

Effective Factors on Accounting Information System Alignment; a Step towards Organizational Performance Improvement

Seyed Mohammadali Nabizadeh*, Seyed Ali Omrani*

*Department of Management Studies, Indian Institute of Technology (IIT) Delhi, India

Abstract- Managers need relevant and reliable information just in time in order to make appropriate decisions to achieve organizational goals and objectives. Financial information is one of the most important types of information. Thus sound Accounting Information System (AIS) is crucial to the firms. This study tries to find out factors affecting AIS effectiveness which is a prerequisite to improvements on organizational performance. The paper examines relationship between AIS effectiveness and Managerial Knowledge, Use of External and Internal Consultant as well as Firm's Size.

Data is collected through questionnaires from 37 manufacturing firms which are members of Iran Association of Detergent, Hygienic and Cosmetic Industries. T-test and Logistic Regression applied to data to test the hypothesis. Findings suggest AIS alignment is related to managerial knowledge, use of accounting and auditing firm's consultancy, internal IT employee's consultants and firm's size.

Index Terms- AIS effectiveness; AIS coordination; Managerial Knowledge; Firm's size, Firm's performance

I. INTRODUCTION

The concepts of Integration, Alignment and Effectiveness of information system are concerned by many academic researches. The relation between any of these concepts and the success level of IS, organization performance and organization success, are considered by different scholars. The above concepts are mostly discussed under Information Systems Portfolio available in organizations. These concepts could be considered for each sub-system like Management Information Systems (MIS) or Accounting Information Systems (AIS). The competitive condition of markets and technology advancements which made easy accessibilities to different markets increases the importance of information and Information Systems (IS). In competitive conditions using information especially financial information is a crucial factor so that on time accessibility to precise information is a competitive advantage. AIS is one of the most important ISs in an organization where its importance would be increased by the time. Technology advancement and emergence of new technologies increases capacities of ISs. On the other hands changes of market competitions makes the needs of new information. Alignment of ISs and information requirements of users is an important topic which has considerable influence on effectiveness of IS and firms' performance. Nevertheless the factors influencing this alignment

are not really identified yet. They are taken under in depth study in this article.

II. REVIEW OF LITERATURE

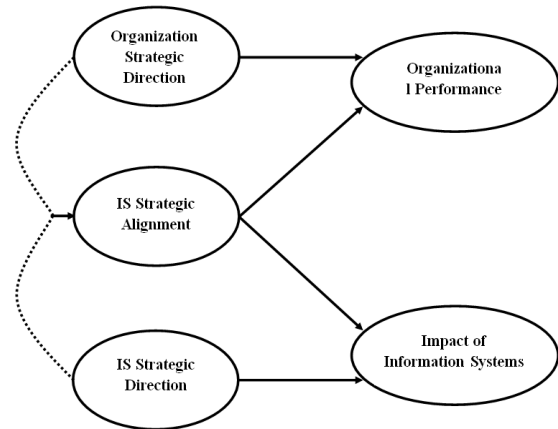
Effectiveness means to look at the extent of effect of works done to achieve the predetermined goals or objectives. In other words in effectiveness study, the extent of realized objectives is measured. The effectiveness of AISs is studied by different scholars and various indicators are used to measure that. AISs usage, User Satisfaction, Project Success, Service Success Economic Success are some of such indicators. A review of 180 empirical and theoretical researches is done and six dimensional variables to integrate the available indicators are suggested [1]. These dimensions are System Quality, Information Quality, System Usage, User Satisfaction, Individual and Organizational Impacts. The first Alignment Strategic Model was SAM (Strategic Alignment Model) is introduced by Henderson and Venkatraman (1993). SAM got four basic concepts of Organizational Strategy, IT Strategy, Organizational Infrastructure and Process, IT Infrastructure and Process (Fig. 1). Chan et. al. measured Organization Strategic Direction, IT Strategic Direction and Information Strategic Alignment (Fig. 2). They examined their impact on ISs effectiveness and organization performance. Chan et. al. suggested a) the best way to study these concepts is modeling them by holistic system approach method. b) IS strategic alignment is a good indicator to predict information systems effectiveness. c) Organization strategic system, ISs strategic alignment and IS effectiveness have an impact on organization performance. Dorociak also looked at impact of organization strategies cooperation and ISs on organization performance. He believes on positive relationship between IS strategy, organization strategy alignment and organization performance (Dorociak, John, 2007). The effort made by SMEs to implement, invest and improve their AIS is related to their economic and financial results, since firms not using AIS or only partly using it obtain losses. (Grande et. al. 2011). Benjamin and Levinson (1993) conclude that performance depends on how information systems resource is integrated with organizational, technical, and business resources. Chan, Huff, Barclay, and Copeland (1997) argue that the impact of information systems on performance may not be a direct one, but intermediated by other factors such as the alignment between information systems strategy and business strategy. Luftman, Lewis, and Oldach (1993) recognize that for companies to succeed in increasingly competitive, information intensive,

