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Summary of the Ph.D. Thesis

**THE CHALLENGES AND VALENCES OF THE AUDIT  
OF ACCOUNTING INFORMATION SYSTEMS**

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## **Overall objective**

Năstase *et al.* (2007:16) stated that „the need for auditing information systems was experienced first by financial and internal auditors, considering it merely an extension of a financial audit mission, then by the managers of organizations, which, in order to resist in the race with competition, acknowledged that information technology is a key resource and there for the processes in which it is used should be controlled and audited, and not at least, by international associations and professional organizations which have recognized the need for controlling and auditing information systems”.

The main objective of this thesis is to identify and evaluate how Romanian financial and internal auditors manage this “need” of auditing information systems, especially accounting information systems, but not as an extension of a traditional audit mission, but as a stand-alone activity that requires specific skills and knowledge.

## **Brief presentation of the theoretical chapters**

In the first chapter we adopt a descendent approach to identify the role accounting information systems and accounting information has in an economic information system. First, we discuss the systemic view of an organization underlying the role of the information system as the central element in the process of obtaining, communicating and using of information, insisting on the ways information systems are structured as they should be correlated with the organization’s structure in order to facilitate the achievement of objectives and support the organization’s strategy. Further, we studied the concept of information, economic information and accounting information. This last concept was approached based on the FASB and IASB’s common Conceptual Framework and on the role of accounting information in the decision making process.

In the first part of the second chapter we achieve a positioning of information systems auditing in the context of internal and financial audit missions, emphasizing the increasing importance of this activity in the evaluation of the organization’s internal control system. We underline the options management has in order to manage the risks the organization is exposed to, considering its “risk appetite”. Then, we continue our analysis and investigate how information systems and the risks they generate are influencing several stages of an audit mission. A special attention is given to risk assessment, insisting on the methods, techniques and models auditors can use for this purpose. Also, by deepening our understanding of internal control mechanism, either general or application controls, we completed our vision about the role of information systems in the internal control system.

In the third chapter we made an analysis of the Romanian legal and professional environment in the field of information systems auditing. By analyzing the legal framework we wanted to determine the evolution of the “rules of the game” named information systems auditing. Further, we compared the structure of professional development programs of the Romanian financial and internal auditors against the guidelines issued by international professional organizations. We consider that this comparison was a pertinent base for identifying the IT knowledge needs of financial and internal auditors and for the positioning of the information systems auditing in Romania, in correlation with international trends.

The last chapter is dedicated to a study in which we identify the practical valences and technical challenges of financial accounting and reporting systems auditing from the perspective of Romanian financial and internal auditors. The study is the first one ever done in Romania, this is why, for the remaining of this summary, we’ll present it in a more detailed manner. The conclusions drawn, the assumed limitations and the identified perspectives, allow us to consider that we succeeded in bringing a contribution in this challenging and ever evolving research area.

## **Introduction**

In an environment characterized by rapid change, global competition, new organization forms, and improved information technology, measures of an entity’s current state and recent past are relatively less important, while information about and measures of what might happen in the near and even distant future are more important. This is why organizations have to take a proactive attitude and anticipate any change within the organization and also in the surrounding economic environment. If we add to this the fact that organizations tend to rely more and more on information technology in order to achieve their goals, we can say that sustainable growth cannot be imagined without a reliable information system.

Accounting finds itself in the middle of this transformation. So how can an organization be certain that their information systems are reliable? This aspect cannot be an issue for subjective analysis so it has to be made by independent professionals trained and with expertise in this field. Internal audit and financial audit are two key pillars which bring their contribution in this area.

The adoption, implementation and/or expansion of information systems are influencing the organization’s structure and performance. Chatzoglou and Diamantidis (2009) examined the impact of IT on a firm’s general performance, examining non-financial performance metrics, like: productivity, coordination and IT risks. They concluded that IT implementation may have an impact on a firm’s

performance but, this doesn't affect firm's productivity. Also they found that for a developing organization IT implementation might empower its development process.

In this dynamic environment auditors are required to anticipate the strategic direction of IT and the effects these directions. IT has an impact on the audit tasks of financial auditors, re-shaping the auditor's roles and outputs and their organization's structure in terms of reducing the number of non-professional audit staff and junior audit positions. IT is perceived to have a small impact on the recruitment of new auditors but have a more significant impact on auditor's promotion. This leads to the idea that organizational structures tend to flatten (Omoteso *et al.* 2009).

