

AN INVESTIGATION ON THE EFFECT OF STRATEGIC INFORMATION SYSTEM ON THE IMPROVEMENT OF THE IMPLEMENTATION OF ORGANIZATIONAL STRATEGIES

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Abstract

Strategic Information System (SIS) is a management process to create information system integration through organizational planning process, linking applied programs of Information Systems to organizational goals, and determining information requirements for achieving long-term and short-term organizational goals. This paper presents an investigation on the influence of the strategic information system on improvement in the implementation of organizational strategies. The proposed study designs a questionnaire in Likert scale consists of 22 questions, distributes it among 228 Iranian experts (by using purposive sampling) and analyzes it based on principal component analysis. During the survey, the numbers of questions are reduced to 17. Cronbach alpha is calculated as 0.86 and Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Approx. Chi-Square are 0.773 and 745.8, respectively. Based on the results of our survey, we have derived six factors including human resource management, integrated strategy, organizational software packages, communication factors, penetration factors, past perception and assessment process.

Keywords: *Strategic Information System, strategy, organization, Implementing Strategy, Technology Planning*

INTRODUCTION

SIS is an information system that supports organization's competitive strategy. Such a system can use information technologies to improve communication with customers, and it plays an important role in simplifying improvement of product design, creating and developing communication paths with suppliers of materials and components, creating new sales opportunities, and improving staff productivity (Ciborra, 2012).

Information systems have gradually changed from change processing systems into information management systems and into decision support systems in the organizations. Currently, the emphasis is on changing these systems into strategic information systems. The difference between these systems, with an example of inventory processing system, is explained as follows:

TPS-This system records changes in inventory and updates inventory master file

MIS-This system manages and controls inventories

DSS-This system supports managers in determining the policy of inventory

SIS-This system processes customers' inventories and connects inventories with ordering system of the institute.

As per Besson & Rowe (2012), Information technology is used for decision making on the aspects of the organization's costs in change processing systems and information management, while this technology is used in strategic information systems to create new information services to use opportunities to earn money for the institution. This will make the units engaged in cost centers in information system turn into profit centers. Another distinctive feature of these systems is that change processing systems, information management, and decision support are internal (within the organization), whereas strategic information system is external and deals with communication and dependencies of the organization with its environment.

According to Buhl et al (2013), the framework that helps explain information systems on today's organizations is information-system strategy triangle. The message conveyed by the triangle is that being aligned and complementary to each other is important to the three elements of the triangle namely trade (business), organization strategy, and information systems. It is important to note that business strategy is at the top there triangle. Pearson and Sanders define the three elements of the triangle as follows:

Business strategy starts with a mission and is an appropriate set of actions to perform (complete) purposes and to apply the limits of the set on what the business is trying to do.

Organizational strategy deals with people, work processes, structure, wage, and program that assist in achieving business goals.

Information systems strategy is the program of an organization used to create information systems (services).

As per Ciborra (2012), conceptual or directing proposals on the strategy, which have resulted from the framework, contain the options below. Successful companies have a leading business strategy that includes both information and organizational systems strategies. Strategy of information system can make effects itself or be affected by changes in business and organizational strategies of the companies. Changes in information systems strategy should be done by changes in organizational strategy and should be consistent with the organization's overall business strategy. Information systems strategy always needs results, understanding or lack of understanding, along organizational and business strategies. Technology planning and strategic information are different from the planning that mainly focuses on user demands and financial justifications. Technology planning and information system reflect a convergence of meanings and purposes. Accordingly, information systems and technology are very important to achieve goals

With the rapid development of technology today, organizations need several years to implement the program and three to five years of useful life for the program. Anything associated with technology is rapidly changing and changes principally occur on technology and information systems. When environmental opportunities appear, organizations need to respond quickly to obtain profit. Some of the quick answers may fail in the future, but they have proven to be better than a missed opportunity. Most processes also include an analysis in form of strengths, weaknesses, opportunities, and threats of Swot. The analysis states the effects of internal and external factors of the organization, formulating strategy, and specific objectives consistent with tactical and operational goals to achieve the objectives (Teubner, 2011).

Information systems strategy has four distinctive features: information strategy, information technology strategy, information management strategy, and strategy of implementation and management of change (Chan et al, 2013).

Information strategy answers the following questions: what information and when needed to support early tasks of key objectives. Information technology strategy is connected with applications and pages to provide information. Information management strategy is concerned with the quality of information services designed for different levels of the organization. Strategy of implementation and management of change will identify whatever the organizational changes need to be successful. Output folders of the planning process should be a comprehensive report along with objectives for system development to offer a futuristic vision of the role of information systems, or there is no standard format for these reports.

Beynon-Davies, P. (2012) provided a more detailed account of the concept of an information system (IS) and established the idea of an IS as a semi-formal 'language' necessary for the coordination and control of activity in different forms of human organization.

