracting the respondents and adequate explanation of the study purpose, it is attempted to minimize the probable errors of study but this study has some limitations as follows:

- ✓ Some respondents took conservative method in responding the questionnaire questions and the lack of presenting exact views of each study is the first limitation of this study.
- ✓ The underlying conditions of management and organizational space and the view of managers and employees are serious limitations of study.
- ✓ Lack of collaboration of some staffs due to lack of time

Another limitation is confidentiality of information of veteran community (target population) and to deliver questionnaires, we need full coordination and adequate explanations to guards of organization and relevant authorities.

References

- Haghghinasab, Manije; Taghavi Seyede Safie. 2012. The effective factors on propagating e-business in Iranian organizations. *IT management*. 4(10): 25-40.
- Ramezani, Mohammad Rahim; Basaghzade, Narjes. 2011. The impact of absorbing ability and organizational culture on success of manufacturing companies of automotive parts of Gilan province. *IT management of IS implementation*. 3(9):41-68.

- Movahedi, Masood. Masood Asebi. 1998. The comparative study of the role of top managers in implementation and using information systems with emphasis on DSS in state Iranian systems. Management knowledge. 11(43):24-52.
- English References
- Ang C.L., Davies M.A., Finlay P.N. 2001. An empirical model of IT usage in the Malaysian public sector. Journal of Strategic Information Systems;10(2): 159-174.
- Azeemi, Imran Khan, Mike Lewis, and Theo Tryfonas. "Migrating To the Cloud: Lessons and Limitations of 'Traditional' IS Success Models." Procedia Computer Science 16 16 (2013): 737-746.
- DeLone, W. H., and E. R. McLean. 1992. Information systems success: the quest for the dependent variable Information System Research 3 (1): 60-95.
- DeLone, WH, and ER McLean. 2003. "The DeLone and McLean Model of Information Success: A Ten-Year Update." Journal of Management Information Systems 19,(4): 9-30.
- Livari, J. 2005. An empirical test of the delone-mclean model of information system success. The DATA BASE for Advances in Information Systems 36 (2): 8-27.
- Pai, Fan-Yun, and Kai-I Huang. 2011. "Applying the Technology Acceptance Model to the introduction of healthcare information systems." Technological Forecasting & Social Change 78: 650-660.
- Seddon, P.B. 2001. "A Respecification and Extension of the Delone and Mclean model of IS success." Information Systems Research 8, no. 3: 240-253.
- Strassmann, P. 2009. Will big spending on computers guarantee profitability?
- Tallon P.P., Kraemer K.L., Gurbaxani V. 2009. Executives' perceptions of the business

Translated by: 89