EXAMINE THE EXISTENCE OF (SYSTRUST) MODEL AND ITS IMPACT ON JORDANIAN COMMERCIAL BANKS PERFORMANCE

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Abstract:

According to business and information technology literature, design of AIS drives quality of performance in three ways: it minimizes level of threat and risk, standardizes harmony of value chain, and then improves performance parameters and indications. This study adopts (SysTrust Model) to investigate the impact of AIS design on performance matrix of the Commercial Jordanian Banks. Sample of the study is consisted from all the Jordanian commercial banks listed in Amman Stock Exchange Market. The sample data has been collected by use of professional questionnaire which has been designed to match purposes of the study. A number of illustrative hypotheses have been tested statistically to examine the relation between AIS design and quality of performance. R square, T-test, F-test, and significance test are example of the statistical techniques used. Statistical tests have indicated high level of results about availability of (SysTrust) principles and criteria in AIS infrastructure of the Jordanian Commercial Banks. In addition, an independent sample R^2 test confirmed a positive relation between applications of (SysTrust Model) and parameters of banking performance matrix (NPM and ROA). While the statistical tests have shown negative relation in regard to banking performance parameters (MVA, ROI, EPS, and P/E).

Key Words: SysTrust Model, Quality of AIS, Availability of AIS, Security of AIS, Maintainability of AIS, Integrity of AIS.

1. INTRODUCTION

AIS has been for long the only formal IS inside business organizations. Set of the financial statements as a key output of AIS still dominating and guiding decision making process of these organizations. With use of information technology, the AIS process and style of control has transformed dramatically. Invisible accounting process has obsolete the internal control system in one hand and increased the risk patterns associated with traditional AIS on the other. These aspects of lack and risk have affected negatively the quality of performance of IT based business organizations. To mitigate the risk and fill the control vacuum, (SysTrust) as technical services guide to design the internal control systems of AIS has been developed. The importance of (SysTrust) is resulted from the fact: (1) it has reengineered internal control system of AIS on technological basis, (2) it has reconceptualised the invisible control mechanism of AIS, (3) it has provided operational and security standards to improve efficiency of AIS, (4) it has provided a solid guide to measure the reliability of AIS and the risk associated with it mechanism. The key aims of this paper are to *First, Examine the Existence and adoption of (SysTrust) Model by Jordanian Commercial Banks and Second, to test the Impact of this adoption on their Performance matrix*. According to these purposes, the current paper is structured in the following way: section 1 provides review of literature related to topics of this paper. Section 2 explains the theoretical framework of (SysTrust). Section 3 presents the data and methodology. Section 4 exposes the results of statistical tests adopted by this study. Finally, in section 5 the conclusions have been remarked and drawn.

2. LITERATURE REVIEW

SysTrust is one of the models to update Internal Control Systems (ICS) of AIS through frame working the technological variables which affect designing of AIS. Due to such nature, much of the practical studies have been implemented using the principles and criteria of SysTrust to examine quality and performance of AIS. The term of ICS has been used by *(COSO, 1992)* to refer to the risks associated with ineffectiveness management of public companies both large and small. Integrated framework of COSO has long served as a blueprint for establishing internal controls that promote efficiency, minimize risks, help ensure the reliability of financial statements, and comply with laws and regulations. According to COSO’s study, ICS is no longer accounting concept. COSO’s report has outlined 26 fundamental principles associated with the five key components of ICS: 1) control environment, 2) risk assessment, 3) control activities, 4) information and communication, and 5) monitoring. *(ISACF, 2001)* has considered the control objectives associated with use of IT. This study has known widely COBIT. COBIT has consisted of three control groups: business objectives, IT resources, and IT based process. The key feature of COBIT is coming from it has developed 36 standards of control related to security of IT based AIS. The impact of IT based accounting process on the operational variables of cost, productivity, and profitability has been addressed by (*Casolaro & Gobbi, 2004*). This study was conducted on more than 600 banks belong to the Italian banking industry. The study concluded with the facts that intensive use of IT based AIS has reasonable impact on: 1) reduction of banking services cost; 2) expansion of banking services package; 3) increasing banking profit. Another study was conducted by (*Raupeliene & Stabingis, 2003)* has considered the effectiveness of IT based AIS. The study has developed a quantitative model based on set of technological, economics, and social parameters. According to Raupeliene and Stabingis study, the effectiveness of IT based AIS is differed according to the sophistication level of IT infrastructure of AIS in one hand, and the environmental development of AIS on the other. (*Abu Musa, 2000)* has conducted a practical study to measure the threats of CAIS in Egyptian banking industry. According to the study, there are different reliable approaches and technique to evaluate security of CAIS. Some of these approaches are quantitative and the others are qualititative.

