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The Impact of ERP Systems in Internal Auditing: The Portuguese Case

Tiago Silva^a, Rui Pedro Marques^{a,b,*}, Graça Azevedo^{a,c}

^aISCA-UA, University of Aveiro, Portugal.

^bALGORITMI Research Centre, University of Minho, Portugal.

^cCenter for Research in Accounting and Taxation, Polytechnic Institute of Cávado and Ave, Portugal.

Abstract

Nowadays, internal audit procedures are increasingly supported by the use of technological tools, such as integrated ERP (Enterprise Resource Planning) systems, aiming to improve the performance of internal auditors, as well as the effectiveness and efficiency of their work. In fact, the adoption of these systems, together with a good implementation strategy, enhances the strengths of a business, while mitigating its weaknesses. This study, through a questionnaire, aims to understand the impact of ERP systems on internal audit work in Portugal. Starting by understanding which systems, modules and functionalities are most used, the study also aims to assess how these systems influence the effectiveness and efficiency of audit work and also the level of satisfaction of internal auditors in their use. The main findings show that there is a wide variety of ERP systems used by internal auditors in Portugal, the most used being SAP ERP, and the Financial Accounting, Treasury and Purchasing modules. It is also concluded that internal auditors agree that the use of ERP functionalities positively influences the effectiveness and efficiency of their work, and they are generally satisfied with the use of these functionalities in their work.

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* Corresponding author.

E-mail address: ruimarques@ua.pt

1. Introduction

Nowadays, more than ever, the issue of added value is of fundamental importance in any organization, after all, in this globalized economy, with increasingly sharp competition, all activities must seek to contribute with more value, and Internal Audit is no exception to the rule, being a very important support and control activity. Currently, accounting and auditing are fundamental elements for their organizations, so the IT resources, which help both the accountant and the auditor in their daily work, have been developed and improved with the aim of standardizing their procedures, as well as reducing audit risk. As an example, ERP (Enterprise Resource Planning) systems have become imperative when the organization's goal is to improve organizational performance and increase competitiveness in the economy. ERP systems are able to promote changes in the organizational structure, always with the aim of improving the quality of accounting information to assist the decision making of managers and stakeholders [1].

Regarding the goals of these systems, one of the most common is a considerable increase in the efficiency of the various areas, since this tool should meet a large part of the operational needs of the company. One can highlight the rationalization and reduction of time in the execution of activities, delimitation, and segregation of functions of distinct work areas, and better synergy between the departments, since there will be an elimination of redundancies and duplications, and improvement in the business practices of the entire company. In this way, the systems allow a customization regarding the outputs provided by the system, so that one can later use this information for more conscious and informed decision making within the organization [2].

Although ERP systems have been studied for many years, it continues to be a topic of interest to the scientific community of information technologies, because there is a need to adjust and evolve the approach to these systems, from the traditional processes and business lifecycle to the current digital transformation of dynamic processes and organizations [3]

In this way, a symbiotic relationship between the maturity of internal auditing and the adoption of these systems could be expected, because their adoption can also contribute to increase the maturity of its processes, in particular, and of the organization, in general [4]. This relationship is a subject of potential interest to study and serves as motivation for the study presented in this paper.

Thus, the objective of this study is to explore the impact of ERP systems in the internal auditing tasks. To achieve this objective, using the Portuguese context, and given the exploratory nature of the study, the following research questions were developed:

- Q1: Which ERP systems are most used by Portuguese internal auditors?
- Q2: Of the features provided by ERP systems, which are the most used by Portuguese internal auditors?
- Q3: What is the impact of using these features on the effectiveness of the internal auditor's work?
- Q4: What impact does the use of these features have on the internal auditor's work efficiency?
- Q5: How satisfied are you with using these features in the internal auditor's work?

To achieve the objective, this paper is structured as follows: this introduction; the second section presents a brief literature review; the third section describes the research methodology; then the analysis of results is carried out; finally, the conclusions are presented from the analysis and discussion of the previous section, as well as the main limitations of this study, and some recommendations for future work.

2. Literature Review

ERP can have a positive impact on auditing, namely [4]: ERP environment may improve auditor's ability to identify suspicious activities and determine fraud; more effective and fast audit processes; ERP systems assist in the reduce of audit report latency; reduction of fraud because of the existence of continuous audit functions; compatibility with international auditing standards; integrated audits rather than separate audits since one of the advantages of ERP is that it is an integrated system that unites all of the enterprise's divisions into one.