The CEOs of the six largest accounting firms (PricewaterhouseCoopers, KPMG, Deloitte, Ernst & Young, Grant Thornton, and BDO) argue that (2006: 2-3) "the auditing profession needs to develop the talent and expertise to deliver consistent, high-quality audit services ... both through the hiring of outstanding individuals and the training of auditors in new auditing techniques (especially evolving IT ... and expanded business information)." The Internet age is forcing audit companies to find ways of providing a broader range of company information in a more systematic manner. To provide these services the CEOs consider they have to attract and retain individuals with broad training in multiple disciplines: accounting, information technology, finance in order to be competitive in a complex business environment.

Financial and internal auditors need to develop and/or enhance their IT knowledge and skills in order to fulfill their mission as required by their professional standards. During audit planning they have to consider how the client's characteristics affect system risk (Bedard *et al.*, 2005) and the possible misstatements (Bell *et al.* 1998). Also, IT complexity affects the nature of audit testing (Javrin *et al.* 2009). To cope with this, the auditors are forced to use more and more computer-assisted audit techniques [CAATs] especially when auditing organizations with complex information systems such as Enterprise Resource Planning [ERP] in place.

Enterprise Resource Planning [ERP] systems are generating unique risks due to business-process reengineering and customizations. This triggers control weaknesses which leads to financial statements errors and inaccurate internal information. These issues need to be addressed in the implementation process overcoming the problems arising from improperly trained personnel and inadequate process reengineering efforts (Wright & Wright, 2002).

## The effect of information systems on financial audit

The IFAC's *Glossary of Terms* (2007) states: „The objective of an audit of financial statements is to enable the auditor to express an opinion whether the financial statements are prepared, in all material aspects, in accordance with an applicable financial reporting framework. An audit of financial statements is an assurance engagement”. The scope of the work of external auditors is determined by their professional standards, and they are responsible for judging the adequacy of procedures performed and evidence obtained for purposes of expressing their opinion on the annual financial statements.

One area in which IT has had a major influence on organizations and their auditors is in preparing financial statements. Few organizations today do not use IT at least to maintain the general ledger, and most entities have automated the process of entering transaction totals and adjustments (including journal entries) into the general ledger and preparing financial statements. Gone are the days when auditors could examine manually prepared cash-receipt journals and check registers, trace monthly totals to handwritten entries in the general ledger and examine manually prepared worksheets combining general ledger accounts for the first pencil draft of the financial statements. (Matiş & Cardoso, 2007)

There are several standards and frameworks designed to embed the issues arisen from the use of information technology and its implication or influence on the objectives of an audit. There are also standards that stress the importance of information technology in the context of the organization's internal control policies or procedures (IIA, 2005), IT governance (ISACA, 2006), financial audit (IFAC, 2009) or information security and management (ISO/IEC 17799, 2005)

The International Standard on Auditing no. 240 (2009) issued by the International Federation of Accountants (IFAC) states that: “the auditor may respond to identified risks of material misstatement due to fraud by assigning additional individuals with specialized skill and knowledge, such as forensic and IT experts, or by assigning more experienced individuals to the engagement. In addition, the extent of supervision reflects the auditor's assessment of risks of material misstatement due to fraud and the competencies of the engagement team members performing the work.”

International auditing standards (AICPA, 2007) states that when a business uses IT to initiate, record or report transactions or other financial data, the systems and programs may include controls related to assertions for significant accounts or they may be critical to the effective functioning of manual controls.

In designing tests of automated controls, auditors may need to obtain evidence that controls directly related to the assertions, and indirect controls on which they depend (such as the entity's general IT controls), are functioning effectively. The inherent consistency of IT processing may allow the auditor to reduce the extent of testing. Once the auditor has determined that an automated control is functioning, he or she should consider performing tests to make sure it continues to do so.

The auditor should obtain sufficient knowledge of the entity's risk assessment process to understand how management considers risks relevant to financial reporting objectives and decides about actions to address those risks. This knowledge might include understanding how management identifies risks, estimates the significance of the risks, assesses the likelihood of their occurrence, and relates them to financial reporting. The use of IT may be an important element in an entity's risk assessment process, including providing timely information to facilitate the identification and management of risks.