Li & Valacich (2014) proposed a marketing IS for a Tea-beverage manufacturing business unit for supporting sales management. The marketing information system concentrates at providing assistance in performing efficient dissemination and management of necessary data and sales documents as well as improving marketing and promotion processes. They reported that their proposed model could provide better support for managers as a result of improved communication and monitoring. Strategic Information Systems Planning (SISP) plays an essential role for better management of different systems.

Teubner (2011) performed an investigation in a German financial services company (FSC) and studied the enterprise situation and the information system practices situation of FSC based on the SISP approach in place. They reported that practitioners largely ignore academic literature and did not implement it in support of their SISP efforts.

Buhl et al. (2013) performed an investigation to find where the competitive advantage in strategic information systems research could be more detected by performing a survey on the German business and information systems engineering tradition.

Li et al. (2008) developed a research model of initial trust formation by considering different factors such as trusting bases, trusting beliefs, trusting attitude and subjective norm, and trusting intentions. They made an assessment on eight trusting base factors including personality, cognitive, calculative, and both technology and organizational factors of the institutional base. They reported that subjective norm and the cognitive–reputation, calculative, and organizational situational normality base factors substantially impact initial trusting beliefs and other downstream trust constructs.

Chan et al., (2013) investigated the use of event studies in information systems and accounting information systems research based on a three-pronged approach. First, they provided a comprehensive survey of the existing research about announcements of the adoption of enterprise resource planning systems and of the impact of security breaches in firms' information systems. Next, they summarized event study methodologies applied in prior research, along with some of the key parameters and concerns associated with their implementation and provided shed light on key event study modeling issues.

Besson & Rowe (2012) presented a framework for business continuity management, and extended it to the IS context. They also validated the method in a survey of IT managers and chief information officers in some organizations operating in Finland. They reported

that social factors such as committed managers and employees were influential in decreasing negative business impacts.

Technology and information systems play an increasingly important role in organizations' today environment. Due to the rapid changes of technology development, sometimes it is difficult to choose the standard planning process. The initial strategy for planning information systems is the planning process's being designed and guided in connection with the organization and business objectives. Most organizations now agree that information system is an important strategic organizational resource that can bring about strategic profits and business performance improvement. One part of their planning is a process some organizations have adopted, which is a response to the situation with regard to opportunities they may prepare themselves. Often a scenario of development approach that seems to help future development in the fight against the rapid growth of technology changes is necessary.

RESEARCH METHODOLOGY

This paper presents an investigation on the influence of the strategic information system on improvement in the implementation of organizational strategies. For this a descriptive survey design was adopted. The proposed study designs a questionnaire in Likert scale consists of 22 questions, distributes it among 228 Iranian experts in the field of automotive industry and also engaged in the formulation and implementation. And then analyzes it based on principal component analysis. In fact, Purposive Sampling is used in this paper. During the survey, the numbers of questions are reduced to 17. Cronbach alpha is calculated as 0.86 and Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Approx. Chi-Square are 0.773 and 745.8, respectively. Fig. 1 demonstrates the results of Screen plot, as we can observe there are two factors, which could be extracted for further studies. In addition, as we can observe from the results of communalities given in Table 1, most factors are well above the minimum acceptable level of 0.5. Table 2 demonstrates the results of factor analysis on these factors.

Figure1.The Screen plot

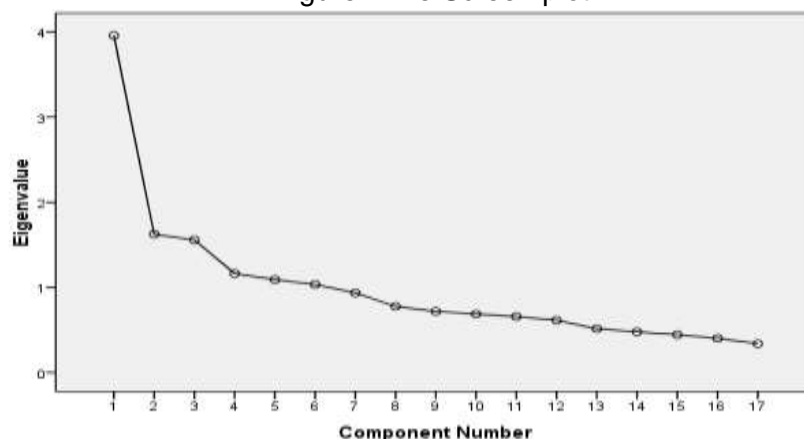


Table 1. The summary of communalities

	Initial	Extraction
VAR00001	1.000	.694
VAR00002	1.000	.654
VAR00003	1.000	.563
VAR00004	1.000	.680
VAR00005	1.000	.603
VAR00007	1.000	.474
VAR00008	1.000	.684
VAR00009	1.000	.533
VAR00010	1.000	.709
VAR00011	1.000	.555
VAR00012	1.000	.573
VAR00013	1.000	.582
VAR00014	1.000	.560
VAR00015	1.000	.645
VAR00016	1.000	.738
VAR00017	1.000	.552
VAR00019	1.000	.632

