FINANCIAL INFORMATICS ENTERPRISE AND AUDIT RISK IN DEVELOPING ECONOMY

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INTRODUCTION/ABSTRACT:

Introduction Technology (IT) has had a radical impact on business processes in both developed and developing countries. It facilitates the streamlining of the administrative process and enables the decentralisation of the scope and scale of the business. An Accounting Information System (AIS) is the system of records a business keeps maintaining its accounting system. This includes the purchase, sales, and other financial processes of the business. The purpose of AIS is to accumulate data and provide decision makers (investors, creditors, and managers) with information to make decisions. While this was previously a paper-based process, most modern businesses now use computerised accounting software such as Sage, Peachtree, Pegasus, Oracle Financial, Iris etc. These are referred to as Computerised Accounting Information System (CAIS). It should be noted that Computerised Accounting Information Systems (CAIS) and IT- based Accounting Systems mean one and the same thing. Both of these will be used interchangeably in this dissertation.

This research aims to assess the impact of the adoption of Computerised Accounting Information Systems (CAIS) or Information Technology (IT) Based Accounting Systems on the level of audit risk in Nigeria. In order to meet the objectives of the research, it was decided that a survey strategy was very much appropriate. It is appropriate because the survey can obtain information from members of a defined population, which in this case consists of auditors in professional audit firms in Nigeria. The primary data for this research was colleted via questionnaires. Some of the key findings of the research are that auditors in Nigeria are incompetent in dealing with issues relating to the audit of CAIS; auditors in Nigeria lack awareness of the issues, problems and risks associated with CAIS; that auditing around the computer approach used by auditors in Nigeria does not allow auditors to detect programme

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errors that do not show up in the computer reports; that the disappearance of the audit trail makes it difficult, if not impossible, for the auditor to follow the processing in a particular application area etc.

Information Technology (IT) has had a huge impact in the developed world. It facilitates the streamlining of the administrative process and enables the decentralisation of the scope and scale of the business. Businesses are harnessing the advantages of using IT due to harsh competition from rivals, financial pressures to lower operating expenses and the impact of globalization. This study seeks to examine the impact of the adoption of information technology on the audit risk in Nigeria.

The aim of this paper is to introduce the research problem undertaken in this study. The second section provides a background to the research problem; the third section explains the rationale for the research; section four includes the research question; section five contains the research aims; and section six outlines the research objectives.

Background to the Research Problem

Introduction Technology has had a radical impact on business processes in both developed and developing countries. It plays a major role in many, if not most, of the everyday operations of today's business world. This advancement in technology has fostered the creation of computerised accounting information systems, which enables accounting tasks to be accomplished with increased speed and accuracy. An accounting information system is the systems of records a business keeps to maintain its accounting systems. This includes purchases, sales and other financial processes of the business.

About a decade ago, the accounting systems in many businesses in Nigeria were mostly manual, for example financial records were manually maintained (paper-based), but with the increased growth in the usage of computerised information accounting systems in Nigeria and the increased risk posed by such systems such as accidental and intentional entry of bad data, organised fraud etc, the main question is if the audit risk placed by auditors on businesses using these systems have changed due to the increased usage of these systems.

The research aims to assess if there has been significant changes in the level of audit risk placed by auditors on particular businesses due to the adoption of computerised accounting information systems.

Rationale for the research

There has been a significant increase in the number of companies and businesses that have adopted Computerised Accounting Information Systems (also referred to as Information Technology Based Accounting Systems) into their day-to-day activities. The advantages of these systems in modern day business cannot be over-emphasised. This has created a new audit environment, which is very different from the traditional environment, in which accounting processes and systems were predominately paper based and manual. This new computerised systems has created new audit environment which has different attributes to the traditional one. Hence there is the need to examine the level of audit risk after the adoption of these computerised accounting information systems.

There are a number of reasons that makes me want to embark on this dissertation. I have mentioned some of these below:

The final research presented to the university will be in partial fulfilment for the award of a masters' degree in computer systems auditing.

It will also improve my awareness of issues relating to the use of computerised accounting information systems in Nigeria.

The results of this research study might be useful to audit firms, whose clients' have adopted computerised accounting information systems, by providing an insight into the risks associated with such accounting systems. Hence allowing these firms to provide ways of mitigating these risks and improving the quality of audit in Nigeria.