3. THEORTICAL FRAMEWORK OF THE STUDY

Trust service is an attestation services guide established by the Assurance Services Executive Committee of the AICPA. Trust Services are consisted from WebTrust and SysTrust and defined as a set of professional services and advisory services based on a common framework (that is a core set of principles and criteria) to address the risks and opportunities associated with IT based accounting process *(AICPA & CICA, 2006)*. SysTrust by its principles, criteria, and illustrative controls has been a key guide for the practitioners to examine AIS performance and quality in terms of AIS availability, security, maintainability, and integrity (See Figure 1).

Availability of AIS:
Availability is a function of accessibility and defined as the end-user ability to use AIS whenever is needed and according to schedules and agenda of business organization. Use of AIS refers to perfect and quality implementation of inputting, updating, storing, and retrieving process during the agreed upon time. The potential sources of threats to availability of AIS are: hardware and software failures, natural and man-made disasters, human error, worms and viruses, and denial-of-services attacks and other acts of sabotage. To minimize (not eliminate) threats to AIS availability, SysTrust has developed set of criteria, operational policies, illustrative controls and procedures such as disaster recovery plan and business continuity plan.

Security of AIS:
Security is defined as protection of AIS against unauthorized physical and logical access. Part of AIS security is ensuring the ethical use of accounting data. Reliability of AIS against security risks entails building IT infrastructure enhances the internal control system of AIS. Ensuring security of AIS requires developing operational and physical policies related to use of hardware, software, and accounting data. In addition, security of AIS demands developing physical and logical access controls such as user identification controls, physical possession identification, and compatibility tests. However, security of Extended AIS entails developing Internet and e-commerce and e-business applications.

Maintainability of AIS:
Maintainability is a function of operational flexibility of AIS and refers to the possibility to modify and replace AIS components without affecting availability, security, and integrity of AIS. To enhance Maintainability of AIS, SysTrust has developed criteria and controls of change management and project development and acquisition.

Integrity of AIS:
Integrity of AIS refers to completeness, accuracy, timeliness, and authorization of AIS process. According to SysTrust, AIS has integrity if the accounting process accomplished in an unimpaired manner and free from unauthorized manipulation. To enhance integrity of AIS, the application and general controls have to be inherited in the designing of ICS. Source data controls, input validation routines, on-line data entry controls, data processing and storage controls, output controls, and data transmission controls are example of application controls.