dynamic environment, the alignment of business strategy and the information systems strategy is a necessity. Six factors of 1) IT complexity, 2) Knowledge Management, 3) Management Contribution, 4) External Consultancy, 5) Internal Consultancy, 6) Organization Size are examined by Ismail and King. They found IT advances, extent of external and internal consultancy have an impact on IS cooperation. There is a low relation between management contributions and IS cooperation. There is almost similar knowledge management in every organization. There is a reverse relationship between organization sizes and IS cooperation (Ismail and King, 2007).

IS alignment and IS effectiveness are used in some of researches interchangeably whereas there are specific definition for each of them. IS effectiveness is the extent of accounting IS contribution to achieve organization objectives (Ismail, 2009). AIS alignment means AIS requirement and AIS capacity (Ismail and King, 2007). Researches reveals that IS alignment and its effectiveness has a strong correlation (Chan et. al. 1997) so these two concept could be used interchangeably or the result taken from alignment may be generalized on effectiveness too.

IT and business strategies alignment and its contribution to firm's improvement are a matter of debate for years among academicians. Various empirical researches in different economies shows firms interest to acquire this alignment but there seems to be few studies on factors affecting this alignment. There is no study done on alignment between AIS capacity and Information Requirement in Iran which might be Due to firm's information accessibility constrains or unavailability of enough literature.

The paper aims to identify factors affecting AIS alignment with user requirements which would result to firm's improvement.



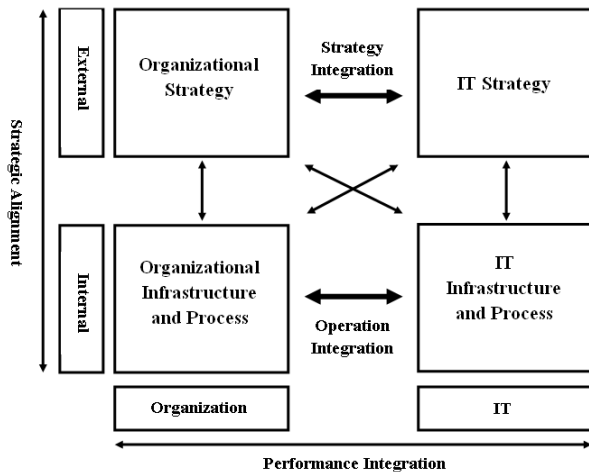
"Fig. 2": Chan Model (Chan et. al. 1993)

III. METHODOLOGY

The research looks at four hypotheses:

- H1: Firms' managers with more IT and accounting knowledge, have more AIS alignment
- H2: Firms using external consultants have more AIS alignment.
- H3: Firms employ internal consultants have more AIS alignment.
- H4: Larger firms get more AIS alignment.

The research has four independent and one depended variables. AIS alignment is dependent and Managerial Knowledge, External Consultant, Internal Consultant and Organization Size are four independent variables of the study. There are varieties of methods to assess the AIS alignment. Venkateramen (1989) introduced six approach to assess alignment while there are specific statistical model and theory to each of them (Ismail and King, 2007). Match Approach and Moderation Approach are the most common among them. The research includes SMEs as well so the Moderate Approach is selected. This approach is suggested by literate where SMEs are involved (Cragg and Tagliavini, 2005). In this method cooperation indicate synergy though it means reciprocity action of two factors. AIS cooperation is defined as reciprocity of two factors of AIS Requirements and AIC Capacity. Respondent are asked to rate their firm on any of above variables on nineteen accounting criteria which measures these variables. The criteria are rated on the basis of their importance and accessibilities in their own IS using five point Likert Scale questionnaire. The product of importance and accessibility is a number which indicates AIS cooperation. It is between one to 25 where the increase in this number show more IS alignment. Managerial Knowledge is assessed through; 1) Financial Accounting Techniques, 2) Managerial Accounting Techniques, 3) Data Processing Software Usage, 4) Spread Sheet, 5) Data Bases, 6) Accounting Applications, 7) Email, 8) Internet, 9) Computerized Production Management. The mean of respondent rates on their familiarity on above organizational main operation are considered as their managerial Knowledge. The firms are given one point in case they use any kind of external and one point for internal consultants. Numbers of employees is one of the most common criteria which is used to decides on the size of the firms

