The Relationship between Information Systems Success, Organizational Learning and Performance of Insurance Companies

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Abstract

Information system quality and capability allow organizations to focus specifically on the areas that have the greatest impact on organizational performance. When organizational members share results through an information system, and similar models, or business processes, a shared vision is materialized, and communication becomes easier. Thus coordination is carried out more effectively and ultimately it will lead to improved performance. Also an organization without the appropriate organizational learning system will not be able to utilize many aspects of information systems success. Organizations must always be ready to adapt to their environment for survival and show appropriate and timely response to changes. They need to be able to create a culture of learning, transmit and modify their behavior to acquire knowledge and insight. In this study we conduct a quantitative survey based study to investigate the relationship between the success of an information system and performance of Iranian insurance companies with mediating role of organizational learning. A questionnaire was used to collect Data from the insurance industry. Data are analyzed using Structural Equation Modeling. Findings suggest that there is a significant relationship between success of information systems and organizational learning and performance of insurance companies.

Keywords: information systems success, system quality, information quality, service quality, organizational learning, insurance company performance.

1. Introduction

Insurance industry is said to have a large impact on every country's economic infrastructure. This industry by accumulating financial resources and pumping cash into the economic system leads to country's economic growth and development. Insurance companies continue to make heavy investments in their information systems and practitioners regard it as a competitive tool. However the extent of positive impact of these systems on performance is open to question

From the day that a company is born, data are functionally generated and usually gathered and grouped based on the decision making priorities of the system. In today's turbulent competitive environment, making optimal decisions in the shortest possible time is the urgent need of the managers. To succeed in such an environment, managers require smart information systems to be able to use the data and information available in an intelligent way. Information technology also by supporting the flow of knowledge in organization helps Small and large companies to increase their efficiency and productivity. In that respect organizational leaning capabilities is believed to play a mediating role which can facilitate and support this flow within the organization in result of which one can expect higher performances.

However, whether the established information technologies quality have rendered sufficient results to justify their expenses or satisfy user's needs in service industry such as insurance industry and/or if it has had any impact on organizations performance is an open question yet to be answered. According to Howson (2008) Due to recent economic downturn, organizations are increasingly modifying various strategies and quality improvement initiatives to continue viability. Organizations that have invested substantial resources and time into information systems still have difficulty achieving competitive advantages.

2. Theory and hypotheses

2.1. Information Systems

Learning theories have evolved from looking at memorization to understanding, and have often influenced organizational practices. Complementary theories have been developed to address a variety of learning scenarios from simple structured learning to complex unstructured learning domains.

Learning in complex unstructured domains require a strong basis of knowledge and self-monitoring of practice, understanding beyond memorization, include multiple problem scenarios, prior experience, and regular assessment of learning (Patel et al,2009).

Many systems do not provide the necessary capabilities that all users require such as adapting to rapidly changing environments, scalability, and real-time decision making. In order to make the required decisions, users must sift through increasing amounts of information, while maintaining production efficiency. Information processing theory, from cognitive physiology discusses limitations to the amount of information received, processed, and remembered. These cognitive concepts allow further support for research into learning. Organizations have invested in information systems in order to increase information processing capabilities and drive performance. Today's technology savvy users increasingly require their own dashboards, analytics, and report generation through a web-based interface to aid in decision making (Ranjan, 2008 &Schlegel , 2008).

In the past, ESS decisions were typically made periodically regarding strategic items of importance and only within executive staff or only a small percentage of users, as they are expected to yield the most decision making ability. Their use was mandatory, and as a result is often dependent on the support of the executives or individual users. Today IS not only supports strategic decision making, but additional capabilities are employed to support wider ranges of business functions such as operational process improvement, and use of IS is now increasingly being used by various levels of the organization. These systems also focus on the capability to move between aggregated and detailed data, and use key performance indicators to track organizational items. This has allowed line and operational level employees full access to information to make day-to-day decisions (Elbashir, 2008;Schlegel, 2008& McBride, 1997).

IS are key to adapting in dynamic environments, and development, integration and release of resources. Information Technology moved to support day-to-day operations and all aspects of decision making, with differentiation through technology becoming increasingly important (Davenport, 2007).