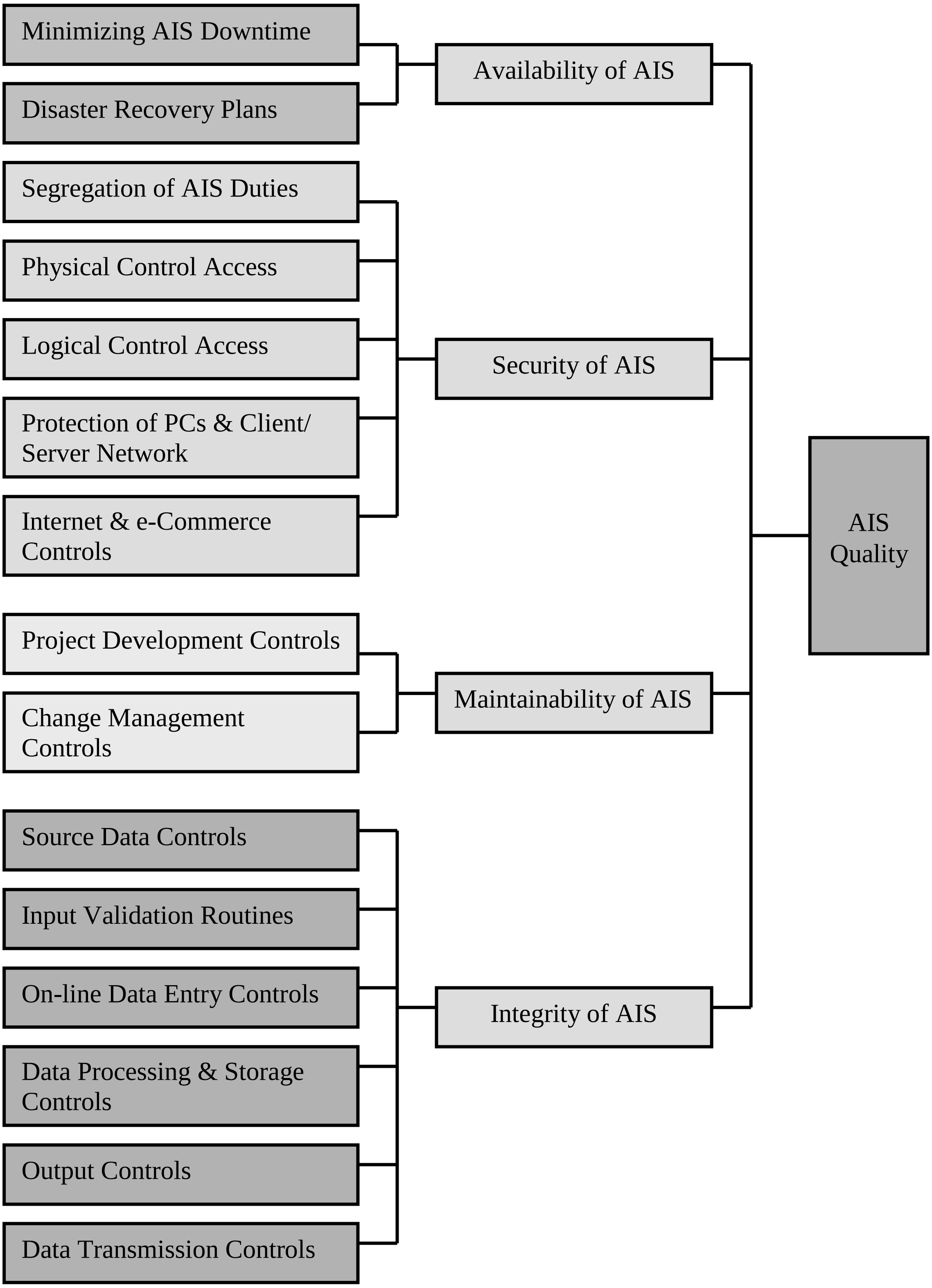
Minimizing AIS Downtime
Disaster Recovery Plans
Segregation of AIS Duties
Physical Control Access
Logical Control Access
Protection of PCs & Client/ Server Network
Internet & e-Commerce Controls
Project Development Controls
Change Management Controls
Source Data Controls
Input Validation Routines
On-line Data Entry Controls
Data Processing & Storage Controls
Output Controls
Data Transmission Controls
Availability of AIS
Security of AIS
Maintainability of AIS
Integrity of AIS
AIS Quality

Figure-1: Theoretical Model of the Study.

4. DATA & METHODOLOGY

As mentioned earlier, (SysTrust) is an integrated model provides the conceptual and procedural understanding for AIS design and quality. The current study is an exploratory study to discover the impact of (SysTrust) principles and criteria on AIS performance and quality. Monitoring the sophistication level of IT infrastructure in the Jordanian banking industry to absorb these principles and criteria is a key aim of this paper. However, addressing the risk associated with use of IT by Jordanian banks is a by product objective of the current study. The adopted methodology has been based on surveying and analyzing IT infrastructure of these banks to determine the exent of avialability and optimity of (SysTrust) principles and criteria. Accordingly, the quantitative data for the study were gathered through a survey questionniare from both the IT specialists and business managers within each bank were used to gather data. The survey questionnaire comprised 63 items 4 dimensions (See Table 1). The questionnaire included Likert type responses on a five-point scale ranging from ‘strongly agree’ to ‘strongle disagree’. The questionnaire parameters structured according to focus and terms of SysTrust literature. Before implementing the survey, the questionnaire was reviewed by academics and practitioners with knowledge of survey AIS design and success. A total of 13 questionnaires were distributed to the targeted commercial banks. The statistical techniquics used were: mean values, standard deviation, and T-test. All parameters were tested at the 0.05 level of significnace. Other source of quantitative data was the financial statements of these commercial banks. The qualititaive data were gathered through in-depth individual interviews and focus groups. Interviews were carfully managed to indicate whether (SysTrust) principles and criteria are really available and followed.

