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Audit of Projects in the IT Environment

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Abstract: A computerized environment may provide auditors with the opportunity for additional processing, by providing the information requested in formats required by the auditor, for interpretation or use as input for specialized computer-assisted audit programs. This way of working contributes to increasing the performance in performing background tests, by applying automated analytical procedures, as well as the performance of audit procedures, by using computer-assisted audit techniques. The audit of IT projects is an evaluation of IT systems in terms of optimizing the management of available IT resources (data, applications, technologies, facilities, human resources, etc.), in order to achieve the entity's objectives, by ensuring specific criteria: efficiency, confidentiality, integrity , availability, operational safety and compliance with a frame of reference (standards, good practices, legislative framework).The main objective is to provide auditors with consistent information about the possibility of correlating the stages of the audit mission related to IT projects.

Keywords: IT projects; correlation; audit mission

JEL Classification: M15

1. Introduction

Information and communication technologies (ICT) are and will continue to be a major driver of modernization in the economy and society. According to a European Union report, in 2010, the EU business sector allocated more than 20% of its investment volume in the field of ICT, a volume of 60% of basic public services are currently fully available online, and more more than half of EU citizens use the Internet constantly (Moeller, 2010). According to the assessments in the quoted report, Europe is among the leaders in the development of the digital economy. The European broadband market (technology segment), with 90 million lines, has more subscribers than any other economic region, and half of European citizens use the Internet regularly. However, it must be borne in mind that, on the one hand, the differences between Member States are significant and, on the other hand, the European institutions have lower levels of investment than other industrialized regions, and are also facing increased competition from part of China and India. For these reasons, the policy framework provided by the i2010 program was necessary and proved more useful than ever during this period. The increased development of ICT and the exploitation of digital content in areas of public interest such as health, inclusion, cultural heritage, the public information sector, education, public administration or energy

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efficiency require and require more proactive policies. Major obstacles to better and wider use of ICT in such areas include, inter alia, the lack (unavailability) of ICT-based services, the lack of interoperability of solutions across Member States, and the market fragmentation of space. information and ICT-based solutions (Weiss & Solomon, 2010).

Globalization brings new challenges for information, which is exposed to multiple regulatory requirements generated by the diversity of situations and sources from which this information comes. Some of them stem from the historical context, others from the dynamics of market change, technology or legislation, and the magnitude of the risks cannot be anticipated for each case. The legislation that regulates the ICT field at international level, presents a series of common features, related to the general issue, the legislative framework including a series of normative acts regarding: network security, electronic signature, electronic commerce, public procurement through electronic auctions, collection by electronic means of local taxes and fees, the endorsement of payment instruments with remote access (such as Internet-banking, home-banking or mobile-banking applications), the protection of individuals with regard to the processing of personal data and the free movement of such data. These normative acts or regulations, as the case may be, constitute references in the IT audit, in terms of compliance with the legislation, considering that the audit field is, in this case, the IT field.

By using computer systems, the audit approach is modified due to the new ways of processing, storing and presenting information, provided by computer applications, without changing the general objective and purpose of the audit. Traditional procedures for data collection and interpretation of results are replaced, in whole or in part, by computerized procedures. The existence of the IT system may affect the internal control systems used by the entity, the risk assessment method, the performance of the control tests and the substantive procedures used to achieve the audit objective.

The decision-making problem from which we started in our research approach is the answer to the question: what is the auditors' perception related to the possibility of a relationship / correlation of the stages of the audit mission within IT projects. The tool that formed the basis of the article and with which the opinion of IT project auditors was surveyed, was the online questionnaire, a method of collecting an online survey conducted on the web, thus allowing the analysis and explanation of causal relationships between variables.

To achieve the objectives, the questionnaire was divided into five sections:

1. Demographic characteristics

2. Specific elements that define the audit planning of IT projects:

- roles and responsibilities of IT project auditors;
- the competencies of the persons coordinating the audit program of the IT projects;
- establishing the scope of the audit program;
- determining the resources of the audit program.

