

**THE MINISTRY OF NATIONAL EDUCATION  
THE UNIVERSITY "1 DECEMBRIE 1918" FROM ALBA IULIA  
THE FACULTY OF SCIENCES  
FIELD: ACCOUNTANCY**

# **DOCTORAL THESIS**

**SUMMARY**

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**ALBA IULIA**

**-2014-**

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**CONTRIBUTIONS OF ACCOUNTANCY  
AND INTERNAL AUDIT IN THE  
ADMINISTRATION OF THE RESOURCES  
IN FORESTRY**

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*Motto: „The train of development passes by the nations once every century. If the nation has the wisdom to catch this train it will follow its development... If not, it will wait another hundred years” (Jean Jaques Rouseau)*

## **INTRODUCTION**

### **The general context of the research**

Through its activities, the modern entity is concerned to manage the available resources with maximum efficiency, economicity and effectiveness, building on the principles of sustainable development. The persons with responsibilities on training, using and development of resources, manifest the need to possess of more complete information concerning the way in which they have been administered, so that can be identified viable solutions in order to mitigate the limited character of resources. Based on these assumptions, the accountancy and internal audit become multidimensional valences.

On the one hand, the accountancy should put into practice new ways of managing the environment, new tools to represent and predict forest resources. On the other hand, the internal audit should not be limited to the financial-accounting area, providing reasonable assurance that transactions are conducted "under control", thus contributing to the objectives of the entity. The multidimensional valences of internal audit occur due to the diversity and variety of the activities of the entities in which it integrates activities involving different types of risks, depending on the dimensional side which is audited.

The accountants, internal auditors, managers operate in an environment which is continuously moving, an environment which must adapt and demonstrate their role in the entities they belong to. In recent decades, we see little change in almost all fields where accounting and internal auditing appear to gain their share in the importance given to the role held by an entity, especially in the field of forestry on which the quality of life depends.

In this regard, in order to identify new perspectives, in the PhD thesis **"CONTRIBUTIONS OF ACCOUNTANCY AND INTERNAL AUDIT IN THE ADMINISTRATION OF THE RESOURCES IN FORESTRY"** we focused on the following issues: the development in forestry in the national and international context, the current situation of forestry in Romania, directions and strategic objectives in the field of forestry accounting issues in the evaluation and presentation of forest resources, forest management entities accounting regime forestry legal entities, the role of self-appreciating the work of internal auditors in forestry entities, measuring the internal audit activity, methods for assessing the epidemiology of forestry autonomous administration board - new approaches to the use of accounting information in the field of forestry, forest management accounting and performance usefulness of econometric modeling and fuzzy logic, operatively improving the work of the internal auditor in an adjacent forest and other issues, which have emerged as

complex research topic, issues that we have considered in the context of resource management in forestry.

I structured my PhD thesis into the following parts: an *introduction*, where I presented the general context of the research, the importance of the conducted research, the motivation of studying the topic, *keywords*, *the research methodology* in which we pointed out the overall objective of the research undertaken and specific objectives, the research methods used and the synthetic content of the chapters, *five chapters*, each containing preliminary conclusions, *general conclusions* resulting from the disclosure, calculations, interpretations which were made, *personal contributions*, *suggestions and research*.

### **The importance of the research**

Analyzing the scope of accounting historically, I found that it was usually limited in records made in the reflection of resources including tangible and monetary goods of the entities, neglecting the reflection in accountancy of events which had impact on the environment, of events with a social impact and issues which make a significant concern of researchers today.

Taking as a base the role and importance of the work carried out by internal auditors, regardless of the type of entity - a public, autonomous, businesses and other legal forms - I found it extremely useful, as they focus mainly on issues concerned and effect of the situation analyzed entity. This however can be materialized only in an environment of effective cooperation between the internal auditor, the entity's management and representatives of the economic sector to which the entity belongs. In this way, the internal audit should be seen as a useful activity, and not as presented and required for mandatory acceptance, unconditional, based on existing legal regulations.

In this respect, we believe that the work of the internal audit and accounting have responsibilities for the continuous improvement of resource management process area of interest, so in the five chapters, we've identified through these activities, possible solutions that should contribute to the complex process of managing forest resources - hence the importance and role of research work, both for accounting, internal audit, as well as forestry.