(SysTrust) Principles	***Weighted-Average***	***Parameters***
Availability of AIS	24%	15
Security of AIS	30%	19
Maintainability of AIS	13%	8
Integrity of AIS	33%	21
Total	100%	63

Table-1: (SysTrust) Principles

5. ANALYSIS & DISCUSSION

The analysis process of the gatherd data has taken two stages: the first stage was focused on measuring the critical availibilty of (SysTrust) principles and criteria in the jordanian commercial banks. In contrast, the second stage of analysis has checked the impact of availability of (SysTrust) principles and criteria on parameters of banking performance matrix (MVA, ROI, NPM, ROA, EPS, and P/E). As for the first stage, mean values, standard deviation and T-test have been claculated to determine whether availiabilty, security, maintainability, and integrity of AIS is placed in the infrastructure of commercail jordanian banks (See Table 2). The result of one-sample

T-test shows that (SysTrust) principles and criteria are highly availiable in AIS infrastructure of the commercial jordanian banks ($H_0 : \mu \prec 65\%, H_1 : \mu \geq 65\%$). Mean values have shown (77.85%, 76.54%, 69.92%, and 57%). To get more assurance about availability of AIS integrity, T-test has been calculated (12.548) and compared with tabulated t (1.782).

In the second stage of analysis, the results of the statistical tests have shown varied level of impact of (SysTrust) on parameters of banking performance matrix (3, 4, 5, 6, 7, and 8). It has been empirically proved that availability of (SysTrust) has reliable impact on profit engine and managing assets of AIS on the Jordanian Commercial Banks. The possible explanation for this difference can be assigned to the operational necessities of these banks. Redesigning AIS based on (SysTrust) criteria and principles has clearly improved the transactional engine of the sample banks in terms of integration, security, and integrity. It has been found that 51.2% of the improvement in profit rates is resulted from the style of new process and procedures. The picture was less clear about the causal link between (SysTrust) and other parameters of the banking performance matrix. Part of the reason beyond such result lays in the fact that investment in the Jordanian commercial banks needs more exploitation far from the operational aspects. Also, integrating banking customer base needs more mature technological applications which unfortunately missed on sample banks such as phone and mobile banking applications (See Table-3, Table-4, Table-5, Table-6, Table-7, and Table-8).

AIS Trust	***Mean***	***Standard Deviation***	***T-test***	***Sig.***
Availability of AIS	77.85%	11.54%	24.122	0.000[a]
Security of AIS	76.54%	14.41%	18.990	0.000[a]
Maintainability of AIS	69.92%	14.41%	23.699	0.000[a]
Integrity of AIS	57.00%	16.19%	12.548	0.000[a]
**Tabulated T= 1.782 (Sig.5% & fd=12)*				

Table-2: Existence of (SysTrust) Principles & Criteria

MVA	$[MVA = \alpha \mp \beta_1\chi_1 \mp \beta_2\chi_2 \mp \beta_3\chi_3 \mp \beta_4\chi_4 + \ell]$			
α	***Sig***	***F***	***R^2***	***R***
-9,329,202,571	0.4388[a]	1.052	0.34%	0.59%
(SysTrust) Principles	***T***	β	***Sig***	
Avialiabilty of AIS	1.600	128.9	0.110	
Security of AIS	0.482	31.01	0.642	
Maintainability of AIS	-0.742	-63.7	0.479	
Integrity of AIS	0.865	41.47	0.412	