## **The effect of information systems on internal audit**

The IIA's *Definition of Internal Auditing* states: "Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes". (IIA, 2008)

The scope of internal auditing covers all of an organization's activities, without regard for internal boundaries or geographical restrictions. Their work is based on the risk assessment and encompasses the adequacy and effectiveness of governance, risk management and internal control processes in identifying and responding to the risks facing the organization. One of the key roles of internal auditing is to provide objective assurance that the risk management processes remains complete, efficient and effective.

A professional internal audit activity will be able to support risk management in two ways. First, it will provide objective assurance to the board and to management that the risk management framework as a whole is operating effectively and that specific risks are being managed to the expected level. Second, it will invest its time and effort in consulting activities, which contribute to the establishment of sound risk management processes.

A study, and in the same time a forecast, made by PwC (2007) revealed that in the near future (2012) the role of the internal audit function will be influenced by several business trends among which technology is a major factor. The study also stresses the factors that will boost the internal audit responsibilities based on the business trends hierarchy presented above. Continuous auditing and monitoring is considered the most important factor that will increase the internal auditor's responsibilities. Also, issues related to information technology like auditing ERM processes and IT security audits will generate more responsibilities than traditional internal audit.

Audit committees and senior management are placing greater pressure on internal audit to provide more clear-cut strategic value by taking a risk-based approach to auditing based on an ongoing risk assessment. In this context information technology has a core position as a risk factor (the automation of the control environment generates a new range of IT risks) but also as a enabler in the risk assessment and management process (auditors need to be familiar with new ways to audit: data-mining, CAATS, etc). In the future the line between IT audits and non-IT audits will blur given the need to leverage the power of technology. (PwC, 2007:26)

## Literature review

The IT competences of auditors have been debated since the '70s. Subject to this debate were mainly financial/external auditors. It was considered that auditors should have a minimum knowledge consisting, among other, of: understand basic computer concepts; understand and be able to analyze the concentration of controls in an EDP (n.a. Electronic Data Processing) environment; understand, in a general way the use of computer auditing software and know when to call for the assistance of a computer audit specialist Cutting *et al.* (1971: 76-77). Jancura (1975) extended the minimum knowledge requirements, also stressing that the auditor's and computer audit specialist's competences should be differentiated by the "depth of EDP knowledge" (Jancura, 1975: 59) suggesting that, to a certain extent, the auditor should be able to perform the audit without assigning experts or staff members with greater IS knowledge.

The auditor's IS knowledge and the experience of IS/IT specialists or computer assurance specialists [CAS] have a serious impact on the audit mission and play a critical role in determining the audit quality. Brazel and Agoglia (2004) demonstrates that "auditor's accounting information system [AIS] expertise and computer assurance specialist [CAS] competence significantly affects auditor planning judgments" (Brazel & Agoglia, 2004: 15). The authors also argue that auditor's AIS expertise levels have an influence on their ability to compensate for potential CAS deficiencies by extending substantive testing.



Still, there is the question of the possibility of a biased audit opinion. Bell *et al.* (1998) observed that the nature of audit differences is affected by the computerization of AIS. They noted few audit differences attributed to problems or failures of IT. Auditors need to consider the reliability of computerized systems in the planning stages of their mission.

The member bodies of the International Federation of Accountants [IFAC] are required to adhere to International Education Standards [IES] and Practice Statements [IEPS] in order to implement generally accepted “good practice in the education and the development of professional accountants” (IFAC, 2009:2). According to IEPS 2 *Information Technology for Professional Accountants* candidates to the profession have to be knowledgeable in CAATs consisting of: accounting packages; professional research tools; analytical tools and pattern matching/recognition (IFAC, 2009:34).

Further, International Education Guideline 11 *Information Technology for Professional Accountants*, a precursor for IEPS 2 requires for the professional development of evaluators/auditors of information systems to use CAATs in the planning phase: in order to design effective and efficient verification procedures to meet evaluation objectives; and during system evaluation when performing planned procedures (IFAC, 2003).

The Information Systems Audit and Control Association consider that CAATs may be used for tests of details of transactions and balances; analytical review procedures; compliance tests of IS general and application controls (ISACA, 2008:2). During the audit plan the auditor should use an appropriate combination of manual techniques and CAATs. The factors that may influence the use of CAATs might be: computer knowledge expertise and experience of the auditor, efficiency and effectiveness of using CAATs over manual techniques; time constraints and level of risk (ISACA, 2008).