Research Question

Has the adoption of computerised accounting information systems in businesses in Nigeria affected the level of audit risk?

Research Aim:

To assess the impact of the adoption of computerised accounting information systems on the level of audit risk in Nigeria.

Research Objectives:

The following consists of the research objectives of this paper:

To assess the extent to which the accounting systems in companies and businesses are computerised in Nigeria.

To evaluate the possible problems that are associated with auditing in a computerised accounting information system based environment in Nigeria.

To evaluate the impact of computerised accounting information systems on the level of audit risk, whether the audit risk has significantly changed (increased) after the adoption of these computerised accounting information systems by clients in Nigeria.

LITERATURE REVIEW

This research will aim to provide the reader with a literature review of the different aspects of Computerised Accounting Information Systems (also referred to as IT-based accounting systems) and its impact on the audit risk. The discussion will commence with a look at the definition of Computerised Accounting Information System and the types of IT-based accounting systems in use in businesses. The discussion will then go on to look extensively at the differences between CAIS and manual accounting systems; the types of auditors and the different kinds of audit activities. Also covered in the literature review is a very descriptive definition of internal control; the various types of internal controls in an IT

based environment; a highly descriptive account of audit risks and its components and finally the potential risks that are associated with auditing in an IT- based audit environment.

Definition of Information Technology (IT)

Information is more than just news; it has been defined as knowledge, facts, figures, data, intelligence, ideas, etc essential for planning and development (Adimorah, 1977). According to Burch and Grudnitski (1986), developmental information must have three attributes consisting of accuracy, timeliness and relevance. If information is to fulfill these attributes, it requires in almost all cases to be processed and repackaged in a format that will allow for its quick, clear and maximum utilisation. This cannot be actualised through manual processes. In response to this inherent incapacity, various technologies have been invented for the management of information resources. It is these that are referred to as information technologies. According to Moll (1983), IT refers to the various technologies used in the creation, acquisition, storage, dissemination, retrieval, manipulation and transmission of information. Information Technology is rapidly changing the global business market. It is altering not only the way in which business is conducted, but also the way in which information is accessed (Cosserat, 2000).

Information Technology (Early Development)

Modern computers, as we understand, were essentially designed and developed in the United States half a century ago. At the end of the twentieth century and the dawn of the twenty-first century, a new revolution had just begun to shape the context of human civilisation. It was called the "information revolution". Basically propelled by the gains of the industrial revolution and advances in technology, the information revolution is the result of a convergence between information and communications technologies.

The worlds' first fully automatic computer is considered to be the MARK1, which was set in operation in 1944. Sometime during the 1950s', the potential of computers in the realm

of business was recognised, and a powerful impetus was now given to marry technology and commerce (Mukherji, 2000).

According to Lynch and Rice (1975), the period from 1956 to 1958 saw three significant developments in computing. These were

Breakthroughs in increased core memories

Development of more standardised and higher level languages

The development of a system for operating a computer or the operating system.

Information Technology in Businesses in Developed Countries

Information Technology has had a huge impact in the developed world. It facilitates the streamlining of the administrative process and enables the decentralisation of the scope and scale of the business.

According to Chan (2000), Table 1 below illustrates how Information Technology (IT) has influenced business processes in the developed world.

Capability	Impact and Benefit
Automation	IT can replace or reduce human labor in a process
Analytical	IT can improve analysis of information and decision making
Disintermediation	IT can be used to connect two parties within a process and eliminate intermediaries from a process
Geographical	IT can transfer and coordinate information with rapidity and ease across large distances, making processes independent of geography
Informational	IT can capture vast amounts of detailed process information for purpose of understanding
Integrative	IT can coordinate tasks and processes
Intellectual	IT can capture and distribute intellectual assets
Knowledge management	IT allows the capture and dissemination of knowledge and expertise to improve the process
Sequential	IT can enable changes in the sequence of tasks in a process, often allowing parallelism

Source: Information Technology in Business Processes, Business Process Management Journal, Vol. 6, No.3, pp. 224-237.