Firms have made major investments in such systems as enterprise resource planning (ERP), supply chain management (SCM) and customer relationship management (CRM), to achieve organizational performance. Firms need streamlined access and analysis of the underlying information in order to make operational decisions. Strategic organizations sought to improve efficiency through faster and better informed decision making, and looked to technology to enhance strategic and tactical results to improve time to market, connectivity, integration, and visibility into their business. New generations of technology savvy users and executives were finding ways to utilize previously untapped information (Davenport, 2007 &Ranjan, 2008)

IS are becoming more critical to organizations. These capabilities are utilized to increase power of workers to make decisions on factual data. Typically however, only a fraction of this data is housed, and a significant portion resides within firm employees, requiring systems to capture, store, and disseminate this data.

2.2. IS Success

The concept of IS success has been widely accepted as an important criterion for assessing organizational performance due to IS use. In general, IS success has been seen as the degree of organizational performance resulting from the use of IS.

According to DeLone and McLean, individual impact refers to the positive effect of information on individual behavior and organizational impact indicates the organizational level effect of IS on organizational performance.

Along with the concept 'impact', several constructs have been used to evaluate especially 'individual impact', such as perceived usefulness, net benefits, individual job performance, and individual productivity. We conceptualized IS success as consisting of three factors: information quality; system quality & service quality.

Additional research has been targeted quality of information systems output. Information quality refers to information that is accurate, complete, timely, and meaningful in format. Accuracy is most commonly defined as correctness in the mapping of stored information to the appropriate state in the real world that the information represents. Completeness means values for a certain variable are recorded. It focuses on whether all values for all variables are recorded and retained (Narasimhaiah et al, 2010). Timeliness is the delay time between input of information, and output of information to the end user for decision making. Currency is the overall age of the information and reflection of the current information state. Format is the layout design and display of the information output (DeLone et al, 1992 & Yu et al, 2009).

System quality includes the ease of system interaction and use, features and analysis capabilities, reliability or uptime/data consistency, architecture, and accessibility from various areas on-demand, and system factors are seen to promote learning and usage. Ease of use includes the system design and interface; the goal is that if the relative ease of use is high, users will be more inclined to learn the systems. Analysis capabilities include the features and technical characteristics, and have the ability to improve performance of the end-users. Architecture refers to the integration between system services and components. These items is important to learning, as it allows the user to more quickly make decisions and learn additional areas of importance based on system related quality (DeLone et al, 1992; Vandenbosch et al; 1997 & Yu et al, 2009).

DeLone and McLean (2003) add service quality as another measure of IS effectiveness. This is added in response to the changing IS roles of information provider and service provider, and the view of end-users as customers. This allows focusing not only on products but also services of IS area. Applied from marketing measures, the service quality dimensions include reliability, responsiveness, assurance and empathy. The measures apply regardless of whether the IS support occurs through an existing IS department, new unit, or external organization (DeLone et al, 2003).

2.3. Learning

Learning is defined as a purposeful remembering displayed 20 through skillful performance, and measured as potential change in performance behavior, as the change may occur at a point in time after the information is collected.

Organizational learning has become a critical component of enhancing the competitiveness of a firm. Organizational learning is a key strategy in enhancing competitive advantages, achieving superior performance, and sustainability (Ussahawanitchakit; 2008).

Organizational learning can be regarded as a group of people who decide to enhance their capabilities to produce desired outcomes. Organizational learning refers to a set of measureable changes, and closely matches individual learning models. Specifically key aspects of organizational learning include the schooling, knowledge transfer, applying knowledge and institutionalizing.

To achieve organizational learning, a commitment to learning must occur through employee training, development, and vision. Shared visions throughout the organization, and open mindedness to encourage innovation and follow consistent practices. The organizational learning process includes aggregation of internal and external information, which is then analyzed and interpreted collectively to allow organizational comprehension and consensus, and incorporated into activities (Chang, 2007).

Organizational learning is able to be tracked over cognitive, behavioral, and performance improvements, with cognitive and behavioral changes leading to performance through new ways of thinking and methods. Surveys, questionnaires, interviews, and performance measures must be utilized to accurately gauge organizational learning (Garvin, 1993).

Janz and Prasarnphanich (2003) found support for work performance as a result of learning, in order to identify how knowledge and learning are gained and applied to generate organizational benefits. Lambert and Ouedraogo (2008) identified learning as significant factors in a firm's short-term and long-term performance.

Learning helps solve current and urgent problems, thereby enabling short-term performance. (Lamberta & Ouedraogo, 2008; Janz & Prasarnphanich; 2003).