There are only a few research papers describing the extent of CAATs use in the audit practice and the factors supporting their use (Curtis *et al.* 2009). Javrin *et al.* (2008a) reported that financial auditors use extensively CAATs for analytical procedures, audit report writing, work paper management and sampling. Also, auditors perceived other audit applications as being important for audit planning, internal control evaluation and risk assessment, but used them less. In another paper Javrin *et al.* (2008b) identified performance expectancy and organizational and technical as factors that influence the auditor’s acceptance of CAATs. They argued that CAATs usage can be increased by developing training programs within audit firms.

Also, computer-related audit procedures are used mostly for understanding the client's system, business processes and for testing computer controls thus influencing the nature of audit testing. Still, "there is a wide range of variability in terms of the procedures auditors select for high IT clients" (Javrin *et al.*, 2009: 115). Curtis and Payne (2008), found that audit firms influence the implementation of new technology by communicating their support and encouragement to auditors.

Another important issue is the way auditors approach more complex information systems. Wright and Wright (2002) put forward the idea that Enterprise Resource Planning [ERP] systems are generating unique risks due to business-process reengineering and customizations. This triggers control weaknesses which leads to financial statements errors and inaccurate internal information. Hunton *et al.* (2004) examined the extent to which financial auditor are able to recognize higher risks associated with ERP system in comparison to non-ERP systems. They suggest that financial auditors are overconfident in their ability to assess risks in complex systems. Also, they observed that financial auditors "do not indicate a greater need to consult with IT audit specialists when auditing an ERP versus non-ERP system and they are equally confident in the ability of financial audit teams to assess risks in both computing environments" Hunton *et al.* (2004: 7).

Hermanson *et al.* (2000) conducted an exploratory study to examine the IT-related activities and evaluations performed by internal auditors in US organizations. They used as reference the objectives, evaluations and test outlined by an IFAC statement entitled *Information Technology in the Accounting Curriculum*, a previous version of a document we are using in this article as starting point IEPS 2 *Information Technology for Professional Accountants*. They concluded that internal auditors focus on application controls and system security performing evaluations risks related to: IT asset safeguarding; application processing and data integrity, privacy and security. There was less attention given to risks related to systems development and acquisition. They also found that the testing methods are influenced by the presence of a computer audit specialist. Abu-Musa (2007) revealed that internal auditors have to enhance their knowledge and skills of computerized information systems for the purpose of planning, directing and reviewing of the work performed.

Hadden *et al.* (2003) examined the perceived IT qualifications and IT activities of audit committees, internal auditors, and external auditors. The results revealed no significant differences in internal audit's perceived IT qualifications or activities between the in-house versus outsourced groups. The results suggested that the internal auditors' commitment to IT oversight was rated „above moderate“; while the external auditors' involvement in IT oversight was rated „moderate“, significantly lower than the internal auditors' mean rating.

## Description of the study

Based on the requirements regarding the IT competences and use of IT specialists prescribed by international professional organizations and the position of researchers, we emphasized that auditors, both internal and financial/external, are required by their guiding standards to have, maintain and nurture their IT skills and knowledge in order to accomplish their mission in a professional manner.

The need for a structured approach to professional education is evidenced by the recent focus many professional organizations have placed on this topic. These organizations and their proposed standards or frameworks are: the International Federation of Accountants [IFAC] which issued International Education Standards [IES] and International Education Practice Statements [IEPS]; the Institute of Internal Auditors [IIA] which is working on an Internal Auditor Competency Framework [IACF] and American Institute of Certified Public Accountants [AICPA] which issued and continuously improves their Core Competency Framework. Each of the above mentioned frameworks offers detailed requirements regarding the IT competences and the recommended level of proficiency.

IFAC's International Education Standards [IES], Practice Statements [IEPS] and the supporting guidelines are intended to: prescribe "good practice"; provide guidance, interpretation and examples of application, to assist member bodies and to discuss and promote awareness of issues (IFAC, 2009). The information technology related competences, from an educational perspective, are described by IES 2. The information technology component should include the following subject areas and competences: "general knowledge of IT; IT control knowledge; IT user competences; and one, or a mixture of, the roles of manager, evaluator or designer of information systems" (IES 2, 2009: 56).

