INFORMATION TECHNOLOGY AND ITS IMPLICATIONS FOR INTERNAL AUDITING: AN EMPIRICAL STUDY ON LEBANESE ORGANIZATIONS

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Abstract

The use of Information Technology in organizations and in a business context has notably been associated with the manner in which transactions are carried out through recording, processing, and reporting of information. This often happens to organizations that have automated information systems to perform the aforesaid activities. In this regard, the study, therefore, aims to investigate the impact of the rapid growth of the Information technology to internal auditing activities and examine if there are changes that are identified in information technology evaluations that are undertaken in Lebanese Organizations. In carrying out this research, a quantitative methodology approach was deployed where a surveying technique was used to facilitate the study by use of a self-administered questionnaire that aided in achieving these objectives. Five hundred copies of the questionnaire were randomly distributed to Lebanese organizations located across Beirut specifically to accountants and auditors. The survey results were analyzed using SPSS software to show the impact of information technology in auditing activities and the changes that have been experienced in Information technology and their implications on the accounting sector. The survey findings have been used to conclude if the internal auditors need to enhance their knowledge and skills of computerized information system (CIS) which can help improve planning, directing, supervising and reviewing the work performed. Factors that affect Auditors performance on the Information Technology evaluations were identified and their impacts assessed. The research conclusively highlighted the impact of the study on managers and auditors.

Keywords: *Information Technology, Internal Auditing, Risk Evaluation, empirical study, and Lebanon.*

Clasificare JEL: *M40, M41*

1. Introduction and context of the study

In recent years, Information communications technology (ICT) has become one of the major drivers to the growth of the economy considering its usage in every sector of the economy.

ICT has been broken into subsets with Information Technology (IT) been one of the subsets. Information technology can be used to refer to the use of computer systems in storing, retrieving, transmitting and manipulating data or information in a business or organization context. IT, therefore, can be summarised in terms of its functions which are designing, implementing and maintaining control activities of an organization which means that it plays roles such collecting, processing and storing information of an organization [1].

Many organizations in recent years have rampantly depended on Information Technology to process and control information through less paperwork that is used. This has therefore led to an increase in the levels of accuracy and efficient time management in organizations through increases in the speed used in processing information. This, therefore, creates a tool for the competition where there is an overall efficiency in operations of the organization due to low costs as well as minimal human errors [2]. However, the incorporation of Information Technology in organizations as well brings several risks with it. Some of the risks include

operational risks such a loss of data through theft and system malware, violation of privacy in case information lands to the wrong hands, loss of a competitive tool when improper IT is deployed in an organization, erroneous record-keeping in case the information collected had an error, the risk of loss of computer assets, and general disruption of the business [3].

A large proportion of the internal controls over financial data are built-in computer program procedures and processes that are written, adopted and implemented by the IT sector. This means that an asset from an organization can be transferred and that liabilities can be incurred without necessarily involving any human effort. More secure transactions such as material purchases and money transfer are incorporated in computer processes. This means that there is a certain degree of automation, which may go to a point where human activity will only be limited to results and sanctioning.

Internal auditors are slowly been replaced by computer processes through radical changes in some organizations. This is noted from the advancement in it which fosters the control activities as obsolete thus making the value of the traditional methods of auditing questionable. In this regard, the auditors must keep the pace at which the IT is growing and the impact that this growth is bringing to the processing system of the client's data as well as personal audit procedures. This is evidenced by the fact that growth in IT is not only affecting audit activities in organizations but also breaking the hierarchical fountain of control structures such as total quality management and reengineering of business processes [4]

The use of IT in business organizations can deploy roles such as initiating transactions, recording, processing and finally reporting about specific details of a transaction. This is, however, most recently associated with automated information systems that record data in an electronic format. Controls in systems that utilize IT in operations compose both automated and manual procedures where the latter may sometimes be independent of the IT systems, may utilize the data stored in these systems or finally, the manual procedures or the controls may be constrained to monitoring the functioning of IT and the automated controls more effectively.