The use of IT in developed countries has propelled the economies of these countries, ranging from investment banks, financial institutions and even the public sector, that the absence of these systems or the failure of these systems will cause major disruptions to business processes.

Information Technology in Nigeria

Information Technology is often recognised as a powerful agent for social and economic change. Nigeria had a late start in the use of computers; the growth in its usage has been quite remarkable. A tremendous impetus was given to the computer market by the growing interest in microcomputers in the past decade.

The computer installations are widely distributed in universities, government departments and agencies, banks, commercial establishments, and industries. It must be realised that the private sector has, however, risen to a position of dominance in the use of computers especially the banking and the oil and gas industries. In summary, the growth in the use of computers in businesses in Nigeria has been phenomenon.

Definition of Computerised Accounting Information System (Information Technology – Based Accounting Systems)

It should be noted that Computerised Accounting Information Systems (CAIS) and Information Technology (IT) - based Accounting Systems mean one and the same thing. Both of these will be used interchangeably in this research paper.

An Accounting Information System (AIS) is the system of records a business keeps to maintain its accounting system. This includes the purchase, sales, and other financial processes of the business. The purpose of AIS is to accumulate data and provide decision makers (investors, creditors, and managers) with information to make decisions. While this was previously a paper-based process, most modern businesses now use accounting software such as Sage, Peachtree, Pegasus etc.

According to Lanier (1992), an IT- based accounting system is:

 '' a set of organised procedures used to collect and record accounting data with the use of a computer''.

The rapid change in information technology, the wide spread of user-friendly systems and the desire of organisations to acquire and implement up-to-date computerised systems and software have made computers much easier to use and enabled accounting tasks to be accomplished with increased speed and accuracy (Al-Fehaid, 2003).

Types of IT – Based Accounting Systems

There are two types of IT-based accounting systems. These consist of:

Integrated Accounting Systems and

Stand Alone Accounting Systems (Dodd, 1992; Lanier, 1992; Fardon, 2002).

According to Lanier (1992), integrated accounting systems are systems in which two or more accounting modules are used together and share information between each other. A module is a program that is written to perform only a specific accounting function such as accounting receivable processing and may be able to communicate with other modules. In other words, in such a system each module handles a separate function but also communicate with the other modules.

A stand-alone accounting system can be defined as a system in which only one module is used (Lanier, 1992).

The usage of the integrated accounting system or the stand-alone accounting system in a business depends on a load of factors such as the frequency of transactions, staff knowledge and skill, and the size of the business (Dodd, 1992; Lanier, 1992; Fardon, 2002).

The Differences between Computerised Accounting Information Systems (CAIS) and Manual Accounting Systems.

It is important to consider the differences between computerised accounting information systems and manual accounting systems. There are essential differences between manual and IT-based accounting systems which auditors should take into account, especially when they perform their tasks in an IT-based accounting environment (Rezaee and Reinstein, 1998; Grays and Manson, 2000; Taylor and Glezen, 1994). The following consists of some of the important differences that have been recognised:

The human being who operates a manual accounting system can react intelligently to various events that affect the organisation while IT-based accounting systems can only act in an apparently intelligent way if they are only programmed to do so (Gray and Manson, 2000). This inadvertently means that manual systems are more flexible than IT-based accounting systems.

Random errors associated with manual processing are much more numerous than those which are associated with IT-based accounting systems since IT-based accounting systems always process items in the same way (Gray and Manson, 2000).

Lack of documentation is a significant problem in many computer installations. Without adequate documentation, the audit trail may disappear and the auditor may find it difficult, if not impossible, to follow the processing in a particular application area (Watne and Turney, 1990).

The potential for observing errors or fraud in IT-based accounting systems is less than in manual accounting systems (Cosserat, 2000). This is because, in the IT-based accounting systems, data is stored in a machine-readable form rather than a visible form which could be deliberately accessed and altered through computer facilities on different sites (Wasik, 1991). Also, the reduced number of staffs involved in handling computer transactions can lead to the obscuring of errors, which would be more easily discovered where information and documents are dealt with manually.

Managers and Auditors who deal with IT-based accounting systems can be provided with a wider and more up to date variety of information than those who deal with manual systems (Taylor and Glezen, 1994). This will ensure that the operations of the business are run effectively and efficiently.