At the pre-qualification stage, professional accountants have to be proficient in the first three competency elements and at least one role. After qualification, the professional accountant's IT related competencies are oriented on the "specialized needs of the work domain and role of the professional accountant" (IEG 11, 2003:16). The IT knowledge components of pre- and post-qualification professional accounting education programs are addressed by IEPS 2 "Information Technology for Professional Accountants"

The competence requirements for audit professionals are presented in IES 8 "Competence Requirements for Professional Accountants". Competence is defined as the ability "to perform a work role to a defined standard, with reference to real working environments" (IFAC – IES 8, 2009:99).

In IES 8 information technology is included as a subject area for the knowledge content within the education and development program for audit professionals. It consists of:

- information technology systems for financial accounting and reporting, including relevant current issues and developments; and
- frameworks for evaluating controls and assessing risks in accounting and reporting systems as appropriate for the audit of historical financial information.

In order to offer a guidance regarding the minimum level of knowledge and competences needed to operate and maintain an internal audit function, the Institute of Internal Auditors issued an “Internal Auditor Competency Framework”. The framework includes a breakdown of staffing areas and notes the appropriate level of knowledge regarding (IIA, 2009a): Interpersonal Skills; Tools and Techniques; Internal Audit Standards, Theory and Methodology, and Knowledge Areas.

Depending on the position in the internal audit function, the level of knowledge ranges from (1) awareness only to (4) independently competent in unique and complex situations (IIA, 2009b). The IT related competences are spread through the entire framework, due to the pervasive effect IT has on an entity and on the internal audit function. In the framework IT is considered core knowledge area, requiring internal auditors to be knowledgeable regarding the: information systems operation and management; IT infrastructure and network; physical and logical security; information systems development and IT control networks (IIA, 2009b). Also, internal auditors are required to have competencies in using CAATs.

The third framework considered for analysis is the AICPA’s Core Competency Framework. It „defines a set of skills-based competencies needed by all students entering the accounting profession, *regardless of the career path they choose*” (AICPA, 2005). The competencies consist of: Functional Competencies; Personal Competencies; and Broad Business Perspectives Competencies.

Within each category there is a competency named “Leverage Technology” which stresses for example that accounting professionals “must acquire the necessary skills to use technology tools effectively and efficiently. These technology tools can be used both to develop and apply other functional competencies (AICPA, 2005:1)”. The value of this framework resides in the structure of the competences and in the metrics used to assess the level of achievement for each competency element.

For our study we elected the IFAC's IES and IEPS for several reasons:

- these documents offer specific guidelines regarding the IT competences for the pre- and post-qualification stage of the professional accountants;
- they are covering all accounting professions;
- the competences are differentiated between pre- (common set) and post-qualification (a differentiated set of competences according to the role the accounting professional has);

The downside of IFAC's approach to accounting professional education is that the assessment method used is descriptive, each generic competence being described by several competency elements (e.g. the auditor has to be able to: perform, evaluate, understand, assign, identify, analyze). The other frameworks considered assess the competences/skills on a more transparent and gradual scale describing each level based on the professional's position in the organization and/or years of experience.

Based on the financial auditor's IT competence requirements prescribed by IEPS 2, enhanced by the general IT control competences, we identified a list of 14 competency elements grouped in three competence areas. These elements are the core of the questionnaire, and were addressed as activities performed during an audit engagement. We decided to address these questions in the manner, of perceived importance and not as a knowledge rating, in order to avoid social desirability bias – the systematic error in self-report measures resulting from the desire of respondents to project a favorable image to others and even to avoid embarrassment (Fisher 1993: 303). These tendencies are considered to be particularly important in marketing and social science research as self-report is a common method of data collection (Jo *et al.* 1997: 429).

## **Research questions - excerpt**

The first research question addresses the perceived importance of several IT-related activities; financial and internal auditors should be able to perform based on the competence requirements presented by IFAC and by their professional standards.

*What is the perceived importance of the identified IT-related activities for financial auditors?*

Another research question concerns the way IT-related activities are performed during a financial audit mission as financial and internal auditors can perform these activities themselves or can use the expertise of an IT specialist.