The research paper, therefore, aims at investigating the impact of the rapid growth of the Information technology to internal auditing activities and examine if there are changes that are identified in information technology evaluations that are undertaken in Lebanese Organizations. The study has been organized into several sub-sections as follows; the statement of the problem, literature review part which defines the IT evaluation and its related activities concept. Additionally, this part has been broken down to identify some of the benefits of IT in business management and the risks and challenges of adopting IT in a business context. The third part is the methodology part which defines the procedures of obtaining the data for the study. The fourth part presents the results and findings of the empirical survey and the discussions thereafter. The final part presents the conclusions, the necessary recommendations and future implications of the study.

2. Statement of the problem

As aforesaid, incorporation of an IT system in the operations of an organization dictates the procedure in which transactions are carried out, through monitoring how they are initiated, recorded, processed and finally reported. IT in an organization may be used by auditors in designing proper audit procedures. In designing the procedures, auditors are supposed to evaluate the impacts of risk, the features of the transactions, the balances in the accounts and the nature of the control activities that an organization undertakes. This means that the auditors are able to tell if they expect to obtain a piece of audit evidence in determining the effectiveness of the controls in an organization in preventing, detecting and correcting any errors such as material misstatements.

There has been a notable change in the audit activities of both the external and internal auditors as noted in the International Standard of Auditing 401- Auditing in Computer

Information Systems Environments. These changes have been arguably said to be brought by factors such as globalisation whereby there is the venture of enterprises into the global market, rapid advancement in the level of technology, increased urge to get the value-added audits, different organizational structures, the pattern of distribution of the computer processing which particularly affects the way the duties are segregated as well as the availability of the sources of data. This particularly affects the computer source files that are available for a short period of time or are only available in a machine-readable form. Therefore, this means that an auditor should be well skilled in the Computerized Information Systems use which will aid in planning, directing, supervising, and reviewing the work that was performed.

Internal auditors have delegated the duties of addressing risks and controls and other vital factors throughout the IT adoption and implementation process. Internal auditors are however expected to go an extra mile in providing other services that aim at reducing the failures of IT [5]. Therefore, the accountability and responsibility of an auditor in the evaluation and improvement of the quality of the documents that guide a procedure contribute to the successful implementation of Information Technology. Additionally, the internal auditors also provide a significant input regarding how the IT systems are configured and most importantly in a way that enhances the use of proper controls. Additionally, there has been an expansion in the scope of internal auditing from measuring and evaluating the internal controls to aiding in IT and system development advice. However, this sometimes brings impaired independence to internal auditors who are acting as consultants [6].

The overall objective and scope of auditing remain constant in Computer Information Systems. This was confirmed by the International Standard of Accounting 401 which however acknowledged that use of computers brings along changes to the processing storing and the communication of financial information. The body further suggests that these changes may affect the accounting and internal control systems that are incorporated by organizations. An environment of Computerised Information systems bring changes such as; the methods that the auditors follow in learning about accounting and Internal control systems, changes in risk assessment procedures and finally the design of performing tests of controls.

Internal auditors are more exposed to IT systems presently than in the past. Information Technology is a major determiner of how well the organizations functions and its integration goes to a level at which every type of audit requires some IT integration in it. The overall quality of audits depends on the degree of IT that has been integrated into the audit activities. He suggested that an IT audit could be performed for small-sized systems through end products auditing. This, however, could not be achieved in large and complex systems and as a result, there is the need for the auditors to collect additional evidence that pertains to the quality of the operation and application internal control systems. This brings along data reliability and hence integrity, the effectiveness, and efficiency of the system, and asset safeguarding the objectives of Information Technology audit.

The study aims at examining the impacts of the emerging IT for the internal auditors' activities as well as examining the Information Technology evaluations that are performed by internal auditors in organizations based in Lebanon. This study, therefore, tries to address what the Lebanese organizations re doing and to determine the drive of IT evaluations either from organizational or objective characteristics such as the number of computer auditors, the age of computer systems and even the industries. The information so collected will be analyzed and the results will enable managers and all stakeholders to understand internal controls of the Computerised Information Systems in a better way.

