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PhD Thesis Summary
**USEFULNESS OF INFORMATION PROVIDED TO
MANAGEMENT THROUGH ACCOUNTING AND
ADMINISTRATION CONTROL**

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CONTENTS

List of tables	5
List of figures	7
List of abbreviations	9
Introduction	11
CHAPTER 1. THEORETICAL-METHODOLOGICAL APPROACHES TO ACCOUNTING AND MANAGEMENT CONTROL	27
1.1. Managerial accounting - between genesis and evolution at the international level..	27
1.2. Some points regarding the appearance of managerial accounting in Romania	32
1.3. Conceptual approaches to the notion of managerial control	34
1.4. Legislative and environmental peculiarities in the industry producing electrical lighting equipment and their influences on accounting and managerial control.....	40
1.5. Technological peculiarities in the electrical lighting equipment industry and their influences on accounting and managerial control	44
1.6. Preliminary conclusions of the research	51
CHAPTER 2. CHANGES IN THE MANAGEMENT ACCOUNTING SYSTEM GENERATED BY THE INSTABILITY OF THE ECONOMIC ENVIRONMENT AND THE INFLUENCES ON THE PERFORMANCE OF ECONOMIC ENTITIES	53
2.1. Cost analysis as the main tool in assisting managerial decisions	54
2.1.1. Traditional cost calculation systems	62
2.1.2. Critical analysis of traditional cost calculation systems	68
2.1.3. Development of cost calculation systems - a determining factor in the transformation of managerial accounting	69
2.1.4. Advanced cost calculation systems specific to managerial accounting.....	75
2.2. The role of managerial accounting in measuring the performance of economic entities to ensure a "sustainable" development.....	85
2.3. Instruments for measuring the performance of economic entities and strategic managerial accounting	87
2.4. Strategic management analysis - the costs between traditional management and strategic management	89
2.5. Strategic managerial accounting - a tool for steering the performance of economic entities	90
2.6. Preliminary conclusions of the research	93
CHAPTER 3. DEVELOPMENTS AND PERSPECTIVES IN THE ELECTRICAL LIGHTING EQUIPMENT INDUSTRY	95
3.1. Evolution of legislative regulations in the field of electrical equipment and lighting in the world	95
3.2. Analysis of the global general lighting market	97
3.2.1. General lighting market analysis by technologies	99

3.2.2.	General lighting market analysis by fields	103
3.3.	Analysis of the general lighting market in Europe	109
3.3.1.	Specificity of the European market	109
3.4.	Analysis of the lighting market in Romania	112
3.4.1.	Presentation of the lighting equipment market in Romania.....	112
3.4.2.	Analysis of the lighting equipment market according to the technologies used	112
3.5.	Preliminary conclusions of the research	114
	CHAPTER 4. METHODS FOR IMPROVING MANAGEMENT ACCOUNTING AND CALCULATING COSTS APPLICABLE TO ECONOMIC ENTITIES IN THE LIGHTING ELECTRICAL EQUIPMENT INDUSTRY	117
4.1.	Considerations regarding the improvement of managerial accounting and cost calculation in the electrical lighting equipment industry	117
4.2.	Positioning Electromax SRL in the lighting industry in Romania.....	120
4.3.	Critical analysis of the factors that influence managerial accounting and cost calculation at Electromax SRL	124
4.4.	Creating the system of accounts according to the Target-Costing method and the activity based costing method (ABC) and the corresponding registration steps.....	126
4.4.1.	Methodological steps on managerial accounting and production cost calculation by Target Costing method and ABC (Activity based Costing) method.....	130
4.4.2.	Target Costing Method and Basic Activity Costing Method (ABC Method) in the context of the new issues related to production, technology and computerization.....	133
4.5.	Target Costing method - an approach that allows competitiveness.....	139
4.5.1.	The stages of implementing the Target Costing method	141
4.5.2.	Ways of developing values specific to the Target Costing method	141
4.5.3.	The objective of the Target Costing method	142
4.5.4.	Considerations regarding the application of the Target Costing method in the Lighting Electrical Equipment Industry	142
4.6.	ABC method - a relevant calculation of costs and performance increase in the lighting industry	149
4.7.	Analysis of production costs and sales following the implementation of advanced costing methods in order to predict future developments of Electromax SRL.....	164
4.7.1.	Mathematical models for identifying and quantifying costs in order to develop and implement managerial decisions	165
4.7.2.	Analysis of the evolution of production costs and sales prices	168
4.7.3.	Calculating the probability of an order from a customer	175