Transactions in manual systems are usually authorised before they are executed and recorded (Coserat, 2000). However, this is not always the case in IT-based accounting systems where some transactions are automatically executed and recorded without management explicit authorisation. (Rezaee and Reinstein, 1998; Taylor and Glezen, 1994).

According to Al-Fehai (2003), the adoption of IT based accounting systems by clients has reduced certain problems such as human errors. However, it creates new challenges or risks for auditors such as the possibility of errors in programming, the loss of audit trail, the lack of segregation between duties etc.

What is Auditing?

An audit is an investigation or a search for evidence to enable an opinion to be formed on the truth and fairness of financial and other information by a person or persons independent of the preparer and persons likely to gain directly from the use of the information, and the issue of a report on that information with the intention of increasing its credibility and therefore its usefulness (Gray and Manson, 2005).

Types of Auditors

These are the individuals who perform the audit. There are classified into three groups: external auditors (also called independent auditors), internal auditors and government auditors (Cosserat, 2000).

RESEARCH METHODOLOGY

This research aims to assess the impact of the adoption of computerised accounting information systems on the level of audit risk in Nigeria. It will evaluate the impact of computerised accounting information systems on the level of audit risk, whether the audit risk has significantly changed after the adoption of these computerised accounting information systems by clients in Nigeria.

For the purpose of this research work, it was decided that a survey was very much appropriate. It is appropriate because the survey can obtain information from members of a defined population, which in this case consists of auditors in professional services firms in Nigeria.

The primary data for this research was colleted via questionnaires. Questionnaires are based on the positivist school of research philosophy.

Research Design: Epistemology

There are two major epistemological orientations, consisting of positivism and interpretivism. There are several variations within each orientation. The key difference in these views arises from their different conceptions of human beings and how their behaviour can be understood. These conceptions reflect different ontological assumptions about the nature of the world (Thomas, 2004). Auguste Comte (1798-1857) intended positivism to refer to an approach to knowledge which restricts itself to observable facts and their relationships and which excludes reference to non-observable entities such as 'gods', 'essence', 'first causes' or 'ultimate ends'. Interpretivism requires the researcher to seek to understand the subjective reality of participants in the study in order to understand their actions and intentions in a way that is meaningful for theses research participants (Saunders et al, 2003).

Research Philosophy:

This research is a piece of Positivist work. This is so because the research will be restricted to observable facts relating to the adoption of computerised accounting information systems and the impact of these systems on the audit risk. This is similar to a cause and effect relationship. More specifically, this research is positivist because of the following circumstances:

The general approach of the research methodology relating to the acquisition of data, which supports the positivist realm. For example the usage of self completion questionnaires, structured face to face interviews etc

Data is given by the respondents, which will be collected through the means explained above, and are not constructed via interpretations.

The research will involve quantitative measurements of the data collected.

General Research Approach:

There will be some element of explanatory research, as this research will show the connection between computerised accounting information systems in businesses and the impact these systems have on the audit risk.

For the purpose of this paper, in order to meet the aims and objectives of the research, it was decided that a survey strategy was very much appropriate. It is appropriate because the survey can obtain information from members of a defined population, which in this case consists of auditors in professional audit firms in Nigeria. According to Sekaran (2000), surveys are useful and powerful in finding answers to research questions, but they can do more harm than good if not correctly targeted at the people or objects that can provide the correct answers to solve the problem. The survey strategy is associated with the deductive approach to research, which this research adopts.

Sampling Technique and Selection Process:

Sampling refers to a procedure in which a subset is selected from a larger number of observations (Nation, 1997). This research will employ the use of judgemental sampling technique. This strategy will allow me to concentrate on subjects who are in the best position to provide the particular information required. These consist of practicing auditors working in the top ten (10) auditing practices in Nigeria that have offices around the country. These audit firms work with a large percentage of the clients in various sectors of Nigerian economy.

Data Collection Methods and Techniques:

A combination of quantitative and qualitative research is worthwhile because it provides a more complex picture by drawing on the individual strengths and weaknesses of each method; as well as enabling discovery and verification; understanding and prediction; validity and reliability within the research design (Jarratt, 1996).