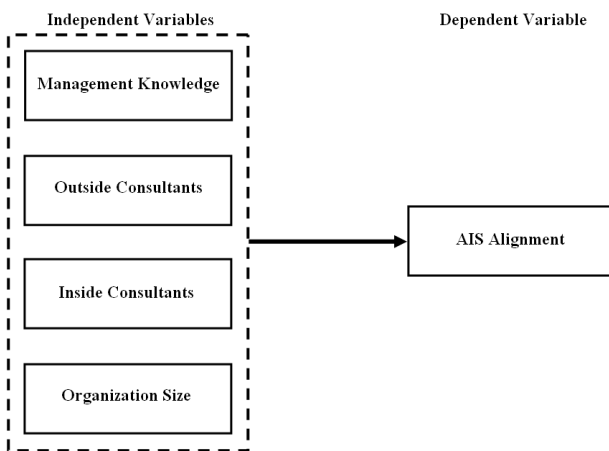


"Fig. 2": SAM Model (Henderson and Venkatraman, 1993)

(Choe, Jong-Min, 1996). It is also a criterion used by Iran Labor Law and EU to classify large firms from SMEs. The research is done on firms who are member of Iran Association of Detergent, Hygienic and Cosmetic Industries. The total firms are 86 where the authors could analyze 37 questionnaires which are mostly filled by financial managers of the firms on personal meetings in time span of Jan-July 2009. The number of respondents is satisfactory on the basis of kakran formula. The Cronbach Alpha for the research' questioner is 0.83 which shows the high validity of the questionnaire.

IV. DATA ANALYZING

The Clustering method is used in the research. T-test is applied to each hypothesis and the variables relationship in every hypothesis is examined by Logistic Regression too. Firms are divided to two different groups by clustering analysis.



"Fig. 2": Research Variables

Ten firms have aligned system (aligned group) and 27 don't have aligned system (unaligned group). Table 1 shows mean of respondents rate on each of the information criterions. Table 2 illustrates managerial knowledge on the basis of nine main operations in firms. Consultant, Suppliers, Government Organizations and Accounting Institutions are considered as organization external consultants. Table 3 elaborates the benefited firms from them and related analysis. Accounting and IS personnel of firms are considered to be organization internal experts. Table 4 states how firms are adopting internal consultancy. Firm's employee numbers are considered as its size indicator (Table 5)

Table1: Information Criterions Rates

Criterion	Total Sample	Aligned Group	Unaligned Group
Report Frequency	18.46	22.0	17.15
Report Quickness	17.46	21.0	16.15
Temporary Report	16.00	21.5	13.96
Report Summaries at Firm Level	15.97	22.3	13.63

Automatic Receipt	15.84	20.2	14.22
Precise and Specific Goal	15.68	20.6	13.85
Sections Reports	14.97	21.2	12.67
Future Events	14.95	21.3	12.59
Production Non Financial Information	14.62	20.9	12.30
Report Summaries at Sections Level	14.11	21.3	11.44
Immediate Reports	14.03	19.1	12.15
Decision Models	14.00	19.6	11.93
Organizational Influences	13.49	18.6	11.59
Various Sections and Bodies Integration	13.22	16.0	12.19
Market Non Financial Information	12.57	17.9	10.59
Non Economic Information	10.89	19.2	7.81
Events Impacts on Future	9.76	17.5	6.89
If then Analysis	9.00	12.1	7.85
External Related Information	8.22	12.2	6.74

Table 2: Managerial Knowledge Results

Criterion	Total Sample	Aligned Group	Unaligned Group
Financial Accounting Techniques	4.24	4.5	4.15
Managerial Accounting Techniques	3.73	4.6	3.41
MS Word	3.41	3.8	3.26
MS Excel	3.65	4.10	3.48
MS Access	1.81	1.8	1.81
Accounting Applications	4.05	4.4	3.93
Computerized Production Management	2.16	2.2	2.15
Email	3.97	4.2	3.89
Search in Internet	3.84	4.5	3.59

Table 3: The Organization External Consultants Usage

Group	Consultants		Suppliers		Government Org.		Accounting Institutes	
	No.	μ	No.	μ	No.	μ	No.	μ
Aligned	9	90%	0	0%	0	0%	9	90%
Unaligned	27	100%	6	22%	0	0%	10	37%
Total	36	97%	6	16%	0	0%	19	51%

Table 4: The Organization Internal Consultants Usage

Group	Accounting Personnel		IS Personnel	
	No.	μ	No.	μ
Aligned	10	100%	9	90%
Unaligned	27	100%	6	22%
Total	37	100%	15	40.5%