3. Literature review

While reviewing the relevant literature that is associated with the evolution of IT, little has been done regarding empirical work on Middle East countries and more done on the descriptive

basis with an aim of promoting computer adoption worldwide. This, therefore, calls for a study that will empirically investigate the impact of IT in organizations and specifically to internal audit controls [7].

In their study on the impacts of Information Technology on auditing functions, [8] discussed major issues that offered the auditors guidance to secure more evidence and audit Computerised Information Systems to the clients. They argued that Information Technology has made activities that are related to transactions more simple while making the evaluations more complicated as there arose the need to secure enough and sure evidence to reach proper judgments and hence the make the best decisions. This therefore brought along issues such as the source of evidence, the control activities that will be involved as well as the methods of evaluating the procedures. Information that was gathered from over one hundred US internal auditors by [9] showed that the internal auditors only focused on traditional Information Technology controls and risks such as asset safeguarding, the integrity of the data, privacy and security and application processing. He argued that internal auditors ignored other areas such as the perils that are associated with systems development and acquisition. This behavior was associated with several factors as follows; the nature and type of the audit objective the availability of skilled personnel who have a great understanding of the internal audit staff and finally the outdated Computer Information Systems. Therefore, the study has been performed in response to the call by [10 &11] of investigating the roles of other parties that are beyond internal auditors and that might be actively engaged in the Information technology and to analyze the results empirically.

An internal auditor traditionally was responsible for the risk management issues and control testing specifically when it came to areas of implementing IT [12]. Their work suggested that the internal auditors are as well responsible for giving out other information regarding system configuration which will ensure that efficient and most effective integration controls will be reached and hence contribute to wise decisions. In this regards, there should be a well-laid means of communication between the internal auditors and the IT department that will help ensure that whenever there is an update of the existing systems or there are new systems, they are properly documented. This urge arises from the fact that record keeping is an integral player in proper auditing and hence very useful and important to internal audit in the process of risk assessment and evaluation. Therefore, it is the role of the internal auditors in ensuring that the Computerised Information Systems are tracked through recording and documentation.

Research conducted by [13] to investigate the opinions of Chief Executive Officers on internal audits showed that the Chief Executive Officers are concerned with the internal audit remaining independent and dropping the consultancy function. This arose from the fact that most of the respondents were against the involvement of the internal audit in the development, adoption, and implementation, and maintenance of the planning and designing phases. [14] investigated the qualifications of Information Technology and the activities of the internal auditors. The research concluded that although audit committees provided limited oversight of the IT-related risks, there was still a room for them to oversee the area.

Canon focused on the merits of information technology to the internal control micro and macro-environment and explained the aspects of Information Technology that might bother the role in regards to financial controls. They highlighted the importance of IT function to the control environment and the success of any school of accountancy. The authors argued that the Information Technology sector does not view the effectiveness of financial controls as their own responsibility. Therefore, the Internal auditors and the IT department should accept these responsibilities as delegated by the school of accountancy [15].

In 2004, research was conducted to explore the similarities and differences of internal auditing among the private and public sectors in New Zealand and Australia [16]. The results showed that there existed a major difference between the two types of sectors. The results showed that the public sectors had a higher status as compared to the private sectors where more

than thirty percent of the internal auditors reported to the chief financial officers. However, the study also revealed that infinitesimal differences that would not be easily noticeable existed between the internal audit activities and the interactions with the external audit in the two sectors of the economies.

Finally, the study revealed that there was a similarity in the time that was spent on various internal audit activities. The research aimed at identifying the main factors that drive listed companies in an Australian stock market to have an internal audit function was conducted by Goodwin The results of the study revealed that a large sector of the Australian listed companies did not use internal audit and those that did mainly had less than two internal auditors. The outcomes of the study also revealed that there was a firm relationship between how the internal audit was used and the commitment to strong risk management. This suggested that smaller organizations did not consider internal audit as a cost-effective control. Finally, the research found out that there was a significant relationship that existed between the internal audit and how complex the organization's business structure was [17]

Most of the research has been done on the developed economies as illustrated above and little research done on the developing countries more so in the Middle East. It is therefore under this condition that I believe such research in Lebanon could bear exemplary results that will help managers and other stakeholders acquire more knowledge on internal control and internal audits. This knowledge will be useful in the adoption and implementation of internal controls and every other activity that is carried out by the internal audit department. In this regard, the paper as well focuses on some of the benefits of using IT in an organization to bring along the big idea to the organizations that are yet to adopt the same.