The primary data for this research was colleted via questionnaires. It would have been beneficial to have a mixture of methods for example a combination of face-to-face (in-depth) interviews and questionnaires, in other to encourage the triangulation of data collected. However due to time and budgetary constraints the most appropriate method for the research was the use of questionnaires.

Questionnaire Description and Design:

This research utilised questionnaires as the main research method. However, before highlighting the procedures that were followed in order to design the questionnaire, it is worth defining the term. The questionnaire has been defined by Sekaran (1992) as:

" *A pre-formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives*".

According to Burns (2000):

"*A questionnaire is a method for drawing out, recording and collecting information and is useful when the researcher wishes to gather large amount of factual and simplistic data that can be quantified and made into statistical evidence*"

Questionnaires are an efficient data collection mechanism when the research knows exactly what is required and how to measure the variables of interest. Questionnaires can be administered personally or mailed to the respondents, or electronically distributed. A good questionnaire should include both positively and negatively worded questions (Sekaran, 2000).

Type of Questionnaire:

The study used a combination of both:

Personally Administered Questionnaires and

Mail questionnaires.

Personally Administered Questionnaires:

Personally administered questionnaire is a good way to collect data. The main advantages consists of:

The researcher can collect all the completed responses within a short period of time.

It is also less expensive.

It is less time consuming than interviewing.

It does not require as much skills to administer the questionnaire as to conduct the interview (Sekaran, 2000).

A good proportion of the questionnaires used for this research, about thirty percent (30%), were personally administered to the respondents at the selected audit firms in Nigeria.

Mail Questionnaire:

The questionnaires are mailed to the respondents, who can complete them at their own convenience, in their homes, at their own pace. This study also used mail questionnaires. A mail questionnaire has the following advantages:

It permits wide geographic contact at minimal cost.

It can be used in contacting a large number of people.

It avoids researcher bias.

It avoids the difficulty of making arrangements for setting appointments with intended participants, as is the case in conducting face-to-face interviews.

The main disadvantages of this method consists of:

It has a low return rate.

The difficulty of clarifying doubts the respondents may have. (Sekaran 1992; Franfort-Nachmias and Nachmias, 1992).

About 70% of the questionnaires used in this study were mail-based questionnaires. The research paper used a higher proportion of mail questionnaires because:

Due to the wide geographical area to be covered, it would be virtually impossible to travel around the country and personally administer the questionnaires to respondents. It was easier to mail the questionnaires to the respondents and include self-addressed stamped envelopes to improve response rate.

It is inexpensive, due to the fact that printing cost is minimal.

The Structure of the Questionnaire:

The questionnaire has four sections. The sections and the questions were constructed to measure the variables of interest. The questionnaire was structured in a simple manner, in other to make sense to the respondents. The four sections have been described briefly below:

Section One: This section starts by defining Computerised Accounting Information Systems (CAIS) and seeks to gain additional background information about the auditors participating in the survey. The information sought includes the number of years worked in the organisation, the job status of the respondent, the number of audit assignments the participant has been involved in the past fifteen months and the proportion of clients who use computerised accounting information systems.

Section Two: This section of the questionnaire was designed to explore the respondents' perceptions of the possible and potential problems that might hinder them during an audit engagement in a client's computerised accounting information system environment.

Section Three: This section of the questionnaire seeks to understand the auditors acquaintance with International Auditing Standards (IAS) 315: Understanding the Entity and its Environment and Assessing the Risk of Material Misstatements and goes further to assess

the potential problems that might affect the application of the auditing standard during an audit engagement.

Section Four: This section of the questionnaire was divided into two parts. The first part contains a list of factors, which could contribute to changes in the overall level of audit risk in a computerised accounting information system environment. The second part of section four requests respondents to rank the factors, which were mentioned in the first part, according to the level of contribution to the audit risk.

In conclusion, the questionnaire consists of both open-ended questions and closed questions. The open-ended questions consists of questions that would obtain demographic data from the respondents such as job level, number of years in organisation etc. These data will help to describe the sample characteristics while writing the report after data analysis. Most of the closed-ended questions employed the 5-point Likert scale.