3. Specific elements that define the audit of IT projects:

- determining the feasibility of the audit;
- preparation of documented information;
- collecting and verifying information.

4. Elements that define audit reporting:

- generating audit findings;
- finalizing the audit conclusions.

5. Elements that define the audit review:

- carrying out the follow-up audit;
- verification of the effectiveness of the measures ordered from a previous audit.

Thus, the main objective of the article is to determine how the main stages of the audit mission of IT projects can be correlated.

Regarding the contribution to the literature, we can say that for a strong correlation between the elements of the audit mission specific to IT projects must:

✓ elaborated the documents provided by the norms, being clarified, in particular, regarding the concrete way of accomplishing the procedures of collecting and processing the information and the analysis of the risks and the evaluation of the internal control and the succession of the documents;

✓ elaborated documents to present the way of using the different audit techniques, with the help of which the findings are established that will be mentioned in the Report of the audit mission of the IT projects;

✓ elaboration of a model Report of the audit mission of the IT projects, structured on the objectives established for the audit so that it clearly presents the objectives, the findings, the audit conclusions and the formulated recommendations.

2. Literature Review

Dependence on information technology is a key factor given that the current trend is to generalize the use of computers in all economic and social fields. The IT function achieves its goals through a well-defined series of processes that involve the skills of the staff and the technological infrastructure to execute automated applications that serve the business, using business-specific information levers. The evolution in the field of IT audit confirms the crystallization of some general audit architectures, a representative promoter in this respect being ISACA (Information Systems Audit and Control Association). The IT audit approach is analyzed from three perspectives (Doshi, 2019):

a) in terms of the country context: the manual includes a critical analysis of the country context approach, with details on the natural coordinates of the national specific, respectively the environment (physical, social, economic) and infrastructures (market, political, legislative);

b) in terms of the approach based on public services: with the detailing of some important services for the economy and society and which present certain elements of progress in e-government (education, health, taxes and duties, etc.), the detailing including both technological aspects, as well as the benefits registered by the respective services;

c) the approach based on common frameworks (such as, for example, a common interoperability framework; similar frameworks for processes and functional capabilities can also be considered).

The main finding is the presence of a series of emerging processes to change the external audit model generated by the significant expansion of information technology and communication (ICT) which, on the one hand becomes the subject of the audit and on the other hand becomes a mandatory tool for auditors (Schiller, 2019).

A second finding is that the evolution reflects the need for a natural, high-quality leap towards approaches driven by information and communication technology (ITC) -based infrastructures and related applications and systems.

Of real interest are also the characteristic notes of this evolution (Renard, 2018):

- focusing on the transformative impact that ICT has on external audit;
- extending the audit concept of information technology governance to the audit concept of e-government systems, dictated by the generalization of e-government.

The most important international institutions, which have a decisive role in regulating the field of audit in general and IT audit in particular, are: INTOSAI (International Organization of Supreme Audit Institutions), the International Audit and Assurance Standard (IAASB). Board) within IFAC (International Federation of Accountants), The Institute of Internal Auditors - IIA, COSO (Committee of Sponsoring Organizations of the Treadway Commission), ISACA - Information Systems Audit and Control Association (Davis, 2021).

The Supreme Audit Institutions (SAIs) are affiliated to the professional organization INTOSAI and, implicitly, to its regional groups. The regulatory framework of the Fund Manager is harmonized with the provisions of the INTOSAI framework but also contains specific provisions, according to the principle of independence promoted by INTOSAI (Otero, 2018).

Although the presence of information technology does not change the fundamental objectives of the audit, by their specificity, information systems may influence the auditor's opinion on the risk or may require the auditor to take a different approach to the audit engagement. The main aspects involved in computerized auditing, which may induce ambiguities or errors during the audit, are (Billows, 2017):

(a) anonymity can be allowed by depersonalizing the user and, implicitly, reducing liability;

(b) unauthorized or unauthorized changes to the accounting data may be permitted;

(c) duplication of inputs or processing may be permitted;

(d) computer systems are vulnerable to remote and unauthorized access;

(e) some processes may be concealed or made invisible;

(f) the audit trail may be erased or hidden;

(g) data may be broadcast, unauthorized, on distributed systems;

(h) applications may be operated by external contractors, who use their own standards and controls, or may alter the information in an unauthorized manner.