4. Benefits of it in business management and the risks and challenges of adopting it in a business context.

Integration of Information Technology has led to an increase in data security. IT has led to the innovation of more secure and convenient security passes to databases through encryptions. Data that was initially exposed to every user is safeguarded against unauthorized hands thus ensuring that there is no data leakage, data contamination and loss of data. Additionally, IT improves data storage through cloud hosting services where data back-up is as well done. This enables retrieval of information in case of loss or data corruption [18]

Information Technology improves communication. Through the innovation of IT gadgets and devices such as mobile phones, electronic mailing, and instant messengers, there is faster movement of information across departments in an organization. This helps in saving time and congestion as employees can move data to every department without necessarily moving and therefore reducing physical interruption.

Finally, among other benefits, integration of IT in business management ensures that there is efficiency in the operations. This is mainly acknowledged by cost cuts that are only encountered through the use of IT. For example, small and medium-sized enterprises that could not raise money to advertise in large platforms can nowadays advertise on social media platforms at very little costs. IT also ensures that the customers get what they deserve, through good service and hence making every operation smooth from the consumer to the management. Other benefits include increased competitive advantage, improved financial management, and increased production.

On the other hand, IT integration into a business is faced by several challenges and risks. These challenges and risks include; the implementation expense challenge were both small and large enterprises have to incur expenses in adopting IT-based systems as well as the maintenance costs of the same. It is also worth noting that maintaining the level of technology sometimes is expensive and unaffordable to some organizations whose failure prompts customer's maintenance.

IT incorporation in business management brings along job elimination, whereby the new technology secures human positions thus leads to unemployment. This sometimes brings the urge of people breaching the security of organizations due to idleness through hacking and thus expose the organization to risks of thefts. Additionally, there is the risk of loss of competitive advantage in case the Information Technology that has been upheld by the organization is improper among other risks.

5. RESEARCH METHODOLOGY

The study conducted a survey using an online questionnaire presented in appendix 1. The questionnaire was presented aiming at evaluating and exploring the impacts of IT and other related activities on the internal auditors in Lebanon. The questionnaire used was developed by Hermason and edited by Ahamad & Abu-Musa with minor revisions on it. The respondents were assured that the responses remained anonymous and that the results obtained were not attributable to any other organization and that they were meant only for the study [19].

The questionnaire has been subdivided into four major parts with the first part seeking responses on the objectives and the goals of the audit evaluations with a five Likert scale which were 1= rarely done, 2= occasionally done, 3= frequently done, 4= often done and 5= always done for each and every objective. The second part B of the questionnaire sought responses on the tests that are outlined by the IFAC and classified under eight categories using the same Likert scale (1= rarely done, 2= occasionally done, 3= frequently done, 4= often done and 5= always done). The third part, C, intended to collect primary data that was associated to the usage of computer-assisted audit techniques in Lebanon. The last part D was set to address the major features of organizations and the Bio data of the respondents.

Five hundred responses were received from the online questionnaire whereby to maintain the number, responses beyond 500 were not considered. Additionally, any incomplete questionnaire was replaced by a complete one for simplicity in the analysis. Internal consistency and inter-rater reliability tests were performed to ensure that the data so obtained fulfilled the predicted objectives and hence is reliable. The results of the reliability showed that the data was highly reliable and unbiased. The data was analysed using SPSS software and gave the following background research data.

6. RESULTS AND DISCUSSIONS

Table no.1 showing the type of companies the respondents worked for

Type of company	frequency	percentage	Cumulative percentage
Private held	320	64.0	64.0
Public held	180	34.0	100.0

(Source: Author's own research)

Table no.2 showing the mode of data processing

mode	**frequency**	**percentage**	**Cumulative percentage**
Centralized	340	68.0	68.0
Decentralized	160	32.0	100.0

(Source: Author's own research)

Finally, the majority of the respondents acted as accountants and internal auditors except for thirty-three respondents who acted as managers in their companies. The system's efficiency in terms of if they are updated or outdated showed an average of 45%.