SUMMARY OF FINDINGS AND CONCLUSION

The primary aim of this research was to investigate the impact of the adoption of IT-based accounting systems by clients of audit firms in Nigeria. The purpose of this research is to conclude the research study by briefly summarising the major findings obtained in light of the aims and objectives of the research.

Summary of Findings and Conclusion

One of the major findings of this research is that approximately 58.1 percent of the respondents confirmed that over 80 percent of their clients use Computerised Accounting Information Systems (CAIS) or Information Technology (IT) – Based Accounting Systems in their businesses. The respondents all acknowledged the fact that a major proportion of their clients' used Computerised Accounting Information Systems (CAIS). This finding supports the researchers' conviction regarding the necessity to investigate the adoption of these systems by clients and the impact of theses systems on the level of audit risk in Nigeria.

The research discovered that contrary to the literature review that the following under-mentioned problems, which are associated with auditing in a Computerised Accounting

Information System (CAIS) or Information Technology (IT) Based Accounting environment, are not an issue in Nigeria. For example

The use of unsuitable and unreliable accounting software by clients. (Muggridge and Troth, 1994; Silltow 2003; Blewett and Jarvis, 1989).

The incompetence of client staffs' in dealing with issues relating to CAIS for example the accidental entry of bad data by employees, being unable to harness the advantages of CAIS in businesses etc. (Bell et al., 1998; Wood, 2002)

Information Technology (IT) Related Fraud (Wasik, 1991; Christy, 1995).

Possible reduction in internal control processes and procedures due to the introduction of CAIS in businesses (Gwiliam, 1987)

It is worth mentioning that this research is also different in the sense that it reveals the following findings relating to the potential risks associated with auditing in a CAIS or IT-based accounting environment in Nigeria:

The application of an unsuitable audit approach (i.e. auditing around the computer), which is mainly used in Nigeria, can be a potential source of audit risk in a CAIS environment.

Financial losses due to internal and external CAIS security breaches are not an issue in Nigeria.

According to Wasik (1991) and Christy (1995), CAIS or Information Technology (IT) - based accounting systems are more easily manipulated fraudulently than manual accounting systems especially in advanced systems. The finding of this research shows that Information Technology (IT) Related Fraud is not an issue in the environment of CAIS in Nigeria.

The use of CAIS has not in any way affected the level of internal control in businesses in Nigeria. This is contrary to what the literature that says that the introduction of IT-based accounting systems may have an adverse impact on internal controls (Gwilliam, 1987). In summary, weaknesses in internal control systems in relation to CAIS doesn't seem to be an issue in the environment of CAIS in Nigeria.

International Auditing Standard (IAS) 315: Understanding the Entity and its Environment and Assessing the Risk of Material Misstatements is too complicated compared with the level of the adoption of CAIS in businesses in Nigeria, for example being too complex for Nigeria.

Some of the results of this study are supported, to some extent, by the potential risks in an IT-Based accounting environment discussed in the literature review section of this dissertation. However, some of the findings that are very unique to Nigeria includes the following that:

Practicing auditors in Nigeria are incompetent in dealing with issues relating to the audit of CAIS or Information Technology (IT) Based Accounting Systems. According to the literature, effective implementation of CAIS or IT–based accounting systems requires competent staffs (Bell et al., 1998; Wood, 2002).

Practicing auditors in Nigeria lack awareness of the issues, problems and risks associated with CAIS.

The auditing around the computer approach used by auditors in Nigeria does not allow auditors to detect programme errors that do not show up in the computer reports.

The disappearance of the audit trail makes it difficult, if not impossible, for the auditor to follow the processing in a particular application area

The research question of this paper aims to ascertain if the adoption of computer accounting information systems in businesses in Nigeria has affected the level of audit risk? The answer to this question is yes. In light of the research findings that have been reported in research four, it can be concluded that the adoption of CAIS in Nigeria has contributed to increasing the audit risk. This can be explained, on the one hand, by the existence of a number of risks in the clients' IT based accounting environment, such as the lack of competence of auditors in auditing IT-based accounting system and their lack of awareness of the problems and risks associated with such systems; the auditing around the computer approach to auditing

in businesses, where auditors examine input and output only and where the processing stage within the computer is ignored; and the disappearance of the audit trail thereby making it difficult, if not impossible, for the auditor to follow the processing in a particular application area.

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