Table 5: Firm's Size

Group	Employee No. Mean
Aligned	171.5
Unaligned	80.96
Total	106.11

V. FINDINGS

Hypothesis 1:

T-test reveals at 95% confidential level, managerial knowledge mean got a meaningful difference in aligned and unaligned group where its value is more in the prior group. Though the assumption of same mean for groups is rejected and due to higher value of managerial knowledge in aligned group H1 is not rejected. The logistic regression analysis also shows a meaningful model as well as a positive relationship between system alignment and managerial knowledge at 95% of confidential level. The familiarity extent of managements with computerized production management and data base software (MS Access) are almost same for both group. Therefore they have uncertain impact on system alignment. On the other hand managements' familiarity with accounting techniques in aligned group is much higher than other one.

Hypothesis 2:

T-test analysis shows the t value equal to -1.146 and -1.96 for hypothesis rejection area. Therefore the assumption of the same mean for groups is not rejected and H2 is rejected. Few firms from unaligned group and none of aligned group member are benefited from supplier consultancy. Governmental organizations are not consulted by any firm. Accounting institute consultancies are used by aligned group member much more than other group. Chi Square method is used due to their considerable difference. The result shows a positive relation between accounting institute constancies and AIS alignment.

Hypothesis 3:

T-test results shows at 95% of confidential level, the mean of adopting internal consultants in aligned firms are meaningfully higher than unaligned firms so that the hypothesis is accepted. Logistic regression method also suggests a meaningful model at 95% confidential level with a positive relation between system alignment and internal consultants' usage.

Hypothesis 4:

T-test shows a meaningful higher mean for firm size in aligned than unaligned group at 95% confidential level. Therefore the hypothesis is not rejected. Logistic regression also reveals a meaningful model with a positive relation between firm size and system alignment at 95% confidential level.

Table 5: The Summary of Hypothesis Testing Results

Hypothesis #1	T test	t-value	Rejection Area (H0)	Result
		-4.42	-1.96	H1 is not rejected
	LR	R2	RCP	Regression Equation
0.21		70.30%	In $(\theta_i/1-\theta_i)=-10.33+2.51x$	
Hypothesis #2	T test	t-value	Rejection Area (H0)	Result
		-1.146	-1.96	H2 is not rejected
	LR	R2	RCP	Regression Equation
0.025		73%	H2 is rejected	
Hypothesis #3	T test	t-value	Rejection Area (H0)	Result
		-4.591	-1.96	H3 is not rejected
	LR	R2	RCP	Regression Equation
0.331		81.10%	In $(\theta_i/1-\theta_i)=-6.495+3.45x$	
Hypothesis #4	T test	t-value	Rejection Area (H0)	Result
		-2.717	-1.96	H4 is not rejected
	LR	R2	RCP	Regression Equation
0.211		80.6%	In $(\theta_i/1-\theta_i)=-2.744+0.015x$	

VI. CONCLUSIONS AND RECOMMENDATIONS

The research results state that AIS alignment is related with managerial knowledge in accounting and IT, Accounting institutions consultancy, IS personnel employment and Firm size. Therefore increase in accounting and IT managerial knowledge and employing full time IS personnel as well as using accounting institute consultancy is suggested to firms in order to promote their AIS effectiveness and cooperation which results to their performance improvement. Unfortunately none of the firms in the study benefited from government consultancy. It may be due to absence of suitable governmental consultancy agencies. The presence of governmental AIS specialized agencies that are able to offer consultancy to firms may have a desirable impact on their performance which needs to be considered by related authorities.

This research focused on a specific industry, it is suggested for future research to look at cross industries. The relationship between every individual criterion might be considered with AIS alignment. The researchers from other discipline may study the impact of factors on other organization systems like MIS alignment.

ACKNOWLEDGMENTS

The authors would like to acknowledge professor Saber Sheri Anaghiz (Department of Management and accounting, Allameh Tabatabaie University (ATU), Iran) for his helps, supports and valuable comments. They also wish to express their gratitude to "Iran Association of Detergent, Hygienic and Cosmetic Industries" for their cooperation.