The company demographics were subdivided into 5 sections within one category regarding the type of company captured above. The responses indicated that most of the companies were mainly classified according to the amount of revenues collected and the types and not necessarily with the internal auditors and computer specialists as shown in table 3 below

Table no.3 showing the demographic data of companies

Company demographics	**frequency**	**percentage**	**Cumulative percentage**
Revenues in the most recent year	135	27.0	27.0
No of internal auditors	67	13.4	40.4
Number of computer specialists	47	9.4.0	49.8
Industry (manufacturing, service, retail and wholesale, banks and others	251	50.2	100.0

(Source: Author's own research)

The study additionally reviewed the following results for every category:

Table no. 4 showing the tests of evaluation and their respective frequencies

test	responses	frequency	percentage	Cumulative percentage
Tests of controls within the application	Rarely done	46	9.2	9.2
	Occasionally done	192	38.4	47.6
	Frequently done	122	24.4	72.0
	Often done	86	17.2	89.2
	Always done	54	10.8	100.0
Integration of evaluation of application controls and general controls	Rarely done	160	32.0	32.0
	Occasionally done	74	14.8	46.8
	Frequently done	112	22.4	69.2
	Often done	108	21.6	90.8
	Always done	46	9.2	100.0
Evaluation of system maintenance and program change standards	Rarely done	65	13.0	13.0
	Occasionally done	165	33.0	46.0
	Frequently done	108	21.6	67.6
	Often done	106	21.2	88.8
	Always done	56	11.2	100
Tests of system maintenance and program change controls and Evaluation of system maintenance and program change controls	Rarely done	192	38.4	38.4
	Occasionally done	211	42.2	80.6
	Frequently done	37	7.4	88.0
	Often done	25	5.0	93.0
	Always done	35	7	100.0
Understanding of data protection legislation, if applicable and the Consideration of personnel issues and confidentiality	Rarely done	184	36.8	36.8
	Occasionally done	112	22.4	59.2
	Frequently done	92	18.4	77.6
	Often done	54	10.8	88.4
	Always done	58	11.6	100.0
Evaluation of security standards and procedures; Evaluation of security technologies, physical and logical access controls	Rarely done	202	40.4	40.4
	Occasionally done	186	37.2	77.6
	Frequently done	64	12.8	90.4
	Often done	28	5.6	96.0
	Always done	20	4.0	100.0
Tests of compliance with security standards and policies and	Rarely done	176	35.2	35.2
	Occasionally done	134	26.8	62.0
	Frequently done	104	20.8	82.8

effectiveness of controls and Tests of production library security and controls	Often done	56	11.2	94.0
	Always done	30	6.0	100.0

(Source: Author's own research)

Further results showed that the evaluation of internal controls is the most fundamental objective when evaluating Computerized Information Systems. This was followed by the evaluation of compliance with the policies and regulations. This translated to other findings that little attention has been accorded to the evaluation of the efficiency and the effectiveness of the use of Information Technology. Nevertheless, the results showed that the task can be done basically on a higher notch instead of the internal audits that involve the evaluations of the utilization of capital resources of an organization. The results also reviewed that approximately forty percent of the respondents had adopted a typical style of performing audit activities using the computer while thirty-seven percent are performing the activities through the computer and the rest of the respondents (23%) are performing these activities around. the computer. The results have also indicated that most of the evaluations are rarely done across organizations with approximately forty percent of all the organizations conducting the evaluation tests from every aspect fully. This can be arguably be said to be evolving from inadequate skills which are shown by most auditors. Lack of computer specialists limits the way Computerised Information systems are utilized and monitored and hence brings along with its negative effects.