### **The motivation of studying the topic**

*The reasons* for choosing "**CONTRIBUTIONS OF ACCOUNTANCY AND INTERNAL AUDIT IN THE ADMINISTRATION OF THE RESOURCES IN FORESTRY**" as the research topic are determined by more elements such as: the observation that society as a whole needs a "healthy" forestry in all aspects - economic, regulatory, legal, environmental, social, cultural, political, technological - generalized idea most countries, the desire to find some solutions to the practical problems facing the forest - an area of research less exploited and discussed in the literature, but with a major importance for society, finding the cruel realities on massive deforestation against low investments for afforestation and the protection of forestry elements; personal items (respect for a tidy "healthy" environment) and cultural factors (values of the Romanian people, protect people's behavior across the environment). To explain the elements of reasoning, we can mention that the problems facing the Romanian economy at present, starting from the existing inconsistencies

in the legislative framework elements that were defined by the sustainable development in the forestry and the regional and global development strategies. Furthermore, we have developed approaches to research upon internal audit, as a practical motivation, found in many forestry entities, namely the lack of the internal audit. This, in the context of the internal auditor in activity is in the best position to report the wrong direction it is heading objectives, actions and results of entities depending on the particularities of each audited field.

The problem of resources, specifically forest resources is a subject that places us from the beginning in a ledger of administrative data. Even with the pronunciation of the word "resources" we enter into a context of disputes and controversial relationships created between the limited resources and unlimited character needs, but disputes and relationships that describe an undesirable reality as a whole.

### **Key-words**

Accountancy, Internal Audit, forest resources, forestry, PEST(LE)O analysis, afforestation, accounting records, self-assessment, external assessment, commensurate, forestry entities epidemiology, risks, econometric models, management tools, fuzzy logic.

## THE METHODOLOGY OF RESEARCH

Given the motivation of the research efforts, the documentation, analysis and evaluation guided us to shape the next objective of this research: exploring the role of accounting and internal audit regarding forestry management to identify new tools to represent and predict forest resources, new ways of assessing the internal audit forestry entities. To achieve the objective of this research, we formulated and listed at the beginning of each chapter, *the specific objectives*.

In pursuing the general objective we started from the premise that between financial accounting, management accounting, internal audit and management should be a harmonious and coherent networking in forestry entities so that the difficult road to sustainable development in resource management to become one rigorous, sustained and completed complex viable decisions that do not harm the health of society in general (present or future)

The research approaches that we have undertaken with reinforcing arguments – which were formulated based on information gathered from the literature (103 references published by the authors in publishing or magazine), the acts (33 acts), various documents (annual financial statements for the years 2008 to 2012, documents show primary forest resources, internal audit reports , internal audit report prepared by the ECA strategy on forestry situation in Romania), international databases and other resources available electronically (90 references available electronically), information collected from practitioners (calling the questionnaires, interviews verbal) and other sources deemed relevant to the research topic (found in text form bibliographical references / footnotes / sources tables, figures) - using throughout the investigation (with exceptions specified in the relevant research methods) research methods such as:

✧ *The literature review* that helped us to study previous research on international and national legislation on issues: resource accounting information, information provided by internal audit, investment in forestry, management tools, policy tax, forest policy, econometric modeling, fuzzy logic

✧ *the study of related documents* on forestry entities from different periods of time: Trial balance (the years 2008-2012), the annual financial statements of the autonomous forestry (the years 2008-2012), various synthetic and analytical financial statements, various internal reports , internal audit reports prepared for different audits (from 2009-2013), documents related to the process of logging operations, Summary audit Report on "The State forest heritage in Romania during 1990-2012" (Court of Auditors of Romania, Bucharest, 2013)

✧ *organizing the collected and processed information* for the consistent presentation of research ideas logically which were ordered sequentially. In this way, we put into relation the complementary information provided by accounting and internal audit resources across the forest, we discussed the relationship between accounting and the environment, we presented different views of the authors on a topic of interest;

✧ *the analysis*: we used data in shaping the various schemes, figures and tables found in the literature surveyed in the pen author addresses issues related to the usefulness of internal audit and accounting in forestry management;

✧ *summary*: I used it to show schematic certain keywords in a more vast manner that were classified in a logical form of a text content on the work of accounting, internal audit, resources, fuzzy logic econometric modeling;

✧ the comparison gave us the possibility to distinguish multiple visions of: accounting, internal audit activity, environmental accounting, fuzzy methodologies, econometric modeling, management tools, and other concepts used;

✧ *mediated data collection methods* that we have used in presenting and disseminating documents, reports, studies, summaries, included or not in different international databases, which have had a significant contribution to the conduct of research;

✧ *the interpretation of results*: the method that we used to summarize the various results obtained during the research, results obtained either by calculation or as a result of the questionnaires or from making other case studies that led to some research results (Chapter I, III, IV, V);