4.7.4.	Using Excel software to calculate the probability of orders.....	178
4.7.5.	Calculating the probable volume of an order	181
4.7.6.	Simulation of product sales in the next 12 months	183
4.8.	Preliminary conclusions of the research.....	188
CHAPTER 5. IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT ACCOUNTING - HOW TO IMPROVE THE MANAGEMENT ACCOUNTING OF ECONOMIC ENTITIES IN THE LIGHTING ELECTRICAL EQUIPMENT INDUSTRY		191
5.1.	Conceptual approaches and the evolution of Environmental Management Accounting (EMA)	192
5.2.	Environmental Management Accounting (EMA). Analysis of implementation factors	196
5.3.	Impact of production on environmental expenditure. Case Study	198
5.4.	Components of total environmental expenditure, statistical methodology and data.....	199
5.4.1.	Statistical methodology	199
5.4.2.	Data and variables	202
5.4.3.	Impact of aluminum waste on environmental costs	203
5.4.4.	Impact of packaging costs on environmental costs	215
5.4.5.	Impact of EEE expenditure on environmental expenditure	217
5.4.6.	Impact of total waste expenditure on environmental expenditure	220
5.5.	The impact of LED technology on the production of electric lighting in the EU.....	223
5.5.1.	Graphic analysis of the evolution of electric lighting devices	223
5.6.	Econometric analysis of the impact of LED technology on the production of electric lighting fixtures	226
5.7.	Preliminary conclusions of the research	228
CHAPTER 6 - CONCLUSIONS, OWN CONTRIBUTIONS AND RESEARCH PERSPECTIVES		230
6.1.	General conclusions	230
6.2.	Own contributions	241
6.3.	Research perspectives	244
BIBLIOGRAPHY		247
DISSEMINATION OF THE RESEARCH RESULTS		
ANNEXES		266

INTRODUCTION

Sustainable development means thinking in perspective, ie setting "policies" to achieve medium and long-term goals, concern for development in order to reap benefits. It is obvious that as profits increase, the environment (natural resources) becomes more and more impoverished. To this end, action strategies have been developed at international level with common goals that take into account not only development but also sustainability. In the current conditions, the most relevant indicator of economic performance is the realization of investments for economic growth; efficient administration; quality services to increase productivity and share of high value-added activities.

In order to participate in the consolidation of economic sectors by adding value, it is necessary to adopt fiscal policies in order to retain human capital.

Due to the phenomenon of globalization and existing transformations at all levels of economic sectors, from the legislative environment to the implementation of new technologies, the complexity of markets has increased with a major role in the evolution of economic entities, because their performance means past, present and future. In general, the purpose of any economic activity is to offer competitive advantages to those who are involved in its development, but precisely because they have undergone major changes, can we question their viability?

The external environment is important through the impact it has on economic entities and which translates into threats and opportunities. The analysis of the external environment involves identifying the factors that have had and are influencing them in the past and present, as well as assessing their influence in the future, but also the influence of new factors that may occur in the future. Knowledge of the characteristics and changes in the structure of the external environment is a fundamental condition for the quantitative and qualitative satisfaction of certain categories of needs by economic entities, realistic needs, well-founded scientifically. As a dynamic, socio-economic system, the economic entity takes from the external environment the resources it needs and introduces them in specific processes, resulting in products, services or works that will be transferred to the same environment.

The economic environment in which entities operate in the context of profound transformations of globalization, but also compliance with EU directives on restructuring different segments of the economy have had a decisive impact on the radical transformation

of economic entities in the lighting industry. There are a number of determining factors such as: the implementation of new technologies, the legislative environment, the penetration into the business environment of new commercial entities.

On the background of globalization, the complexity of the economic environment over the last 30 years has led to an increase in the role of information in making current, but especially future decisions that have a major impact on the results obtained by an economic entity. The globalization process has led to a decrease in demand for the productive sector in Romania so that small economic entities have had to focus on identifying innovative solutions to face competition.

The management of these economic entities must be organized on a realistic thinking, internal but also external to the business environment, in order to respond favorably to the new challenges of implementing the market economy so as to ensure a good functioning and sustainable development of economic entities.