In the case of an audit of an IT system that provides information relevant to a financial audit engagement, the evaluation of the IT system shall be performed in order to provide reasonable assurance as to the functioning of the system, which is necessary for the financial audit to which the entity is subject (Schwalbe, 2019). If the information required for the audit is provided by complex applications or systems, it is necessary to consult or participate in the audit team of a specialist who has specialized knowledge and skills in the field of computer systems audit, in order to evaluate the system (Cascarino,

2017). It will also work with auditors to understand the significance and complexity of IT procedures, to process data provided by the IT system, and to understand the internal control system, in order to plan and address the audit, appropriate to new technologies, and to make recommendations on weaknesses of the computer system, in order to remedy the anomalies found.

3. Research Methodology

The purpose of the article is to determine the way in which the audit of IT projects is carried out, analyzing the requirements regarding the development of activities in all stages of the audit mission: audit planning, audit, reporting and audit review.

1. Planning is the first stage in the life cycle of the audit of IT projects, its correctness ensuring the efficiency and effective execution of all other stages of the audit. The planning of the audit of IT projects is based on an audit strategy, which is formulated starting from the definition of the audit approach and specifies elements related to the coordination of the audit mission, the team involved in this mission, team responsibilities, time horizon and main directions of action.

2. Carrying out the audit of IT projects - obtaining audit evidence: the collection and inventory of audit evidence of IT projects refers to the establishment of the database in electronic and / or printed format based on models, questionnaires and completed checklists, such as and their organization and storage.

3. Elaboration of the audit report of IT projects - the report aims to highlight the weaknesses of the controls, identified by the auditor and bring them to the attention of the audited entity through the audit report and a letter containing a summary of the main findings and recommendations.

4. Audit review - is performed in a new audit engagement, which aims to assess how the recommendations made in the previous audit report related to the audit engagement of IT projects have been implemented.

Based on the purpose of the scientific research, the following objectives were drafted through which the necessary information was identified.

The objectives of the research are:

1. Analyzing the stages of the audit mission;

2. Identifying the links between the audit activities of IT projects;

3. The mutual influence of the stages of the audit mission of IT projects;

After establishing the objectives underlying the scientific research study, the research plan was designed which included the following stages:

Stage 1 - Establishment of the research community: Romanian auditors, internet users, who carry out audit activities.

Stage 2 - Identification of the survey unit: it is represented by IT project auditors, of both genders, from Romania, internet users and who carry out activities in all stages of the IT project audit mission.

A number of 312 valid questionnaires were obtained, which allows us to use a large number of statistical techniques to analyze the data collected. As both the time and the interview materials and operators traditionally used in the surveys are quite expensive, a modern method of applying the questionnaire was used, namely its design and application online using the Google Forms application.

Step 3 - Determination of the sampling method: simple random sampling was used. Subjects who were the subject of the scientific research study were selected based on two criteria: availability and accessibility.

Stage 4 - Exploratory quantitative analysis: data collection was carried out between November 2020 and February 2021, using the questionnaire, a quantitatively structured research tool. The duration of completing the questionnaire was about 20 minutes.

The main purpose of this stage was to outline, with the information generated by the questionnaire, as well as with other information obtained from secondary sources, the realistic image of the audit activity of IT projects.

In the processing, processing and analysis of the collected data, the special statistical research software S.P.S.S. (Statistical Package for the Social Sciences), with the help of which the Spearman rho Correlation Coefficient was calculated;

Below are presented the results obtained after the development of the exploratory qualitative stage, respectively the analysis of the data collected with the help of the questionnaire.

4. Results and Discussions

To validate the research objectives, we used the most common and by far the most useful, the Spearman rho correlation coefficient, with the help of the special statistical research software S.P.S.S. (Table 1).