✧ The *questionnaire*: was used to see the general trend of human resources across the study, initial shooting a set of financial statements and to obtain information related to how the internal auditors of the autonomous administration of the forestry manage to self-assess the activities that were developed (Chapter III, IV)

I applied questionnaires to internal auditors in forestry subordinated to the National Forest Administration-Romsilva. Of the 22 requests for the questionnaire to the internal auditors of the entities subordinated forest RNP-Romsilva, 21 completed questionnaires were received - the few cases that have not received the necessary responses, 5% of the total requested - where the responses we may consider relevant for the population we studied. Another questionnaire was applied to a number of 120 economists, in order to ascertain the general trend of human resources across the initial interest shown when analyzing a set of financial statements, receiving 120 completed questionnaires

✧ *graphic representation*: I used it to show graphs, figures, diagrams results of research of various issues addressed;

✧ *The case study*: I used it to capture different aspects of forest resources addressed in this paper from a practical perspective. (Chapter I, III, IV, V).

R.K. Yin considers the case study as "a strategy of a research that requires empirical investigation in relation to a particular contemporary phenomenon within a real life context using multiple sources of information (interviews, questionnaires, testimony, evidence, documents) ", although most critics of the case study, often accused it of failure criteria of reliability and robustness of the economy. By this they mean that the researcher is the main instrument for data collection and analysis, and can not guarantee that other researchers will find completely the same results"<sup>1</sup>.

The mentioned research methods were used to perform either *quantitative* research on issues studied (e.g. woodland, income from wood exploitation) or *qualitative* research on other topics discussed (e.g. appreciation of the work of internal auditors perspective of practitioners) or a descriptive research (development in forestry) or a practical approach, interpretive or critical (e.g., econometric modeling, the PEST (LE) O model), depending on the subject of interest and relevance considered, but specific methods employment in constructivism in terms of epistemological positioning in certain parts of the work (part of

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<sup>1</sup> Ivonne Giardano, *Conduire un projet de recherche*, EMS Publishing House, Paris, 2003, p.43.

Chapter II, III, IV, V), and positivism in other parts of the content of the paper (Chapter I, parts of Chapter II, III, IV V).

According to the authors K.Howard and J. A. Sharp, we conducted a structured research efforts, following the seven steps mentioned, namely: identification of the study area, the selection of the research topic, choosing the way of the research, the plan formulation, the data collection and data analysis and the interpretation of data, the display of the results<sup>2</sup>.

We encountered difficulties in documenting national forest practice some entities, such as in data collection and international reference.

As shown by R.K. Yin, we consider to be eloquent the fact that "the economic practice is richer, not fully known at every moment, it is the sole criterion of truth, veracity or accuracy of scientific knowledge" 1. This is why, different science topics research methodology is based on the practice, real as the basis of the information reviewed, establishing various factors that determined the situation / activity in question, the factors that explain the various concrete activities. All this research undertook permanent or continuous improvement determined by the theoretical content. But "practice encompassing the theory of confrontation always makes an imperfect methodology and makes corrections and improvements, bringing it closer to practice"<sup>3</sup>.

Thus, using these research methods, motivated by the elements mentioned above and having regard to the objective of this research, in "**CONTRIBUTIONS OF ACCOUNTANCY AND INTERNAL AUDIT IN THE ADMINISTRATION OF THE RESOURCES IN FORESTRY**" I've presented in a multidisciplinary approach, the conducted research.

Specifically, in *Chapter I "The forestry and the administrated resources "* in order to achieve specific objectives , observed at the beginning of the chapter, we turned our attention to the knowledge of management resources of forestry and have addressed issues related to : international developments in forestry and national typology related resources in forestry , general objectives priority of an extension of Romanian forest , environment ( ecology ) in the context of sustainable development, direction and strategic objectives in the forestry sector , the implications of the tax burden borne by the resources managed by forestry . These issues have given us the opportunity to present preliminary findings, to bring some personal contributions by demonstrating the practical solutions identified (which may be useful in the management of forest resources) to formulate some suggestions and to establish future research directions

In *Chapter II " Accounting approach in evaluating and presenting forestry resources "* I have analyzed the techniques of recognizing and accounting of forest resources, based on the specific objectives of the chapter - mentioned at the beginning of - and we synthesized information on: the relevance of financial information from forestry, the economic theory and practice value of forestry entities accounting mechanisms on taxes applied to the forestry entities , the role of management accounting in forestry entities , costs and their role in decision making - informational , managerial accounting concept and the forest logging . Based on the information that forms the content of the chapter, I made the connection between the objective of the paper, the specific objectives of the chapter content,

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<sup>2</sup> Septimiu Chelcea, *Metodologia cercetării sociologice. Metode cantitative și calitative*, Ediția a III-a, Editura Economică, București, 2007.