Moreover, studies have shown that digital records created in ERPs, such as digital accounting implementation, remain authentic to facilitate financial auditing processes and accomplish audit performance [5]. The ERP systems are also considered important to provide continuous assurance services to organizations, namely by monitoring operations in real time, identifying the irregular transactions, ascertaining of fulfilling of rules and detecting processing errors [6], considered very important for the improvement of the internal audit [7].

The positive impact on business performance caused by the adoption of current ERP systems continues to be

noticed and studied empirically [8–10]. An organization can enhance the operational performance of its internal audit department using an integrated effective ERP system [11].

3. Methodology

The methodology used to conduct this study was the questionnaire survey, which was designed to answer the aforementioned research questions. The questionnaire is divided into three parts:

- The first part, composed of four questions, is intended to collect information about the respondents, which allows us to characterize the sample and, later, understand which of these characteristics influence the impact and satisfaction of using ERP systems in the work of audit;
- The second part has five questions and corresponds to the characterization of the company where the respondent is internal auditor. Similar to the first part, through these data it will be possible to understand if any of the factors that characterize the company have an influence on the impact and satisfaction of the use of ERP systems in the work of internal audit;
- Finally, the third part consists of seven questions, all of them related to the use of ERP systems by respondents. This part will allow you to know which systems are most used, as well as the most used modules and functionalities. It will also make it possible to measure the impact and degree of satisfaction with the use of ERP systems in the internal audit work.

The questionnaire was prepared on an online platform, was available for response between August 20 and September 29, 2021, and was addressed to all professionals who perform internal audit functions in Portugal. The questionnaire was disseminated mainly on the professional network LinkedIn.

4. Results and Discussion

The questionnaire carried out to internal auditors resulted in a set of 119 valid responses, which will be analyzed and discussed below.

4.1. Characterization of the respondents

The sample is made up mostly of male respondents, with about 59% of the sample, while the remaining 41% are female respondents. By analyzing the data relating to the age group of respondents, shown in Fig. 1 (a), it appears that respondents of the option “30-39 years old” predominate, with approximately 39% of the answers, however, the option “29 years old or less” is not far below, with 34% of respondents. It is thus possible to conclude that most of the respondents are under 40 years of age, since these two options, combined, cover about 72% of the sample.

When analyzing Fig. 1 (b), we can see that 99% of the sample has a higher education degree as academic qualification, being graduates, postgraduates, masters, or doctors. The answer “Master” is the one that stands out the most, accounting for about 41% of the total answers, results not far from the answer “Bachelor”, in second place, with approximately 37%. We can thus conclude that 78% of the sample has a Bachelor's or a Master's degree.

Regarding the number of years as internal auditor, shown in Fig. 1 (c), it is observed that there is some discrepancy between the ranges of years indicated by the answers. We can conclude that our sample is not homogeneous, as there is a significant discrepancy between the options allowing us to state that our sample is essentially composed of internal auditors with lower professional experience in internal audit functions.

4.2. Characterization of companies where respondents work as auditors

From the Fig. 2 (a), it can be said that the respondents essentially work in a large Companies. Through Fig. 2 (b), it can be seen that the majority of respondents, approximately 72%, work in companies that are part of the tertiary sector, also known as the services sector, and which includes commerce, tourism, transport, and mainly, financial activities, where the existence of the internal audit function is frequent.

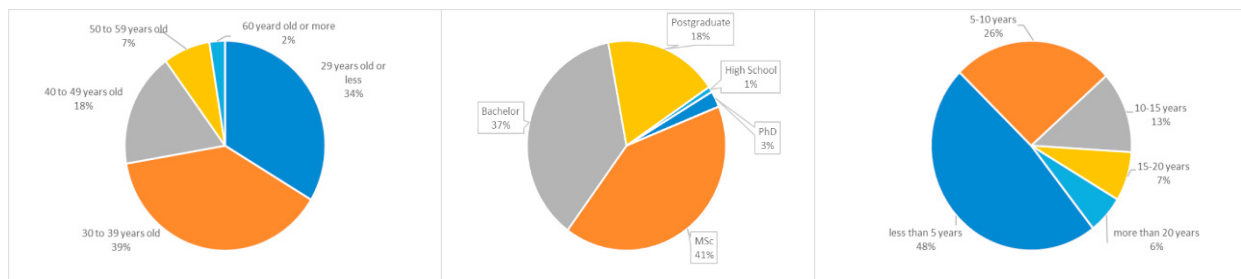


Fig. 1. (a) respondents' age group; (b) academic qualification of respondents; (c) number of years as internal auditor.