Additionally, the results are as well associated with the past research conducted by Hermason who suggested that there is the reluctance of internal auditors in performing Information Technology related evaluations such as the asset safeguarding, the Computerised information systems implementation, application processing and the procedures of processing and data recovery plans.

7. Conclusions

The research aimed at investigating the impacts of Information Technology on Internal auditors. The research has addressed some of the main areas where internal auditors use IT in the assessment and management of Information technology-related risks in Lebanon. The study through the results showed a correlation between the internal auditors' Information Technology evaluations and the audit objectives. (Combined in table 4 above). The research also noticed that internal auditors mainly focus primarily on the non-traditional methods of control and system security. Most of the most performed evaluations include data integrity evaluations, privacy evaluations, and security evaluations. Several other modes of evaluation that are carried out in Lebanese organizations are included in the 36 model evaluation tests and later subdivided into specific classes for a general analysis. The current research considered. The results also showed that most of the tests from the eight groups are undervalued by many organizations and only a few organizations consider them.

In the statement of the problem of the current research, the study revealed that the internal auditors have a major playground through which they can exercise roles that will enhance the viability and the usefulness of Information technology and the implementation in the Lebanese organizations. However, this calls for some more knowledge and skills of using Computerised Information systems in planning, directing, supervising and reviewing the work performed. Through the acquired skills, the internal auditors and managers will realize that the size of internal audit sectors and the number of computers are not significant to the performance of the evaluation activities.

The study, however, calls for additional analysis on each and every type of evaluation as well as an elimination of the general analysis of the evaluation controls. This will present a more detailed analysis such as the correlation and regression analysis of all the evaluation models which will aid the managers in determining the relationship between the control activities and the evaluation objectives. Additionally, a future study can be focused on other developing countries especially in the Middle East which will help investigate why the internal auditors perform little work that is related to IT asset safeguarding as aforementioned above. This study can be implied by managers in coming up with better methods and strategies through which the evaluation of internal audits will be performed as well as making sure that the internal auditors accept the roles that are related to application processing and asset safeguarding.

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Appendix I

Dear Respondents!

I am examining the usage and evaluation of information technology (IT) by internal auditors in Lebanon organizations.

The study is designed:

- To provide internal audit directors with an overview of other companies' approaches to auditing computerized information systems, and
- To provide accounting educators with greater insight into the IT dimension of internal auditing practice so that we can better prepare future graduates for professional success.

The impetus for this research is the release of the International Federation of Accountants' Education Guideline No. 11, "Information Technology in the Accounting Curriculum." The Guideline summarizes the information technology competencies required of practicing accountants and auditors. Our study will examine the tie between the competencies listed in the Guideline (the system evaluator role) and current internal audit practice. In other words, "How are the competencies in the Guideline reflected in internal audits today in Lebanon?"

Please take a few (approximately 15) minutes to complete the enclosed questionnaire. You have our personal and professional assurance that all responses will remain anonymous. No results will be attributed to any particular organization.

I would very much appreciate your assistance with this research. Your response is very important to the study, and we thank you in advance for your participation.

Sincerely,

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Information Technology and its Implications for Internal Auditing: An Empirical Study on Lebanon Organizations

Please respond to the questions below by circling the appropriate number on the scale. **Please answer all questions based on your internal audit department's "typical" audit approach or "typical" portfolio of audit activities. If a question is not applicable to your organization, please leave the response blank.** You have our personal and professional assurance that all responses will remain anonymous. No results will be attributed to any particular organization.

Part A - Evaluation Objectives

As your internal audit department evaluates computerized information systems, what are the primary (most common) objectives of your evaluation? Please rate the four possible objectives below.

Evaluation Objectives	Rarely Done (1)	Occasionally Done (2)	Frequently Done (3)	Often Done (4)	Always Done (5)
1. Evaluation of efficiency / effectiveness / economy of IT use					
2. Evaluation of compliance with policies, statutes, and regulations					
3. Evaluation of internal control in computer-based systems					
4. Evaluation of fairness of financial statement representations and the accuracy and completeness of computerized accounting records					

Part B -- Types of Evaluations

Evaluations of computerized information systems (CIS) can involve a number of specific tests.