<sup>3</sup> Gheorghe Răboacă, Marin Comșa, *Metodologia cercetării științifice*, București, *Analele Universității Spiru Haret*, Fundația România de mâine, Publishing House, 2006, p. 58.



ideas presented preliminary findings, contributions made to demonstrate some practical solutions which were identified (which may be useful in the management of forest resources ) submitted suggestions, the prospects of the established research.

In *Chapter III, "Risk assessment of the techniques and the actual value of the forestry resource"* we conducted an analysis on the internal audit activities that are designed to mitigate the risks in forestry, emphasizing implications for resource management field under study and the methods through which the epidemiology in the autonomous administrations that can be quantified in economic data from specific objectives related to the chapter and finally summarizing the preliminary findings related to the chapter.

In *Chapter IV, "Study on the contribution of accountancy in the management of forestry resources"*, I have examined how accounting could make contributions to the complex process of managing forestry resources. Based on the specific objectives mentioned at the beginning of the chapter, we tackled issues: opportunities for environmental management through accounting, accounting information using the utility representation of economic reality econometric modeling of forest resources and forecasting, and we finally synthesized the preliminary conclusions of this chapter.

In *Chapter V "Study on the contributions of internal audit in the management of forestry resources"* I've analyzed the contribution that internal audit can bring to the complex process of managing forest resources, based on the specific objectives stated at the beginning of the chapter and sketching the preliminary conclusions.

Finally, based on the *overall objective* of the research paper, the specific objectives for each chapter of the book, and based on the content of the research results presented in the five chapters, I summarized their *overall conclusions* and contributions of the research. I also considered useful to point out the suggestions made based on the results of research, foreshadowing perspectives on research in order to strengthen the credibility of public accountancy and business information from the internal audit related to forestry.


## GENERAL CONCLUSIONS, PERSONAL CONTRIBUTIONS, SUGGESTIONS AND PERSPECTIVES OF RESEARCH

### General conclusions

The research efforts undertaken to do the work: „*CONTRIBUTIONS OF ACCOUNTANCY AND INTERNAL AUDIT IN THE ADMINISTRATION OF THE RESOURCES OF FORESTRY*” allowed us to formulate general conclusions which, related to specific objectives, are presented in the following table:

Table: General conclusions pertain to the main objectives considered in the scientific endeavour

Specific objectives	General conclusions
<p><b><i>The general objective of the research:</i></b> knowing the role of accountancy and internal audit concerning the administration of forest resources in order to identify new instruments in the representation and forecasting of forest resources, new ways of assessing the forest entities through internal audit.</p>	
<p><b><i>Chapter I. The forestry and the administrated resources</i></b></p>	
<p><b><i>Specific objectives:</i></b></p> <ul style="list-style-type: none"> <li>☒ the knowledge of forest resources managed by the forest entities;</li> <li>☒ conducting analyses of forestry to show various statistical statements at international, national level</li> <li>☒ identifying the organizational context pertain to the entities in forestry;</li> <li>☒ identifying concrete possibilities of adapting forestry management decisions related to the environmental requirements in the context of sustainable development;</li> <li>☒ identifying the directions and strategic objectives established for the administration of the tax burden in forestry.</li> </ul>	<ul style="list-style-type: none"> <li>◆ sustainable development depends directly on how forest resources are being managed;</li> <li>◆ the national forest covers an area of 6.5 million ha of which 3.3 million hectares of forest owned by the state, and according to National Forest Administration-Romsilva, Romania is facing a shortage of exploitable trees as a result of past exploitation (only in 2000 it is estimated that 195 400 m<sup>3</sup> were exploited);</li> <li>◆ the overall objective of forestry entities established by law in all states analyzed in Romania is to ensure sustainable management of forests and unified public property in order to protect the Romanian forest heritage and the growth of forest vegetation;</li> <li>◆ each type of forest resource which is effectively managed could contribute to improving the welfare situation in forestry, being helpful not only to promote the importance of timber, their value, but also the importance of other types of forest resources, with reference to the essential endeavours necessary</li> </ul>