According to Fig. 2 (c), it is possible to verify that most respondents (66%) work in companies where the number of hired internal auditors is greater than 3. The remaining options have a homogeneous distribution.

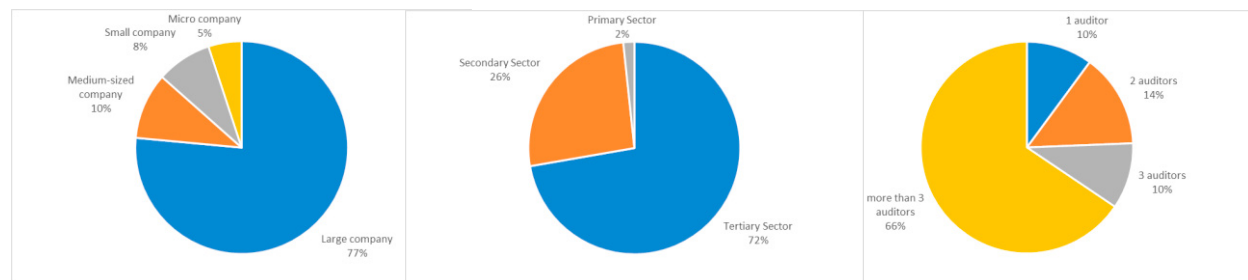


Fig. 2. (a) size of the company; (b) company's sector of activity; (c) number internal auditors in the company.

In accordance with Fig. 3, it is possible to observe that most respondents have a Certified Internal Auditor (CIA) in the company where they work, with approximately 60% of responses. Analyzing the existence of CIA by company size, it is also possible to observe that the existence of CIA is verified in all types of size of the companies, most of them are in large companies, with about 56% of the sample.

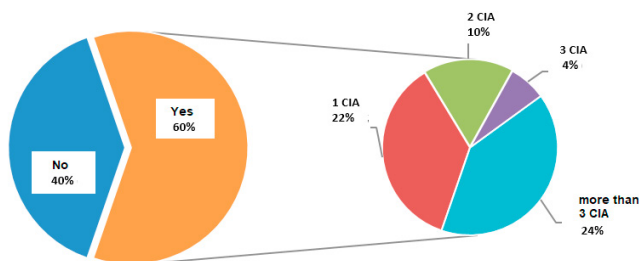


Fig. 3. Existence of Certified Internal Auditors in the company.

4.3. ERP most used by internal auditors

In order to answer the proposed research questions and taking into account that these questions presuppose that the respondent uses any ERP system, of the 119 valid responses, only 77 of the respondents (65%), use an ERP system. In this way, we perceive that the sample under analysis regarding issues related to ERP systems will be 77 respondents.

After analyzing Table 1, we concluded that the ERP system most used by internal auditors is “SAP ERP”. Another relevant result was the answers that indicate the use of software developed internally by the company.

Table 1. ERP systems used in internal auditing functions.

ERP System	No. of Responses	
SAP ERP	39	51%
Software developed by/for the company	14	18%
PHC Enterprise	5	6%
Microsoft Dynamics 365	4	5%
Primavera	4	5%
Oracle ERP Cloud	3	4%
SAGE	2	3%
Other	6	8%

Table 2 shows which modules, among the various ERP systems, are most used by internal auditors in Portugal. We can observe that the module most used by internal auditors is the “Financial Accounting” module. With usage percentages very similar to each other, we have the “Treasury”, “Purchases”, “Controlling” and “Stocks”.

Table 2. ERP modules used in internal auditing functions

ERP System	No. of Responses	
Financial Accounting	66	86%
Treasury	48	62%
Purchases	46	60%
Controlling	45	58%
Stocks	44	57%
Sales and Distribution	38	49%
Fixed Asset Management	35	46%
Materials Management	29	38%
Human Resources	25	33%
Production Planning	15	20%
Quality Management	11	14%
Other	3	4%

It should also be noted that the least used modules are “Production Planning” and “Quality Management”, with 20% and 14%, respectively. This fact is in agreement with the data found in Fig. 2 (b), since these modules are commonly used in industrial companies, and the vast majority of respondents work in companies belonging to the tertiary sector, also known as the service sector.