We believe that the purpose of an economic organization operating in a competitive economy with limited resources is to streamline its business. In the current stage of development and improvement of technologies used in the field of electrical lighting equipment, but especially in the production of LED lighting systems, the innovative technology used in the production process is crucial, because it is a very efficient method, thus high quality products and various sizes and models can be realised.

At the level of the lighting equipment market both nationally and internationally, for the “lighting” segment there is a continuous increase in the need for LED lighting systems, due to the accentuated growth trends of the electrical equipment market and especially of the lighting market with LED, their electricity consumption and last but not least, the orientation towards the “Eco friendly” behavior of consumers. For this reason, we consider this field of interest to present the behavior of this market segment, as a component of the world economy, in conditions of continuous adaptation to new objectives and strategies, with the main goal of improving managerial accounting at the level of economic entities producing equipment. electric lighting in our country.

The causes mentioned above produce effects that are transmitted indirectly in managerial accounting. In order to maintain a quality-price balance, economic entities must pay special attention in the production process to the allocation of indirect costs to products, and in this area with a great diversity of products, the production cost must be calculated differently by product and not on the volume of production.

The management of an economic entity pursues the efficiency of managerial decisions in order to achieve a high degree of productivity. In order to be able to appreciate the performance, an adequate value system is needed, with the help of which its specific objectives can be interpreted.

Economic entities operating in the field of electrical lighting equipment both in production and in sales or services, must show flexibility in adapting their products, sales techniques and pricing methods, knowing that many times the price is what dictates the choice of product.

The dynamics of this sector of activity causes a continuous observation, study and adaptation of the economic information expressed in the ratio between supply and demand, a ratio that determines the level and evolution of prices. Its price and functions will influence the managerial decisions within the economic entities within the lighting industry. Thus, in a dynamic market, governed by competition laws, knowledge and monitoring of costs becomes an imperative.¹

The context of scientific research

The market of industrial products proved to be a very complex field in which changes follow one another rapidly, following the fast pace of technologies, modeling and adapting to current requirements, and in such conditions the success of the economic activity of a manufacturing entity lighting is conditioned by the quality and diversity of the products obtained.

At the market level, for the "lighting" segment there is a continuous increase in the need for LED lighting systems and bodies, based on increasing customer interest in order to reduce electricity consumption and increase the life of products.

European Commission officials estimate that, in the future, LED bodies will become a viable alternative to both incandescent bulbs and CFL lighting solutions, which include mercury vapor in the production process. The advantages brought by this technology are multiple: the operating time of over 50,000 hours, energy consumption 10 times lower than that of classic lighting fixtures and the lack of any toxic elements.

A global study conducted in 2015 by Strategies Unlimited shows that sales of lighting fixtures based on LED technology will have an annual increase of over 20% by 2020. The main growth vectors will be: improving technology and reducing prices products, the energy

¹Groșanu, A. (2010). *Calculația Costurilor pe centre de profit*, Editura Irecson, București.

efficiency strategy, the legislative regulations, but also the fiscal incentives offered by governments around the world.

The European LED lighting market will reach 17 billion euros in 2020, given that specialized studies show that, in the next eight years, 62% of all fixtures will be based on LED innovation.

In the context of the research in Romania, it is shown that at the end of 2015 there were only 18 producers of materials for electrical installations (cables, lighting fixtures, etc.) which reported a total turnover of 460 million euros; 60 importers and distributors of sales amounting to 619 million euros; about 1,100 economic entities that specialize in the execution and design of electrical installations with a turnover of about 2.5 billion euros.

Regarding the evolution of the Romanian market of lighting equipment manufacturers is not different from the global one, following the same trends in terms of technologies used. There is a transformation of the Romanian consumer into an increasingly informed and demanding consumer in terms of the new requirements of CIL.

In Romania, as in the rest of the world, producers who were quite flexible and had managerial structures anchored to reality have adapted to new requirements and trends, others who did not show these capabilities have disappeared from the market. Thus, we had large factories (Steaua Roșie Fieni and Romlux Târgoviște) with thousands of employees who produced incandescent or fluorescent lighting sources that unfortunately no longer exist on the market today. Other large CIL manufacturers in the past have shown flexibility and good management, but have migrated from "general lighting" mainly to other, more attractive areas, such as automotive.

After 1989, the lighting industry suffered the same decline as the entire industry, reaching a country with extremely low imports in this field, a country dependent on imports in terms of "general lighting". However, in the last 10-15 years there have been economic entities with Romanian capital, private, which have gradually taken over a growing percentage of the domestic market and even, still shy, to penetrate exports. These economic entities are either newly established entities or entities that have focused on this field.