Specific objectives	General conclusions
	<p>for use of all forest resources and opportunities related to the management of these resources;</p> <ul style="list-style-type: none"> <li>◆ financing activities in forestry can also be achieved through European funds - by the end of 2013, 229 million Euros will be available through European programs;</li> <li>◆ according to the research conducted and presented in Chapter I, local taxes paid by DS Alba R.A. would be enough for the afforestation of a hectare of land annually;</li> <li>◆ afforestation costs are justified by two further categories of benefits: material and natural;</li> <li>◆ the plastic tax aims to protect the environment by determining a part of citizens to switch to biodegradable products, thus having a contribution to the education of citizens;</li> <li>◆ organizing voluntary activities and punishments in the form of community work can be considered points of support for a healthy environment / forest healthy / clean air, etc</li> <li>◆ connecting forestry and environment as a whole to various corresponding economy (industry, tourism, transport, construction) can be considered one of the problems of sustainable development in Romania, because directly or indirectly it influences the environment;</li> <li>◆ the forest is divided among RNP-Romsilva and the private owners who most often have conflicting interests of economic profit and the forest profit that can be obtained from forest possession;</li> <li>◆ the massive restitution from previous years are the effect of bad normative acts that led to exceptions on sustainable development</li> <li>◆ a particular case for the forestry sector is the tax treatment for wood raw materials, i.e. the reverse charge for V.A.T.</li> </ul>
<p><b><i>Chapter II. ACCOUNTING APPROACHES IN ASSESSING AND PRESENTATION OF THE FOREST RESOURCES</i></b></p>	
<p><b><i>Specific objectives:</i></b>   Identifying the role of management accounting, the need</p>	<ul style="list-style-type: none"> <li>◆ the information is considered a valuable resource for an entity unlimited if the managers have invested resources to possess accurate information;</li> </ul>

Specific objectives	General conclusions
<p>for substantiation of management decisions based on the information provided by financial accounting and management accounting, difficulties of measuring performance;</p> <ul style="list-style-type: none"> <li>✦ the analysis of the concept of "value" in economic theory and practice in forestry;</li> <li>✦ the analysis of the techniques for the recognition and accounting of forest resources;</li> <li>✦ identifying the main national and international accounting regulations applicable in forestry.</li> </ul>	<ul style="list-style-type: none"> <li>◆ the information resource is the one that can permanently improve the cost-effectiveness;</li> <li>◆ although the information seems to be unlimited resources, special attention should be paid to the perish ability of the accelerated information in time;</li> <li>◆ the accounting information represents the main source of information for managing the activity of the forest autonomous administration, from the inside as well as from the outside, giving the possibility of an analysis on an activity from an economic point of view, through researching the efforts made by a forest entity during an accounting period, in relation to the achieved effects, in order to highlight the performances achieved at a given moment as well as the forecast performances;</li> <li>◆ nowadays, society demands that the scientific rigor of accountancy should be reflected usefully and efficiently in the practice, through the coordinates of the financial-accounting information (form, substance, characteristics) for avoiding misleading the users of the financial-accounting information, the only ones who justify the activity of professional accountants;</li> <li>◆ the actual value (overall, total) of the exploited wood is an objective and would involve multidimensional analysis complex and complementary - because the profit that can be brought by trees consists of material benefits, plus the important natural benefits to society;</li> <li>◆ before being cut down, trees are not recognized, they are recorded only when drawing the APV (Act enhancement), forming a party and removal auction / start operation with its own forces, preparation of the technology;</li> <li>◆ the normative acts that regulate accountancy inside the forest entities include the common legislation of other types of entities, but also the specific legislation to the field which is pertain to the legal system of performance, to the accountancy, to the forest fund, to the forest fines and transgressions, and others;</li> </ul>

Specific objectives	General conclusions
	<ul style="list-style-type: none"> <li>◆ the agents are hardly motivated to register incidents and respectively to impose fines, confiscations, as most of their value is transferred to the state budget (80% for fines and 65% of the value of confiscated timber sold);</li> <li>◆ the largest share of the costs of an autonomous forest holds labor cost - information that managers of these entities should take into account in making decisions;</li> <li>◆ the validity and quality of the sources used to support performance analysis and tools used to analyze the results, are the difficulties in carrying forest representation is an issue that makes it difficult to take measures to find solutions on the management of forest resources.</li> </ul>
<p><b>Chapter III. TECHNIQUES OF ASSESSING THE RISK AND THE ACTUAL VALUE OF THE RESOURCES IN FORESTRY</b></p>	
<p><b>Specific objectives:</b></p> <ul style="list-style-type: none"> <li>☒ the analysis of internal audit activities targeting specific risks in forestry and its implications for the management of resources;</li> <li>☒ the evaluation of the forest resources audit activities</li> <li>☒ identifying methods for assessing the epidemiology of autonomous administration of forestry in the economic data.</li> </ul>	<ul style="list-style-type: none"> <li>◆ the use, along with external evaluation system of forestry business entities (by auditors, the Court of Accounts, other institutions in this regard) of a self-assessment system that can benefit in improving the conduct of business entities forest (as we found in Section 3.1);</li> <li>◆ there are problems in the work of private forest districts, namely the proper management of forest resources and internal audits carried out (by the Court of Accounts) highlights how poor these forest districts operate the wood, given that these entities have to check the operation of exploitation of these areas under management;</li> <li>◆ internal audit outsourcing in forestry entities would not be a solution to be considered viable due to the particularities of this field;</li> <li>◆ to assess the internal audit activity in the forestry entities we can not standardize the generally valid indicators to help determine the effectiveness of this activity, a situation justified by the nature of the activity, therefore, specific human activity in various fields that can not be uniform;</li> <li>◆ information from their own self-assessed activities of internal auditors in the autonomous administration</li> </ul>