Table 2. The summary of principal component analysis after rotation

component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.960	23.291	23.291	3.960	23.291	23.291	2.593	15.250	15.250
2	1.625	9.559	32.850	1.625	9.559	32.850	1.942	11.425	26.676
3	1.558	9.166	42.016	1.558	9.166	42.016	1.549	9.110	35.785
4	1.164	6.846	48.862	1.164	6.846	48.862	1.510	8.884	44.670
5	1.092	6.422	55.284	1.092	6.422	55.284	1.453	8.545	53.214
6	1.034	6.084	61.368	1.034	6.084	61.368	1.386	8.154	61.368
7	.935	5.503	66.871						
8	.776	4.567	71.438						
9	.718	4.222	75.660						
10	.688	4.047	79.708						
11	.658	3.868	83.576						
12	.614	3.612	87.187						
13	.514	3.025	90.213						
14	.478	2.813	93.026						
15	.444	2.613	95.639						
16	.402	2.367	98.007						
17	.339	1.993	100.000						

Based on the results of our survey, we have derived six factors including human resource management, integrated strategy, organizational software packages, communication factors, penetration factors, past perception and assessment process.

EMPIRICAL RESULTS

The first factor: Human resource management

The first factor is associated with human resource management. Table 3 demonstrates details of our study. As we can observe from the results of Table 3, “Organizational change” is the most important factor, followed by “Good quality input data”, “Taking advantage of information technology”, and “Using electronic business”.

Table 3. The summary of factors associated with human resource management

option	factor	Eigen Values	% of Variance	Accumulated
Good quality input data	0.652			
Organizational change	0.727	2.489	62.223	62.223
Using electronic business	0.577			
Taking advantages of information of technology	0.578			

The second factor: Integrated software packages

Integrated software packages are the second important issues and they include two factors, which are summarized in Table 4. According to the results, “Automation” is number one priority followed by “Resource management program”.

Table 4. The summary of factors associated with integrated software packages

Option	factor	Eigen Values	% of Variance	Accumulated
Resource management program	0.502			
Automation	0.806	2.031	50.767	50.767

The third factor: Communication factors

Communication factors are the third important issues and they include three factors, which are summarized in Table 5.

Table 5. The summary of factors associated with communication factors

option	factor	Eigen Values	% of Variance	Accumulated
firm expenses	0.863			
Information	0.863	2.093	69.782	69.782
Management of information	0.778			

According to the results of Table 5, “Information” is number one priority followed by “firm expenses” and “Management of information”.

The fourth factor: Penetration factors

Penetration factors are the fourth important issues and they include three factors, presented in Table 6, according to which “Information lost” is number one priority followed by “Danger of hackers” and “Internet usage”.

Table 6. The summary of factors associated with penetration factors

Option	factor	Eigen Values	% of Variance	Accumulated
Danger of hackers	0.863			
Information lost	0.863	1.530	38.238	38.238
Internet usage	0.778			

The fifth factor: Past perception

Past perception is another factor with two sub-components, presented in Table 7. It shows that “Firm reputation” is number one priority followed by “Mutual trust between two parties”.

Table 7. The summary of factors associated with past perception

Option	factor	Eigen Values	% of Variance	Accumulated
Mutual trust between two parties	0.0750			
Firm reputation	0.866	1.729	57.625	57.625

The sixth factor: Process based approach

Process based approach is the last factor with two sub-components, presented in Table 8.

Table 8. The summary of factors associated with process based approach

option	factor	Eigen Values	% of Variance	Accumulated
Inter department communication	0.857	1.424	47.476	47.476
Competitive advantage	0.824			

According to the results of Table 8, “Inter-department communication” is number one priority followed by “Competitive advantage”.

CONCLUSION

Technology and information systems play an increasingly important role in organizations' today environment. Due to the rapid changes of technology development, sometimes it is difficult to choose the standard planning process. Most organizations now agree that information system is an important strategic organizational resource that can bring about strategic profits and business performance improvement. This paper has presented an investigation on the strategic information system on the improve the implementation of organizational strategies.

The proposed study of this paper has extracted six factors by applying principal component analysis. The first factor, human resources management, includes four sub-components where “Organizational change” is the most important factor, followed by “Good quality input data”, “Taking advantage of information technology”, and “Using electronic business”. The second factor, integrated software packages, maintains two factors where “Automation” is number one priority followed by “Resource management program”. The third factor is associated with communication issues where “Information” is number one priority followed by “firm expenses” and “Management of information”. The next factor is related to past perception where “Firm reputation” is number one priority followed by “Mutual trust between two parties”. Finally, process based approach is the last item where “Inter-department communication” is number one priority followed by “Competitive advantage”.

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