*To what extend financial auditors use the expertise of IT specialists for the identified IT-related activities?*

As accounting information systems are becoming more and more complex, auditors are forced to keep up with this increasing complexity by adopting and using CAATs especially when the audited entity has an ERP system in place. To assess the extent to which auditors use CAATs and perceive ERP systems we addressed the following research questions:

*To what extent auditors use computer-assisted audit techniques (CAATs) for the evaluation of the financial accounting and reporting system?*

and

*To what extent the existence of an ERP system affects the auditor's evaluation of the financial accounting and reporting system?*

## **Method adopted**

For this study we obtained the support of the Chamber of Financial Auditors of Romania and the Romanian Institute of Internal Auditors. The members of these professional organizations were asked to complete a questionnaire addressing the perceived importance of several IT related activities they should be performing during their engagement.

The questionnaire was emailed to:

- 1.520 e-mail addresses of financial auditors, but due to invalid or wrong email addresses 232 emails were undeliverable. Of the 1.288 valid questionnaires mailed we received 97 answers (answer rate: 7.53%).
- 567 e-mail addresses, by the representatives of the Romanian Institute of Internal Auditors, this is why we don't have any information about the invalid or incorrect addresses the questionnaire was sent to. Of the nominal number of addresses of 567 we received 38 valid answers (answer rate: 6,70%)

The questionnaire consisted of three main parts. In the first part, the respondents were asked to answer several questions related to their educational background, both academic and professional. The second part contained questions addressing the auditor's profile: the type of their main activity; years of experience; number of audit missions completed; the nature of the client organization's activity. In the third part, the respondents were asked to answer several questions related to: the perceived importance of several IT related activities, using an interval scale rated from 1 = not important to 5 = very important for each individual element. Other aspects covered were: the way the identified IT related activities are carried out (1 = by the auditor or 2 = by an IT specialists); the extent to which auditors use CAATS during their mission; the extent to which ERP systems affect the auditor's ability to evaluate the client's AIS and the influence of AIS evaluation on the audit opinion (using an interval scale rated from 1 = not important to 5 = very important for each individual element).

## Main findings

Auditors considered that the most important IT activities performed by them are those related to the planning of financial accounting and reporting system evaluation, the evaluation of an entity's overall IT environment, and finally the evaluation of financial accounting and reporting system.

The most important activities indicated by financial and internal auditors were:

- Identify business processes, significant flows of transactions;
- Identify significant risks and relevant user controls / application controls;
- Perform planned procedures, exercising required controls over their execution;
- Analyze and evaluate evidence/results of procedures.

Financial auditors also indicated as being important the definition of the level/frequency of systems errors, flaws and failures that are deemed significant/material, while internal auditors considered the analysis of risks and controls at entity level to align IT with entity's business strategy.

Even if the respondents indicated the evaluation of the relationship between user/application controls and general controls as being the least important activity they consider the identification of significant risks and relevant user/application controls as being the most important. The other activities identified as being among the most important are presented in a more general manner and we are tempted to consider that respondents answered based on their overall perception of these activities and not in a more specific way, relatively to the financial accounting and reporting system as required by the question.

When analyzing in detail the IT activities we found that the least important of them, as considered by the auditors, were:

- Identify the supporting IT infrastructure and general IT controls;
- Evaluate general IT controls and application controls;
- Adjust planned procedures for changes in circumstances.

Financial auditors indicated as also being among the least important activities: the identification, analysis and evaluation of the effects of IT on an entity's business, considering relevant current issues and (technological) developments; and evaluating the relation between application controls and IT general controls. Internal auditors considered also as being least important the process of understanding the complexity of the IT environments.

All of the above activities require a higher level of IT knowledge and skills in order to identify general controls (including supporting IT infrastructure) and application controls and further to evaluate the relation between them and the overall impact of these controls on the planned procedures. We don't want to jump to conclusions, because the average responses are a bit high, but in correlation with the most important activities (presented below) we can state that these activities are not as important as they should be. General and application controls are tending to be the prevalent component of an entity's internal control system as information systems are depending more and more on IT solutions. The way they are implemented and function have a major impact on the audit plan, the audit procedures and further on the length and cost of the mission. The need for improvement of computerized information systems skills and knowledge is stressed by Abu-Musa (2007) as they are influencing the planning, directing and reviewing of the work performed.

The auditors were also required to indicate how IT related activities are carried out during the audit mission. They could choose between "auditor" and "IT specialist". The activities for which auditors use the most the expertise of IT specialists are:

- Identify the supporting IT infrastructure and general IT controls;
- Evaluate relations between application controls and IT general controls;
- Evaluate general IT controls and application controls; and
- Understand the complexity of the IT environments.