Specific objectives	General conclusions
	<p>of the forestry sector can make a significant contribution to improving internal audit, although, so far, self-assessment is not exploited in this sense, there is a tendency to assume more of a point the support of external assessments of the work of internal auditors than their self-assessment;</p> <ul style="list-style-type: none"> <li>◆ internal audit and diagnostic analysis can be considered as risk in the assessment techniques and the present value of the forestry resources;</li> <li>◆ the methods for assessing the epidemiology of autonomous administration of the Forestry (legal diagnosis, the human diagnosis, technical diagnosis, diagnosis, economic and financial diagnosis) contribute to the overall results to help improve the efficiency of forestry entity as a whole;</li> <li>◆ the resources in forestry depend directly or indirectly to human resources of these entities, in particular due to the fact that the source of the decision is the human resources</li> <li>◆ the PEST(LE)O analysis model can be considered a real tool of support to identify functions / human resources forestry entity because the entity that helps managers to identify factors that influence human resources unfavorably with order that appropriate steps to mitigate the effects of negative influences factors (a full elimination is impossible because human resources analysis in the context timeline will be different from the analysis of those resources in another temporal moment);</li> <li>◆ between the result of legal forestry entities diagnosis in Romania and those in other countries such as Germany, Finland, USA, Canada, we identified certain symmetries, and asymmetries.</li> </ul>
<p><b><i>Chapter IV. A STUDY CONCERNING THE CONTRIBUTION OF ACCOUNTANCY IN THE ADMINISTRATION OF FOREST RESOURCES</i></b></p>	
<p><b><i>Specific objectives:</i></b></p> <ul style="list-style-type: none"> <li>☒ examining the opportunities in the forestry resource management based on financial information</li> <li>☒ identifying new tools to represent and predict forest resources</li> </ul>	<ul style="list-style-type: none"> <li>◆ accounting information can be synthesized in an econometric model that would represent economic reality figures and diagrams, thus enabling interpretations of information and predictions of a more consistent and complete interpretation;</li> <li>◆ the use of the board as a management tool and</li> </ul>

Specific objectives	General conclusions
	<p>econometric models as tools for correlating and forecasting variables, contributes to a better correlation of the credibility of information on average accounted for with user expectations</p> <ul style="list-style-type: none"> <li>◆ the board, as the instrument intended to be used in the forestry entities contributes to improving performance and how an entity forest resources are managed, if they are developed to follow the trend and encourage progress in forestry entities;</li> <li>◆ the SWOT analysis from the main board as a management tool can help improve it based on the information needs of the forestry entity concerned.</li> </ul>
<p><b><i>Chapter V. A STUDY CONCERNING THE CONTRIBUTIONS OF INTERNAL AUDIT IN THE ADMINISTRATION OF THE FOREST RESOURCES</i></b></p>	
<p><b><i>Specific objectives</i></b></p> <ul style="list-style-type: none"> <li>☒ identifying internal audit contributions to the knowledge of forest resources;</li> <li>☒ identifying new ways of assessing the activity of forestry entities in terms of fuzzy logic.</li> </ul>	<ul style="list-style-type: none"> <li>◆ the management of forestry resources process can be improved on the one hand by the contribution of information provided by financial accounting and management accounting, on the other hand the contribution of the information provided in the course of internal audit in the establishments in this field;</li> <li>◆ internal auditor's work based on mathematical calculations, econometric modeling, statistical analysis methodologies like fuzzy logic, ensure the improvement of the credibility of users in its results.</li> </ul>