4.4. Functionalities of ERP systems most used by internal auditors

The most used functionalities are shown in Fig. 4. Based on this, Table 3 were created, showing the ranking of the most used functionalities, in which N represents the sum of the responses “Always Used” and “Frequently Used”.

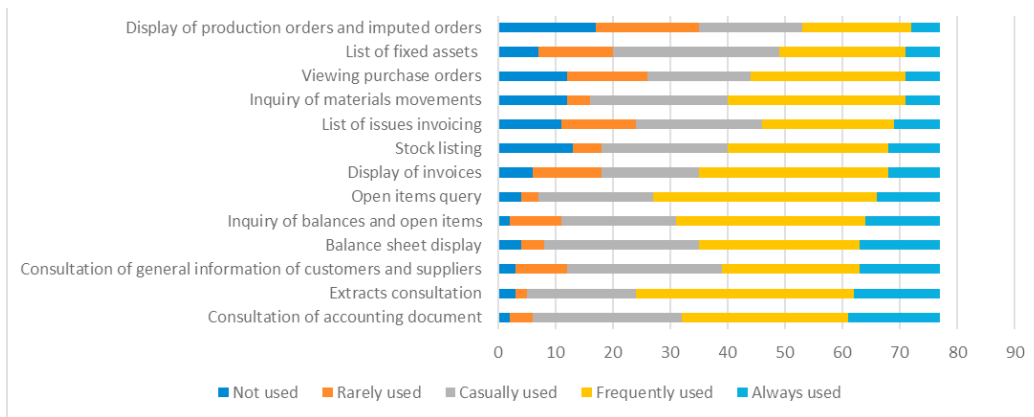


Fig. 4. Use of the functionalities of ERP systems.

Table 3. Ranking of the functionalities of ERP systems most used by internal auditors.

Functionality of ERP System	N
Extracts consultation	53
Open items query	50
Inquiry of balances and open items	46
Consultation of accounting document	45
Balance sheet display	42
Display of invoices	42
Consultation of general information of customers and suppliers	38
Stock listing	37
Inquiry of materials movements	37
Viewing purchase orders	33
List of issues invoicing	31
List of fixed assets	28
Display of production orders and imputed orders	24

4.5. Impact of ERP systems on the effectiveness and efficiency of the internal auditor's work

Through Fig. 5, it is possible to see that most of the respondents, approximately 56%, agree that the use of the functionalities of the various ERP systems contributes to the effectiveness of the Internal Audit work performed by them. If we consider the respondents who agree or totally agree, a percentage higher than 93%. None of the respondents chose the options “Strongly Disagree” or “Disagree”. We consider effectiveness as the success of obtaining results is directly dependent on the use of the software's functionalities. Regarding efficiency, the answers listed in table 12 were obtained. Here, too, the most frequent choice was the option “Agree”, with about 53% of the population. Again, over 90% of respondents agree or strongly agree. None of the respondents opted for the answers and chose the options “Strongly Disagree” or “Disagree”. We consider efficiency as the software's ability to optimize the time spent on the audit tasks, as well as the result of it.

To assess whether the impact of using the functionalities of ERP on the effectiveness of the internal auditor's work is influenced by the characteristics of the respondents (gender, age, academic qualification, number of years in Internal Audit functions) and by the companies where they work (size and existence or not of CIA) the Pearson chi-square test

was applied. To assess possible influence between the variables, the Sig value is observed. Thus, if $Sig > \alpha = 0.05$, H_0 is not rejected, on the other hand, if $Sig \leq \alpha = 0.05$, H_0 is rejected, which indicates that the variables are related.

Regarding the effectiveness, we conclude that the value Sig. is always greater than 0.05, so H_0 is not rejected. In other words, we can say that the respondents' opinion regarding the contribution of ERP systems functionalities to the effectiveness of internal audit work is not influenced by the characteristics of the respondent nor the characteristics of the company. About efficiency, we conclude that the value Sig. is always greater than 0.05, except for the variable “Existing CIA in the company”, therefore, H_0 is not rejected for the remaining indicators, but H_0 is rejected for this variable. In short, the factors that influence the respondents' opinion regarding the contribution of ERP systems functionalities to the efficiency of Internal Audit work are only the existence of certified internal auditors.