In DeLone and McLean (2003) IS Success review, some authors discuss removing system use as it is a behavior and must precede net benefits, but does not cause them. De Lone and McLean argue that use is appropriate for a success measure. One of the challenges is that use is a simplified approach to a complex component. Implications that increased use will lead to increase benefits is unlikely without determining the factors that go into use such as type, duration, intention, etc. In DeLone and McLean use measures effectiveness success, with use capturing a variety of tasks such as web visits, information capture, or transactions. DeLone and McLean recommend for each individual research study, IS success measures should be based on the investigation and tested where possible. Use should not measure frequency alone, but instead capture the nature, level, and appropriateness of usage. Also practical research should be conducted to expand net benefits ideas (DeLone et al, 2003).

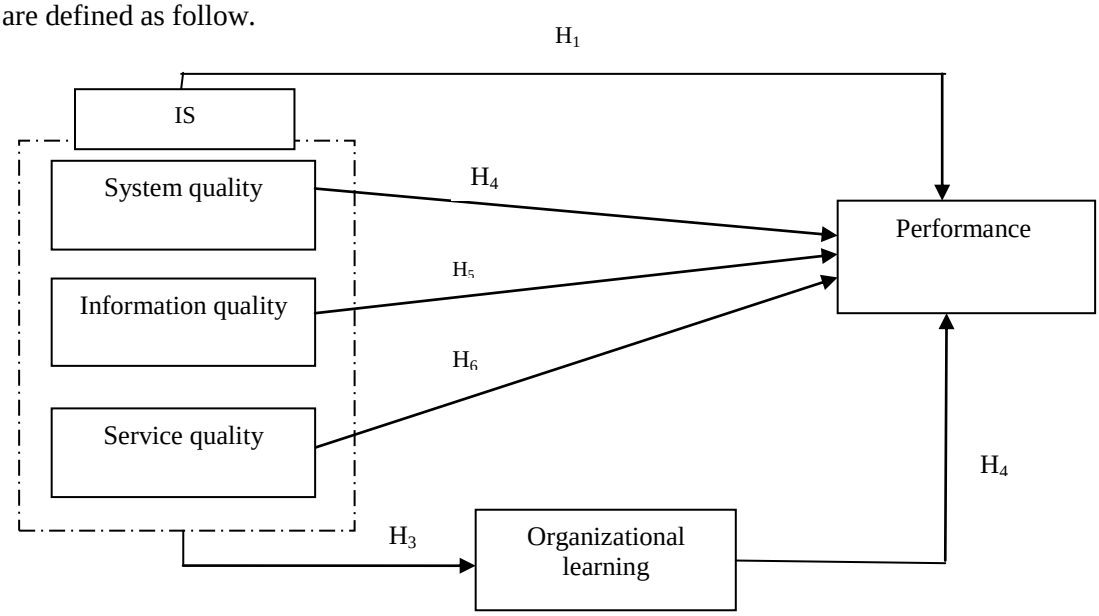
In Vandenbosch and Higgins (1995), the authors found that performance from ESS use were only related to mental model building, but not mental model maintenance, implying that use alone may not affect learning models. The description is that learning developed from any system cannot occur unless through using said system to some degree. The view of success is not simply that the system is used, but rather that they contribute to learning, which was viewed as a more appropriate way to measure success (Lamberta & Ouedraogo, 2008).

2.4. Operation

Institutions and organizations and executive agencies with any mandate, mission, goals and vision, eventually act in national or international scope, are required to respond to customers, clients and stockholders. A company whose goal is profitability and customer satisfaction or to render their legal obligations to the highest standards in order to achieve their goals should put their formal or informal strategies into action.Therefore, processes followed and results of operation rea hievedca considered to have strategic importance. The followings are performance measures of an insurance company usually used by researchers:

1. Operational indicators: Indicators of this section deal with the analysis of the factors affecting insurance income, provide an appropriate basis for the assessment of insurance operations.
2. Financial Indicators: These indicators measure a firm performance for optimal use of the asset.
3. Solvency indicators: the most important issues for insurance companies are the ability to fulfill payment obligations on time and in particular, the loss rapidly and completely. Therefore the indicators are designed based on the strength of the relationship between liquidity of assets and liabilities.
4. Customers access to insurance and customer service indicators: These indicators investigate the number of branches of insurance companies, agents, employees, education level, complaint level and geographic dispersion. (Insurance Industry Statistical Yearbook, 1391)

Indicators of operating performance evaluation in this research have been extracted from operational indicators which are defined as follow.