Source: sketching done by the author

### **Personal contributions**

Based on the conclusions from the other paragraphs, the personal contributions which were gathered can be synthesized as follows:

- ◆ I've identified possible new financial resources needed to increase forest areas in order to increase the forest quality, the environment, based on the determination of the tax burden borne by the implications on resources managed forestry - contribution consisting of correlating cost with taxes and local entities forest (for example, if it costs DS Alba RA about £ 8,000 ) a hectare of afforestation cost of land ( a hectare of forest establishment costing between 8 and 25 thousand), the future financial benefit (assessed at the time of to somewhere between 2500-5000 euro / ha ) and the benefit it can bring to society through different forest properties it holds: the prevention of landslides, of " purifying " water etc; the correlations that have led us to the proposal of granting tax breaks autonomous administration of the forest by local authorities for the purposes of exempting such entities to pay local taxes (Chapter I);

- ◆ I've made the SWOT analysis model of managed resources of the Romanian forest, a model of analysis that proves its usefulness by providing a scan on multiple aspects of resource implications or entities related to the activity in this area at a given time (Chapter I);
- ◆ I've developed a model of accounting and evaluation of trees under the management of the forestry entity. Analytics account off-balance sheet Class 8 - trees that are currently not registered in the accounts until the operation. This accounting records simplify operation and technical operative damage resulting from illegal deforestation, natural disasters and other damage; it would cause setting a guide of the wood under the administration of an forestry entity (Forest Department, RNP - Romsilva ) timber, which could be exploited at some point in the production classes etc. Also note that this method of accounting would be useful if the value of recordings made as updated periodically (3-5 years), so as to reflect the reality of the forest actually suffering from permanent modifications under the influence of many factors. (Chapter II);
- ◆ I've identified correlations between financial and other types of resources in the Romanian forest entities in order to highlight the importance of efficient deployment of resources within those entities, and in particular, the importance of pursuing the link between those entities resources - human, resources forestry, financial resources, technical resources, legal resources, information resources, so that management decisions are taken as close as possible to reality and its timely needs (Chapter II);
- ◆ we've identified the functions / interdependencies / relationships between human resources in DS Alba RA model based on PEST - PESTLE (this model is usually used when considering external factors of the entity, many employees of large companies using model analysis purposes of human resources assigned to the entity) and developed this model (by adding factors related to organizational culture - O), resulting in the PEST(LE)O analysis model; the utility of this model is that an entity that can help out where they are in a given context or when they are in terms of s human resources assigned to the entity (Chapter III);
- ◆ I've set up an econometric model to test the dependence of profit earned and investments in the forestry units subordinated National Forest – Romsilva, in order to correlate the resulting economic benefits of forestry entity with the investments and to signal that this activity deserves to raise the issue of "gross forest" in close correlation with the resulting economic benefits of these entities, the model proves its usefulness in both the dependence of the variables analyzed in our case and in the analysis of other quantitative or qualitative variables of interest to the various users of the information related to forestry (Chapter IV)
- ◆ I've founded an econometric model useful for forecasting of timber exploited on an entity level forestry model that would prove useful in forecasting the other income and expenses of an entity forest - depending on the subject of interest but following the same model and stages of work (Chapter IV);
- ◆ I developed the Risk Registration, which was developed and completed during the audit of an organization and conducted over the matter of forest regeneration (natural regeneration and reforestation) or the activity of the forest nurseries of forest directions (Chapter V).



- ◆ I applied fuzzy logic in conducting internal audit of forestry, identifying an assessment of resources model based on fuzzy logic methodology used and I've created a computer program applicable to internal audits under these entities built on the model of resource assessment based on fuzzy logic methodology applied, the basis we have identified the advantages and disadvantages of using computer programs in forestry entities (Chapter V).

## **Suggestions**

Alongside the aspects which were presented before as general conclusions and personal contributions, the next suggestions round up the results of our efforts carried out in our research