REFERENCES

- [1] K. Gholamreza, Research Methodology with Thesis Writing Approach, Country Scientific Research Centre, Tehran, 1999. غ. خاکي، روش تحقیق با روکردی بر پائین نامه نویسی، مرکز تحقیقات علمی کشور، تهران، 1387
- [2] A. Delavar, Research Practical and Theoretical Basis in Social Science, 2nd edition, Roshd Publication, Tehran, 2006. ع. دلوار، مبانی نظری و عملی پژوهش در علوم انسانی و اجتماعی، ویرایش دوم، انتشارات رشد، تهران، 1385
- [3] S. H. Sajadi, S. M. Tabatabaie Nejad, "Barriers Identifications to Computerized Accounting Information System Development in Khuzestan Province Manufacturing Firms", Accounting Studies Quarterly, vol. 2, 2003. س. ح. سجادی، س. م. طباطبایی نژاد، "شناسایی موانع توسعه سیستم های اطلاعاتی حسابداری رایانه ای در شرکت های تولیدی استان خوزستان"، فصلنامه مطالعات حسابداری، شماره 2، 1382
- [4] M. Abdolmohamadi, R. G. Mccood, " Types of Accounting Researches", Accountant Quarterly, vol. 160, 2004, pp. 30-35. م. عبدالمحمّدی، ر. جی. مک کود، "انواع تحقیقات حسابداری"، ماهنامه حسابداری، شماره 160، 1383، ص. 30-35
- [5] A. M. Yazdi, M. Tayefi Nasrabadi, H. Tayefi Nasabadi, "Revision in Teaching of Systems and Information Technology Concepts in Accounting Training Courses", Accounting Quarterly, vol. 197. ع. م. یزدی، م. طایفی نصر، "بازنگری در آموزش مفاهیم فناوری اطلاعات و سیستم ها در دوره های آموزشی حسابداری"، ماهنامه حسابداری، شماره 197

- [6] A. Eisaie Khosh, "An Overview on Accounting Information Systems", Accountant Quarterly, vol. 140. الف. خوش احمد، "نظری اجمالی بر سیستم های اطلاعاتی حسابداری"، ماهنامه حسابداری، شماره 140
- [7] K. C. Laudon, J. P. Laudon, "Management Information Systems: Managing the Digital Firm", 9th ed., Pearson/ Prentic Hall, 2006.
- [8] Y. E. Chan, S. L. Huff, D. W. Barclay and D. G. Copeland, "Business Strategic Orientation, Information Systems Strategic orientation and Strategic Alignment", Information Systems Research, vol 8, no. 2, 1997, pp. 125-150.
- [9] J. M. Choe, "The Relationships among Performance of Accounting Information Systems, Influence Factors and Evaluation Level of Information Systems", Journal of Management Information Systems, 1996.
- [10] C. Paul, M. Tagliavini, "Evaluation Information Systems Alignment in Small Firms", Italy: University of Carlo Cattaneo, 2006.
- [11] J. Dorociak, "The Alignment between Business and Information Systems Strategies", US, Capella University, 2006.
- [12] J. C. Henderson, N. Venkatraman, "Strategic Alignment: Leveraging Information Technology for Transforming Organizations", IBN System Journals, vol. 32, no. 1, 1993, pp. 4-16.
- [13] N. Ismail, "Factors Influencing AIS Effectiveness Among Manufacturing SMEs: Evidence From Malaysia", The Electronic Journal on Information Systems in Developing Countries.
- [14] N. Ismail, M. King, "Factors Influencing the Alignment of Accounting Information Systems in Small and Medium Sized Firms", Journal of Information Systems and Small Business, vol. 1, no. 1-2, 2007, pp. 1-20.
- [15] M. B. Romney, P. J. Steinbart, Accounting Information Systems", 10th ed., Prentice Hall, 2005.
- [16] W. H. Delone, E. R. Mclean, "Information Systems Success: The Quest for the Dependent Variable", Information Systems Research, vol. 3, no. 1, 1992, pp. 60-95.
- [17] E., Grande, R., Estébanez, C., Colomina, " The impact of Accounting Information Systems (AIS) on performance measures empirical evidence in Spanish SMEs ", International Journal of Digital Accounting Research, vol. 11, no. 15778517, 2011, pp. 25-43.
- [18] R. I., Benjamin, E., Levinson, " framework for managing IT enabled change", Sloan Management Review, Summer 1993, pp. 22-23.
- [19] J. N., Luftman, P. R., Lewis, S. H., Oldach, " Transforming the enterprise: The alignment of business and IT strategies", IBM Systems Journal, vol. 32, no. 1, 1993, pp. 198-221.

AUTHORS

First Author – Seyed Mohammadali Nabizadeh, Ph.D. Research Scholar (Finance), Department of Management Studies, Indian Institute of Technology Delhi, India

Second Author – Seyed Ali Omrani, Ph.D. Research Scholar, Department of Management Studies, Indian Institute of Technology Delhi, India

Corresponding Author: DMS, Indian Institute of Technology Delhi, Haus Khas, New Delhi, 110016, E-mail:

sma.nabizadeh@dms.iitd.ac.in, Phone Number: +919953036717