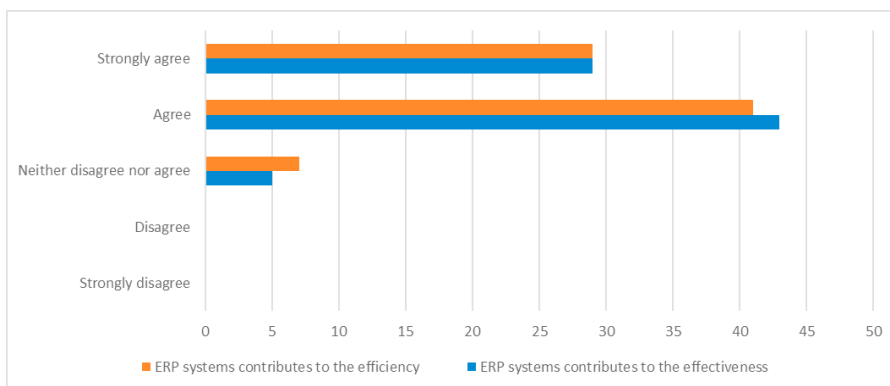


Fig. 5. Responses about the impact of ERP on the effectiveness and efficiency of internal auditing.

4.6. Level of satisfaction with the use of ERP systems in the work of the internal auditor

According to Fig. 6, it can be easily verified that 66% of the sample is “Satisfied” with the use of the existing functionalities in the ERP systems for the internal audit procedures they carry out, and 22% even say they are “Totally Satisfied”. Only less than 3% of the sample are “Dissatisfied”. We once again used the “

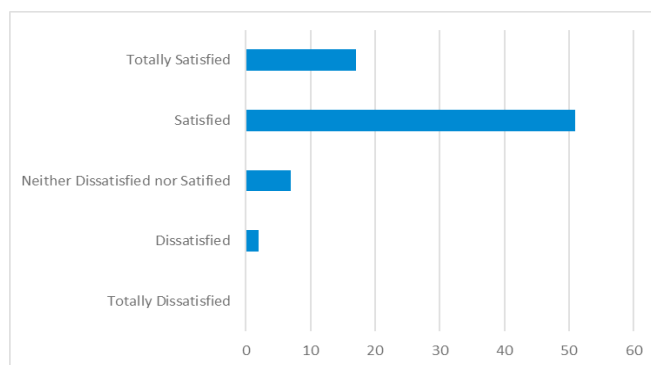


Fig. 6. Level of satisfaction with the use of ERP systems in internal auditing.

Chi-Square Test’ to assess whether the general level of satisfaction with the use of functionalities of the ERP used in internal audit procedures is, or is not, influenced by gender, age, academic qualification, by the number of years that the respondent has been internal auditor, by the size of the company or by the existence of a CIA in that company. The value Sig. is always greater than 0.05, so H_0 is not rejected. We can declare that none of these variables has any influence on the general level of satisfaction with the use of ERP functionalities in internal audit procedures.

5. Final Considerations

This empirical study aims to analyze the impact of ERP systems on internal auditing. Of the 119 responses obtained through a questionnaire, applied to internal auditors working in Portuguese companies, the following can be concluded: firstly, the ERP system most used by internal auditors is “SAP ERP”; secondly, the five most used modules are the “Financial Accounting”, “Treasury”, “Purchases”, “Controlling” and “Stocks” modules (bearing in mind that the sample consisted of only internal auditors, it is possible to perceive that the most used modules are expectably the accounting/economic ones); thirdly, the functionalities most used by internal auditors, when using ERP, are extracts consultation, open items query, inquiry of balances and open items, consultation of accounting documents; finally, most respondents agree that the use of ERP systems contributes to the effectiveness and efficiency of the audit work performed by them. Also at this point, it is worth noting the influence verified between the existence of CIA in the company to the efficiency of the audit work performed by the internal auditors.

Also, about the level of general satisfaction regarding the use of the functionalities in the ERP in the internal audit procedures, it was possible to conclude that: most of the sample is satisfied with the use of the existing functionalities in the used ERP; there is no influence of independent variables on the level of satisfaction of the internal auditors regarding the use of the functionalities of the ERP in the internal audit procedures.

The main limitation of the study is related to the lack of representativeness of the sample, since the number of responses is relatively low considering the population of internal auditors working in Portugal. Another limitation, which may be mitigated with future work, is related to the geographic limitation of the sample. Therefore, it is suggested for future work to replicate the study in other contexts or in broader contexts.

Acknowledgements

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