- ⇒ the development of highlighting the forests under the management of a Forestry Department, the National Forest Romsilva so as to have information on the specific characteristics of forest resources to provide domain-specific methods of determining various indicators including: availability forests, the wood legally harvested (by species, area, ownership, etc.), illegal mass of timber (as evidenced on the same basis), the afforestation (by area, species, etc.);
- ⇒ the making of a statistical situation at RNP - Romsilva containing synthetic and analytical information relating to: the total volume of wood exploited annually, the legally harvested timber volume, the volume of timber illegally exploited, mushrooms, berries, medicinal plants recovery, of the afforestation which was made;
- ⇒ granting of tax incentives to autonomous administration of forestry by the local authorities for the purposes of exemption from payment of such entities local taxes as a possible solution to the financial resources necessary to carry out afforestation search in this sector or achieve correction works, the green reconstruction of forest roads, purchase of vehicles, computers, because all these expected problems find their solutions to the deficits of the entities forest managers, local authorities, the European bodies, etc. or any persons interested in forest quality, namely the environment;
- ⇒ planning volunteer activities organized by entities forestry activities aimed to take care of the forest, afforestation activities available; on the surface of it or other activities beneficial to the forest - to supplement the lack of financial resources are needed to achieve these activities, but at the same time to participate in educating people of our country in order to participate in the continuous improvement of the environment that surrounds us and affects us in one way or another, life in terms of health and not only;
- ⇒ the full access to European funds available to improve the quality of our country forest / environment so that the opportunity of "today" is not a missed opportunity for the days of "tomorrow";
- ⇒ using SWOT analysis as a tool that helps identify and awareness of strengths, weaknesses, opportunities and threats related to resource management in forestry, both among forest districts subordinated RNP-Romsilva but also for private forest districts in which the benefits of this analysis are not sufficiently acknowledged and valued;
- ⇒ the reverse distribution percentages for financial resources from fines and confiscations value in order to become motivating for various incidents, so as not to evade law

enforcement, in which case it would transfer the 80% range to the account of legal damage that was done and the remaining 20% would direct the state budget situation fines and 65% of the value of confiscated timber sold remain available to legal entities having jurisdiction over the damage occurred and the remaining 35% should be transferred to budget / local budget / owners;

- ⇒ highlighting the trees in an account-balance sheet Class 8 - Class 8 is similar to the account that keeps track of warranties - as the trees before being cut are not accounted ;
- ⇒ the formal acknowledgement in the regulations in Romania of the concept of biological assets, according to the stipulations of IAS 41, so that the financial circumstances of the forest entities should distinctively present the information concerning the biological assets that they hold – synthetically in the balance sheet as well as a detailed presentation in the explanatory notes;
- ⇒ the completion of a Risk Register in each forest directions subordinated to RNP-Romsilva and the private forest districts;
- ⇒ the continuing training of staff in forestry entities with the purpose of knowledge of legislative changes in this field;
- ⇒ the management of forest entities through cohabitation with the local foreign brainpower so that best practices can be realistically adopted or adapted depending on the circumstances
- ⇒ Using the PEST(LE)O analysis model developed in this paper to analyze the relationships between the human resources of a forestry entity model which would help managers and others to identify factors influencing unfavorably the human resources;
- ⇒ focused regional forest districts according to their distribution situation from before the local council - the municipalities - which would result: reduced staff costs classified in leadership, effective business decisions due to be taken unitary access and solutions of the structural funds should be available;
- ⇒ Valuing the option for managers to appeal to the self-assessment conducted by practitioners themselves in the forest entities to identify potential problems, malfunctions occurring and could not be solved without involving additional costs for their identification;
- ⇒ reliance upon internal audit and diagnostic analysis as risk assessment techniques and the present value of the forest resource for the information that will underpin management decisions of such entities to the fullest;
- ⇒ The use the main board as a management tool, which uses information from the financial accounting and management accounting, which could help to improve the performance and the way an forest entity manages the resources;
- ⇒ using fuzzy logic methodologies as tools within the reach of the internal auditor;
- ⇒ the purchase of software or creating databases to facilitate work to obtain the main board (Excel database), econometric models (e.g. the program eviews7.0), fuzzy logic methodologies (program described in section 4.2. : Audit Fuzzy - I. Călean), so these tools provide information in time, given the large volume of data with whom that works.

## **Perspectives concerning the research**

The research that was carried out according to those presented above, contributes to the advancement of the field and offers new dimensions, new research directions.

Therefor, we believe that throughout the content of the thesis „**CONTRIBUTIONS OF ACCOUNTANCY AND INTERNAL AUDIT IN THE ADMINISTRATION OF THE RESOURCES OF FORESTRY**” we have mentioned considerable ideas which open new perspectives of research. Furthermore, we believe that the effects of their contributions, the suggestions which were made can be traced dynamically and any noticeable improvements can be made in time in order to always keep up with the economic and social changes in perspective we hope to take shape once the presentation research results to practitioners area of interest. These, during the three years of study and research have shown interest and openness in the effective application of possible solutions identified through the research. We appreciate that in the future we can continue the research on forestry entities subordinated to the National Forest Administration– Romsilva and the entities in the local council and the monasteries, so that the results can be analyzed, interpreted, and comparatively studied.

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