Table 1. Spearman Rho Correlation Coefficient Values

Correlations - Spearman's rho		PLANNING	PERFORMING THE AUDIT	AUDIT REPORT PREPARATION	AUDIT REVIEW
PLANNING	correlation coefficient	1.000	.921**	.837**	.823**
	Sig. (2-tailed)		.000	.000	.000
	N	312	312	312	312
PERFORMING THE AUDIT	correlation coefficient	.921**	1.000	.800**	.784**
	Sig. (2-tailed)	.000		.000	.000
	N	312	312	312	312
AUDIT REPORT PREPARATION	correlation coefficient	.837**	.800**	1.000	.895**
	Sig. (2-tailed)	.000	.000		.000
	N	312	312	312	312
AUDIT REVIEW	correlation coefficient	.823**	.784**	.895**	1.000
	Sig. (2-tailed)	.000	.000	.000	
	N	312	312	312	312

Source: processing data obtained through SPSS program

Following the analysis of the Spearman rho correlation coefficient we can observe the following correlations between the different stages of the audit mission of IT projects:

1. There is a very significant positive relationship between the stage: IT project audit planning and Performing the audit (rho = 0.92, df = 310, p <0.001). From the scatter plot (Figure 1) it can be seen that the point spread is relatively limited, which indicates a strong correlation (R^2 = 0.81). The slope of the scattering of the results is relatively straight, indicating a linear rather than a curvilinear relationship.

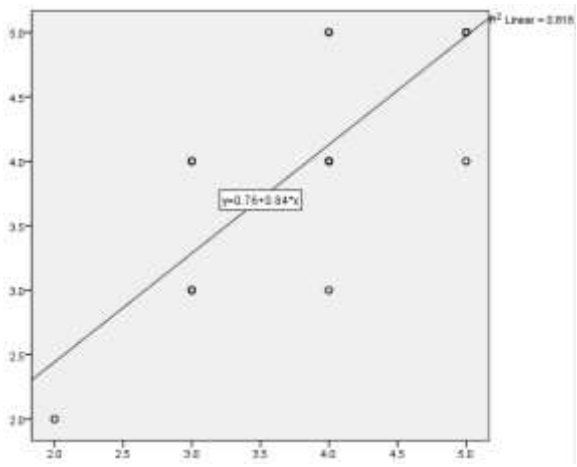

Figure 1. Dispersion Diagram - Correlation between *IT Project Audit Planning* and *Performing the Audit*
Source: processing data obtained through SPSS program

2. It can be seen from Table 1 that there is a very significant positive relationship between the stage: IT project audit planning and Audit report preparation (rho = 0.83, df = 310, p <0.001). The scatter plot (Figure 2) reveals that the point spread is relatively limited, indicating a strong correlation (R^2 = 0.67). The slope of the scattering of the results is relatively straight, indicating a linear rather than a curvilinear relationship.

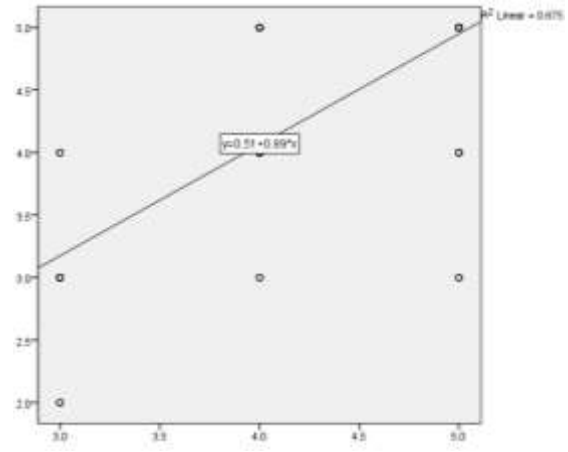

Figure 2. Dispersion Diagram - Correlation between IT project Audit Planning and Audit Report Preparation
Source: processing data obtained through SPSS program

3. between the stage: IT project audit planning and Audit review there is a very significant positive relationship (rho = 0.82, df = 310, p <0.001). In Figure 3, the scatter plot reveals that the point spread is relatively limited, indicating a strong correlation. The slope of the scattering of the results is relatively straight, indicating a linear rather than a curvilinear relationship.