Table-3: Statistical Tests of (SysTrust) Impact on MVA

ROI	$[ROI = \alpha \mp \beta_1\chi_1 \mp \beta_2\chi_2 \mp \beta_3\chi_3 \mp \beta_4\chi_4 + \ell]$			
α	**Sig**	**F**	R^2	**R**
260	0.0408[a]	6.664	45.40%	67.40%
(SysTrust) Principles	***T***	β	***Sig***	
Avialiabilty of AIS	2.455	1.944	0.021	
Security of AIS	1.862	3.467	0.040	
Maintainability of AIS	2.363	3.901	0.006	
Integrity of AIS	3.579	1.804	0.009	

Table-4: Statistical Tests of (SysTrust) Impact on ROI

NPM	$[NPM = \alpha \mp \beta_1\chi_1 \mp \beta_2\chi_2 \mp \beta_3\chi_3 \mp \beta_4\chi_4 + \ell]$			
α	**Sig**	**F**	R^2	**R**
142	0.003[a]	8.600	51.20%	71.50%
(SysTrust) Principles	***T***	β	***Sig***	
Avialiabilty of AIS	2.525	1.226	0.036	
Security of AIS	1.870	1.361	0.042	
Maintainability of AIS	1.997	0.347	0.047	
Integrity of AIS	2.043	0.014	0.007	

Table-5: Statistical Tests of (SysTrust) Impact on NPM

ROA	$[ROA = \alpha \mp \beta_1\chi_1 \mp \beta_2\chi_2 \mp \beta_3\chi_3 \mp \beta_4\chi_4 + \ell]$			
α	**Sig**	**F**	R^2	**R**
142	0.003[a]	8.600	51.20%	71.50%
(SysTrust) Principles	***T***	β	***Sig***	
Avialiabilty of AIS	2.525	1.226	0.036	
Security of AIS	1.870	1.361	0.042	
Maintainability of AIS	1.997	0.347	0.047	
Integrity of AIS	2.043	0.014	0.007	

Table-6: Statistical Tests of (SysTrust) Impact on ROA

EPS	$[EPS = \alpha \mp \beta_1\chi_1 \mp \beta_2\chi_2 \mp \beta_3\chi_3 \mp \beta_4\chi_4 + \ell]$			
α	**Sig**	**F**	R^2	**R**
0.50	0.793	0.416	17.20%	41.50%
(SysTrust) Principles	***T***	β	***Sig***	
Avialiabilty of AIS	0.126	0.001	0.903	
Security of AIS	1.148	0.009	0.284	
Maintainability of AIS	-1.058	-0.011	0.321	
Integrity of AIS	0.058	0.000	0.955	

Table-7: Statistical Tests of (SysTrust) Impact on EPS

P/E	$\left[P/E = \alpha \mp \beta_1\chi_1 \mp \beta_2\chi_2 \mp \beta_3\chi_3 \mp \beta_4\chi_4 + \ell\right]$			
α	***Sig***	***F***	***R***^{2}	***R***
28.63	0.001	7.174	37.00%	60.80%
(SysTrust) Principles	***T***	β	***Sig***	
Avialiabilty of AIS	1.927	0.619	0.040	
Security of AIS	0.439	0.127	0.672	
Maintainability of AIS	3.550	0.212	0.036	
Integrity of AIS	1.830	0.194	0.044	

Table-8: Statistical Tests of (SysTrust) Impact on P/E

6. CONCLUSIONS

The present paper highlights two important matters. First, the IT infrastructure of the Jordanian commercial banks by its status qua is mature enough to provide the operational requirements for (SysTrust) principles and criteria. Such result matches the conclusion of (Casolaro & Gobbi, 2004). Second, the IT management of these commercial banks needs to be enhanced for more mature and innovative use of IT in banking applications. By investigating the AIS design, this paper has discovered that Jordanian banking environment has acceptable rate of existence for (SysTrust) principles and criteria such as availability, security, maintainability, and integrity. Due to operational focus in building and designing AIS, the impact of (SysTrust) principles and criteria on parameters of banking performance matrix is still unclear. The findings from this paper indicate the urgent need to exploit IT infrastructure for more adoption, adaptation, and integration with banking investment applications. A challenge of AIS design is not to apply (SysTrust) principles and criteria, but how to develop new ways to integrate these principles and criteria with parameters of banking performance matrix.

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