Research model (extracted from: Mclean et al, 2003; Woodside, J, M, 2010 & Floropoulos et al, 2010)

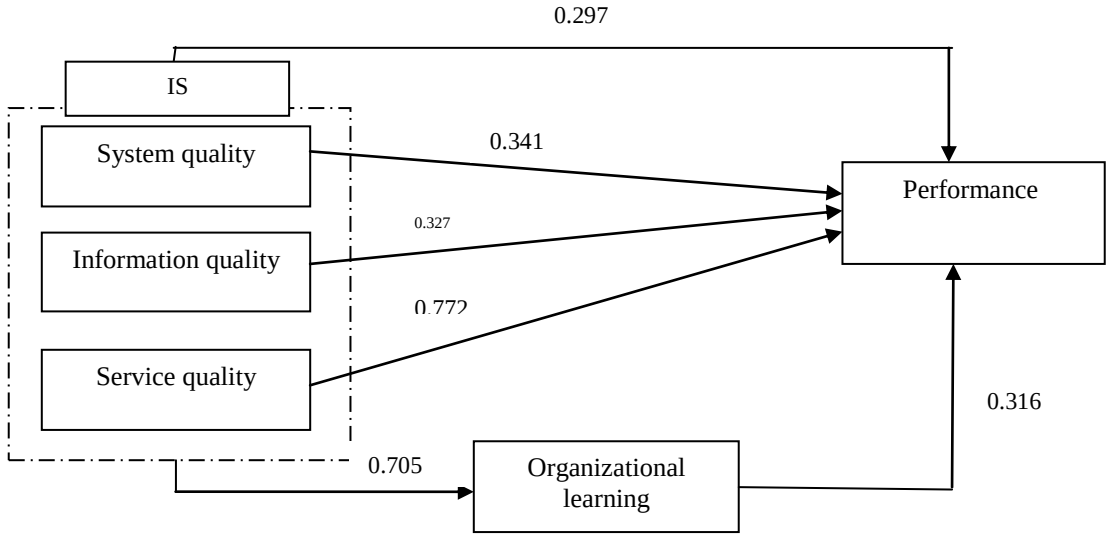
3. Research Methods

In this research we have used the method which developed by Moore and Benbasat's (1991). This method has three stages as follow: item creation, scale development, and testing. Item creation, in which existing items were utilized from prior literature, then additional items added to those components which fit the definitions. Scale development, where similar categories of items were created and refined as needed. Testing, in which sample surveys were conducted, and then was followed by revisions and larger distribution.

The survey uses a five point likert scale, and measures the level of agreement with each statement, with 1 being strong disagreement and 5 strong agreements.

4. Data Analysis

In this study insurance company performance is dependent variable. Company performance measures are based on the Insurance Industry Statistical Yearbook which is published annually by the Central Insurance. Growth rate of insurance policies issued by insurance companies were compared to the previous year and growth rate of market were compared to the previous year.



Research model (path coefficients)

4.1. Testing Hypotheses

In order to analyze data we used structural equation modeling and tested hypotheses using t-value ratios. If the t-statistic is greater than 1.96, the path coefficients and factor loadings are significant at the 95% significance level and if the amount of t-statistic is less than this value, factorial loading or path coefficient is not significant. If the value of the t-statistic is greater than 2.58, the path coefficients and factor loadings are significant at the 99% confidence level.

Table 1-1 Results of Test Hypotheses

Hypothesis		T-statistic	test results
Hypothesis 1	there is a significant relationship between the success of information systems and performance of insurance companies	17.405	the hypothesis confirmed
Hypothesis 2	there is a significant relationship between organizational learning and performance of insurance companies	2.398	the hypothesis confirmed
Hypothesis 3	There is a significant relationship between the success of information systems and organizational learning.	19.768	the hypothesis confirmed
Hypothesis 4	is a significant relationship between information quality and performance.	2.701	the hypothesis confirmed
Hypothesis 5	There is a significant relationship between system quality and performance	2.705	the hypothesis confirmed
Hypothesis 6	between service quality and performance, there is a significant relationship	7.589	the hypothesis confirmed

1. There is a significant relationship between the success of information systems and performance of insurance companies.

According to path coefficient of 0.714 and t-statistic value of 17.405 it can be said that success of information systems at the 99% confidence level has significant positive relationship with performance.
Coefficient of multiple determination (R ^ 2) is equal to 508/0. This coefficient examines the ability of index predicting the dependent variable by the independent variables. Accordingly, the information system success variable could predict 50% of changes in performance variable. The remaining 50% is forecast error.