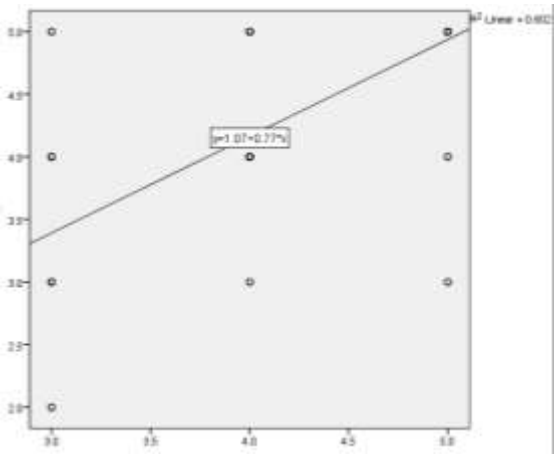

Figure 3. Dispersion Diagram – between IT Project Audit Planning and Audit Review

Source: processing data obtained through SPSS program

4. Analyzing the stage Performing the audit and Audit report preparation results in a very significant positive relationship (rho = 0.80, df = 310, p <0.001). The scatter plot (Figure 4) reveals that the point spread is relatively limited, which indicates a strong correlation (R^2 = 0.61). The slope of the scattering of the results is relatively straight, indicating a linear rather than a curvilinear relationship.

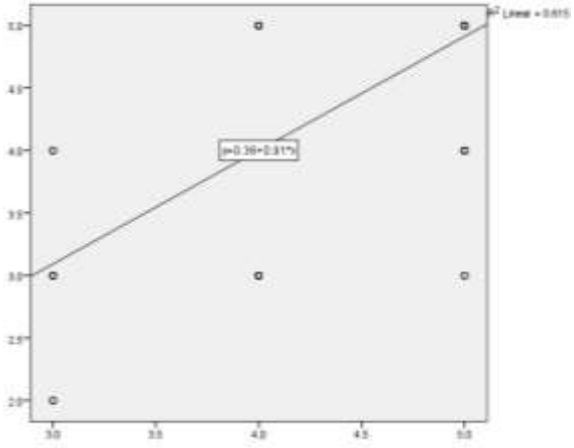

Figure 4. Dispersion Diagram – between Performing the Audit and Audit Report Preparation

Source: processing data obtained through SPSS program

5. There is a very significant positive correlation between the Performing the audit and Audit review (rho = 0.78, df = 310, p <0.001). The scatter plot reveals that the point spread is relatively limited, indicating a moderate to strong correlation (R^2 = 0.54) - Figure 5 The resulting spread slope is relative or straight line, indicating a linear relationship rather than a curvilinear one.

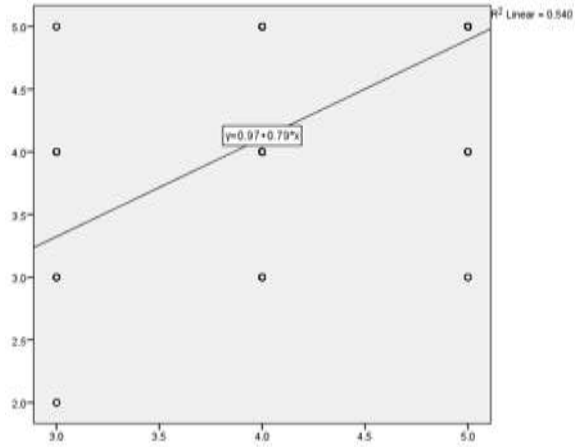

Figure 5. Dispersion Diagram – between *Performing the Audit and Audit Review*
Source: processing data obtained through SPSS program

6. There is a very significant positive correlation (rho = 0.89, df = 310, p <0.001) between the stage: Audit report preparation and Audit review (Table 1). The scatter plot (Figure 6) reveals that the point spread is relatively limited, which indicates a moderate to strong correlation (R^2 = 0.74). The slope of the scattering of the results is relatively straight, indicating a linear rather than a curvilinear relationship.