These activities require high IT/IS knowledge and skills and probably that is why auditors use the expertise of IT specialists. Still the percentages are very close for most of the highlighted activities which could mean either that the auditors are having sufficient skills to perform these activities or in the audit team there is frequently an IT specialist. Correlating the way IT related activities are done with the perceived importance of them we found that the first three activities done most frequently by an IT specialist are among the least important activities from the auditor's point of view. This might lead to the conclusion that auditors use the work of IT experts but fail to understand the importance of this work. This is reinforced by the fact that adjusting the planned procedures for changes in circumstances is one of the least important activities.

Other activities like the analysis and evaluation of evidence/results of procedures; defining the level/frequency of systems errors, flaws and failures that are deemed significant/material or identifying of business processes, significant flows of transactions are done mainly by the auditor. These activities are applying to an audit mission in general and we have concerns that the auditors answered in that manner.



For the question regarding the extent to which auditors are using computer-assisted audit techniques (CAATs) for the evaluation of the financial accounting and reporting system, the auditors had to choose between: to a small extent = 1; to some extent = 2; to a moderate extent = 3; to a great extent = 4; or to a very great extent = 5.

As the mean for this question (2.86) is close to the median value (3) we can state that auditors use CAATs for the evaluation of financial accounting and reporting system ranging from “to some extent” to “a great extent”. But the mode value (2) suggests that most frequently the respondents use CAATs “to some extent”.

For the question regarding the extent to which auditors consider that the existence of an ERP system affects the evaluation of the financial accounting and reporting system, the auditors had to choose between: to a small extent = 1; to some extent = 2; to a moderate extent = 3; to a great extent = 4; or to a very great extent = 5. The mean for this question (3.69) is also close to the median value (4) and mode value (4), suggesting that auditors consider that the existence of an ERP system is influencing their ability to evaluate the financial accounting and reporting system “to a great extent”.

## Conclusions

In our study we tried to identify the perceived importance of several IT related activities by financial auditors and the way these activities are performed. Why tried to achieve that with the aid of a questionnaire having as core elements the IT competences prescribed by IFAC’s IEP 2 “Information Technology for Professional Accountants”. This Practice Statement provides guidance on the pre- and post-qualification knowledge and competence requirements. We used for our study the post-qualification requirements for auditors. Our intention was to observe how these competences are perceived by financial auditors in Romania and in a real-life situation, during an audit mission, how these activities, described in the competency elements, are performed: by the auditor him/herself or by an IT specialist.

For our first research question we can conclude that the identified activities are perceived as being important or very important (one could argue that too important, based on the averages obtained.) We approached this problem in this manner to avoid the social desirability bias – the systematic error in self-report measures resulting from the desire of respondents to project a favorable image to others (Fisher 1993) which is very frequent in social sciences (Jo *et al.* 1997). Probably a better way to deal with this issue would have been if we asked how frequently the activities are performed in a typical audit mission, as suggested by Hermanson *et al.* (2000).

Still we can conclude that financial and internal auditors perceive as being least important several activities that are being more IT-related than those considered most important which are generally applicable to an audit mission. As for the second research question we found out that there is a correlation between the importance of the activities and the way they are done. Probably this is due to the fact that we targeted only financial auditors and omitted the opinion of IT specialist as members or consultants of the audit team. Still, we found out that the most important activities that require extensive IT knowledge are done mostly by IT specialists and also these activities are considered to be among the least important activities as perceived by financial auditors. This leads us to the conclusion that auditors use the work of IT experts but fail to fully understand the importance of it.

From the questions regarding the impact of ERP systems and the usage of CAATs, we learned that even though auditors consider that the existence of an ERP system is influencing at least “to a great extent” their ability to evaluate the client’s information system, they are not using CAATs to the same extent. This means that a significant number of auditors still rely on a traditional approach “around the computer”, by using tests of details and analytic procedures rather than “with the computer” by using CAATs, when they evaluate the financial accounting and reporting system or during their overall mission. As technology is constantly evolving auditors will be forced to be knowledgeable and use IT tools and techniques that will allow them to detect misstatements and by this properly changing their audit plan in order to avoid the possibility of issuing an erroneous opinion.

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