2. There is a significant relationship between organizational learning and performance of insurance companies.

According to path coefficient of 0.316and t-statistic value of 2.398 it can be said that organizational learning has a positive and significant relationship with performance at 95 percent.

The amount of multiple determination Coefficient (R ^ 2) is equal to 0.998. This coefficient examines the Index ability to predict dependent variable by independent variables. Accordingly, the overall organizational learning variable could predict 10% of performance variables. The remaining 90% is forecast error.

3. There is a significant relationship between success of information systems and organizational learning.

According to path coefficient of 0.705 and the t-statistic value of 19.768 it can be said, the success of information systems in organizational learning has a positive and significant relationship, with 99% confidence level. Coefficient of multiple determination (R ^ 2) is equal to 0.486. This coefficient examines the index ability to predict dependent variable by independent variable. Accordingly, the information systems success variable could predict 49% of organizational learning variables. The remaining 5% is forecast error.

4. According to path coefficient of 0.327 and the t-statistic value of 2.701 it can be said that the quality of information systems at 95% confidence level has significant positive relationship with performance.
5. According to PATH ratio of 0.341 and the t-statistic value of 2.750 it can be said that the quality system is functioning at 95 percent, with a significant positive relationship.
6. According a path coefficient of 0.772 and the t-statistic value of 7.859 it can be said with 99% confidence level of service quality has a significant positive relationship.

5. Conclusion and Recommendations

Information systems are great solutions for issues and challenges in the business environment. When information systems are not of good quality, the system will not be able to solve the problems. According to the importance of information systems in insurance companies to success and goals progress, including achieving new customers and market and offering products based on being in harmony with customers' needs, the importance of information systems quality can be seen. To increase their activities for processing, storing and reporting necessary information, insurance companies became dependent to a large number of information systems at different levels, increasingly. Therefore, it should be noted that information systems have adequate quality to help organizations having better performance. As mentioned before, what was more important in the research is quality of service that must have taken an interest in the insurance companies that if we can rely on services provided by information systems and to what extent the service is guaranteed and client will develop a sense of mutual understanding. Reliability in quality information systems in use is the major concerns of administrators. In some systems, reports generated for managers, are not ever considered. These reports are asumed as worthless reports and are full of numbers that have no effect on decision process or analysis. Using some systems are questioned due to slow processing speed, high operational costs and constantly downtime. And in these cases because of the lack of good quality of information systems, the system is broken. When information systems are not of good quality and do not solve the problem, companies do not benefit from the investments made in information systems. According to the importance of quality in success of information systems and progressing organization goals and achieving better performance, review of quality standards will be important and in this study we have tried to evaluate quality factors in the framework of information systems success in the context of the prevailing concepts of system quality, information quality and service quality.

Learning takes place at different levels, including individual, group and organizational levels. Although organizational learning stems from the first two, but meanwhile organizational learning, has a special focus on learning at systems level. Today Insurance companies are living in a complex and turbulent environment.

New technological risks, climate changes and abundance of risks with catastrophic nature are the source of unpredictability for these companies.

One important source of sustainability in this arena is learning and knowledge sharing. Organizational learning is the main factor that is needed for a company which wants to be indefeasible in the new economic and competitive environment. At Insurance industry and its competitive environment, every person, organization, or system constantly is trying to achieve better conditions for their performance thereby gaining a larger share of the market and ultimately increase their profitability.

To improve information systems quality for insurance companies the following recommendations are made:

- Forming ask force of IT professionals to implement the system with the latest technological advances.
- Engaging senior managers of company in the planning and implementing strategies.
- Reducing complexity of system in a way that it becomes user friendly.

As the importance of organizational learning is confirmed by this study's results, it is recommended that:

- Pay special attention to the processes of organizational learning and providing educational infrastructure in the insurance company in order to gain knowledge of the process and the efforts done.
- Strengthening and supporting training programs or considering outsourcing the training that enables organizations to hold it in, can be very effective.
- According to impact of information distribution process on organizational learning, and the impact of organizational learning on performance; giving a true definition of organizational relationships and structures in the organization and existence of a mechanism to guarantee experience exchanges among members and encourage them to this action through printing organizational publications, workshops, creating a formal website, the information flow and open communication can play an important role in disseminating information effectiveness. In this way it is necessary that staff learn communication skills and the ability of bilateral and multilateral communications and capability to learn from and apply it.
- To create an organizational memory, and maintain existing knowledge; any databases to maintain institutional knowledge plays a significant role, so it is recommended that knowledge record system be strengthened in organizations and to become a formal process.

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