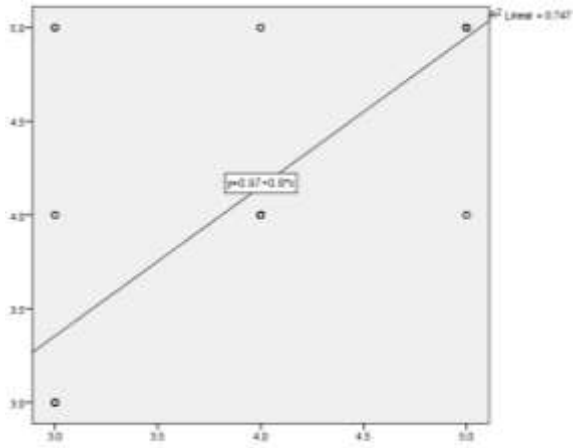

Figure 6. Dispersion Diagram – between Audit Report Preparation and Audit Review
Source: processing data obtained through SPSS program

The auditor's responsibility for the implementation of IT projects is reflected in the policies and procedures implemented. Ensuring that IT projects are properly implemented and reasonably reduces risks is provided by auditors who examine the policies, procedures and controls implemented and the effects of their operation on the entity's business.

5. Conclusions

From a theoretical point of view, the results obtained offer a perspective on the importance of the correlation between the elements of the audit mission of IT projects based on the generic evaluation criteria:

– If the information system provides an adequate framework, based on the integration of information technologies for the continuous development of the activity;

– If the activities carried out during the development of IT projects are in accordance with the objectives and deadlines, approved at institutional level, at their substantiation;

– If during the IT projects technical, implementation or other difficulties were registered;

– If the implementation of IT projects leads to the modernization of the entity's activity, contributing to the integration of new working methods, adequate and in line with the new approaches at European and international level;

– If the technical solution is reliable and supports the required functionality in order to increase the quality of the activity;

– If the computer system operates in accordance with the requirements of computer programs and projects on completeness, accuracy and veracity, as well as with specific security standards;

– If user training reaches the level of performance required by this new approach, analyzed in terms of impact with new technologies;

– If there are and have been observed standards regarding the quality of technical and methodological support.

The general purpose of a strong correlation between the elements of the audit mission of IT projects is to obtain a reasonable assurance on the implementation and operation of the system, in accordance with the provisions of current legislation, regulations, international standards and good practice guidelines, and evaluation the system in terms of providing quality IT services or in terms of performance in modernizing the administration and ensuring confidence in the use of electronic means.

In conclusion, the objectives of the audit mission have a decisive role in approaching the audit of IT projects, from which derive requirements and restrictions on the development of activities:

1. The audit planning of IT projects must include all the phases necessary to achieve the objectives of the audit mission, namely: documentation on the audited activity, the program or system subject to audit, establishing the audit strategy, establishing audit procedures and related techniques, synthesis methods, analysis and interpretation of audit evidence, identification and assessment of the risks generated by the provision of electronic services.

2. Carrying out the audit of IT projects - in collecting the samples, the following must be considered:

a) Physical audit tests - results from demonstrations of applications, technical documentation, diagrams, architectural schemes and other equivalent elements.

b) Verbal audit tests - answers to interviews, surveys.

c) Documentary audit evidence - documents, documentation, manuals in written form or in electronic format.

d) Analytical audit tests - results obtained from the evaluations and analysis of the information fund (indicators, trends).

3. The audit report must identify the scope, objectives, period, timing and coverage of the audit work performed on the IT projects. The audit report of IT projects must be objective and correct, include all relevant findings, including positive ones, be constructive and present the conclusions and recommendations made by the audit team.

4. Audit review - the results should be recorded in a new audit report containing conclusions, findings and recommendations regarding the stage of implementation of the recommendations formulated in the initial audit report.

Understanding the issues related to IT infrastructure, IT services management, as well as risk assessment and management procedures is fundamental in auditing IT projects.

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