Please rate the frequency of your department's performance of the following specific evaluations and tests.

Types of Evaluations	Rarely Done (1)	Occasionally Done (2)	Frequently Done (3)	Often Done (4)	Always Done (5)
1. System development and acquisition					
a. Evaluation of acquisition/development standards and methods					
b. Tests of compliance of development methods with standards					
c. Evaluation of acquisition/development controls					
d. Evaluation of system development technology (e.g., CASE)					
2. System implementation					
a. Acceptance testing methodologies					
b. System conversion methodologies					
c. Evaluation of post-implementation review practices					
3. System maintenance and program change					
a. Evaluation of system maintenance and program change standards					
b. Tests of system maintenance and program change controls					
c. Tests of production library security and controls					
d. Evaluation of system maintenance and program change controls					
4. IT asset safeguarding -- evaluation of facilities management and IT asset safeguarding					
IT asset safeguarding -- evaluation of					

facilities management and IT asset safeguarding					

5. Data integrity, privacy, and security

a. Understanding of data protection legislation, if applicable					
b. Consideration of personnel issues and confidentiality					
c. Evaluation of security standards and procedures					
d. Evaluation of security technologies, physical and logical access controls					
e. Tests of compliance with security standards and policies and effectiveness of controls					
f. Tests of the effectiveness of controls					

6. Continuity of processing/disaster recovery planning

a. Evaluation of threat and risk management methods					
b. Evaluation of software and data backup techniques					
c. Evaluation of alternate processing facility arrangements					
d. Evaluation of disaster recovery procedural plan, testing, and documentation					
e. Evaluation of integration of IS plans with user department plans					
f. Tests of compliance of recovery procedures with standards					
g. Tests of the effectiveness of recovery procedures with standards					

7. Operating system/network processing activities

a. Evaluation of operational activities					
b. Evaluation of performance monitoring					

methods					
c. Evaluation of controls over productivity and service quality					
d. Evaluation of technologies used to automate IS operations					
e. Tests of compliance with operational policies					
f. Tests of the effectiveness of general controls					
g. Tests of performance achievements					

8. Application processing

a. Identification of transaction flows					
b. Evaluation of strengths and weaknesses of the application					
c. Tests of controls within the application					
d. Integration of evaluation of application controls and general controls					

Part C -- Usage of Computer Assisted Audit Techniques

Please rate the extent to which your internal audit department uses the following techniques.

Usage of Computer Assisted Audit Techniques	Rarely Done (1)	Occasionally Done (2)	Frequently Done (3)	Often Done (4)	Always Done (5)
1. System analysis and documentation (e.g., flowcharting packages, review of program logic)					
2. System/program testing (e.g., test data, integrated test facility, parallel simulation)					
3. Data integrity testing (e.g., generalized audit software, utilities)					
4. Problem-solving aids (e.g., spreadsheet,					

database, on-line databases)					
5. Administrative aids (e.g., word processing, audit program generators, work paper generators)					

Part D -- Company Information and Other Questions

1. Are evaluations of computerized information systems **typically** performed (check one):
   a. Only by computer audit specialists?_____
   b. By all of your internal auditors?_____
   c. Other (explain below)._____

2. Is your organization's **typical** style to audit primarily (check one):
   a. Around the computer? _____
   b. Through the computer? _____
   c. With the computer? _____

3. Company demographics:
   a. Revenues in the most recent year_____
   b. Number of internal auditors_____
   c. Number of computer audit specialists____
   d. Industry (check one):

Manufacturing _____
Service _____
Retail / Wholesale _____
Banks _____
Regulated _____
Other _____

e. Is the company (check one):

Publicly-held? _____
Privately-held? _____
Joint Venture? _____

4. Computer system information

a. Is the company's data processing generally (check one)

Centralized? _____

Decentralized? _____

b. Approximately what percentage of the company's computer systems is new within the last 3 years? ----------

c. Approximately what percentage of the company's computer systems is, in your opinion, outdated? ----------

5. What is your job title? _____

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS STUDY.

Link: https://forms.gle/TBc5f1NeomLQpeEH6