Under these conditions, in the electrical lighting equipment industry, we see an increase in investors' interest in intelligent lighting solutions, this sector being dominated by a number of factors that directly or indirectly influence this field. In this sense, it is very important to organize a very efficient accounting and managerial control system for calculating costs that can be considered a useful tool in decision making and allow an efficient management of the economic entity.

Accounting in general has the role of "providing quantitative and qualitative information, mainly of a financial nature, relating to economic entities and to be used in decision-making"². According to the provisions of the Accounting Law no. 82/1991, republished in the Official Gazette of Romania, Part I, no. 629 of August 26, 2002, with all subsequent amendments, the legal entities provided in art. 1 para. (1) of the law have the obligation to organize and manage their own accounting, including management accounting adapted to the specifics of the activity. Financial accounting provides information to external users, being subject to standards and norms of the legislation in force³, and administrative accounting is addressed to internal users (OMFP no. 1826/2003).

As defined in the literature, managerial accounting (internal or analytical) is getting closer to measuring performance, thus finding answers for the future and what is to happen. Thanks to the tools of control of microeconomic processes, it is useful in the daily managerial decision.⁴ Starting from the simple calculation of production costs, managerial accounting provides answers on how to optimize and reduce them, standardize them and budget control.

Managerial accounting has been influenced by these works to such an extent that strategic management accounting is seen by many specialists as the key to understanding the efficient design and implementation of MCS.^{5,6,7}

Cost calculation has developed a strategic guidance system through which activity-based costing management (ABCM) has gone from refining the allocation of fixed costs to cost objects to systems that link costs and value factors to alternative strategies, thus allowing cost-benefit analysis and understanding of the process requirements for implementing strategies^{8,9}. Performance measurement has evolved from increasing the usefulness of performance measures, by including both financial and non-financial measures, to more complex systems, based on a balanced suite of measures that provide strategic performance management, including the implications. operational for different strategies^{10;11,12,13}. The

²Grosu, C. (1998). Sistemul informațional contabil de gestiune, Editura Orrizonturi Universitare, Timișoara, p.5.

³Mateș, D. (2003). Normalizarea contabilității și fiscalitatea întreprinderii, Editura Mirton, Timișoara, p.17.

⁴Diaconu, P. (2002). Contabilitate managerială, Editura Economică, București, pp. 15-16.

⁵ Simmonds, K. (1981). The Fundamentals of Strategic Management Accounting. ICMA Occasional Paper Series. London: ICMA.

⁶ Bromwich, M. (1990). The Case for Strategic Management Accounting: The Role of Accounting Information for Strategy in Competitive Markets, Accounting, Organizations and Society 15(1/2); 27-46.

⁷ Ward, K. (1992). Strategic Management Accounting. Oxford: Butterworth Heinemann.

⁸ Shank, J. W.& Govindarajan, V. (1995). Strategic Cost Management: The New Tool for Competitive Advantage. New York: Free Press.

⁹ Kaplan, R. S. & Cooper, R. (1998). Cost and Effect: Using Cast Systems to Drive Profitability and Performance. Boston, MA: Harvard University Press.

¹⁰ McNair, C. I., Lynch, R. L.,& Cross, K. E. (1990). Do Financial and Nonfinancial Performance Measures Have to Agree?. Management Accounting, (Noir): 28-36.

focus has been on how strategic management control (MCS) can be used interactively to help develop responsiveness across the organization to the strategic uncertainties it faces.^{14,15}. These advances are reflected in the emphasis given in most contemporary management accounting manuals to a strategic orientation for management control.

Therefore, the changes that have taken place in managerial accounting have influenced management decisions to improve the methods of performance management and identification of changes in an unstable environment, such as the lighting industry, their purpose being to explore cost information and application of integrated methods belonging to strategic managerial accounting.

Managers of economic entities must have a full understanding of the entire activity, from knowledge of the market and the ability to explain economic phenomena, which leads to optimal results in the best possible circumstances.

As the main economic language, accounting must provide a report of responsibility in close connection with market requirements, being considered the main source of data in the implementation of a business plan¹⁶. The secret of an economic entity's success means knowing the sources of value creation and its ability to explore them, in order to create added value not only to the products but also to its entire activity. "Gradually, the environment forced the company to act from marketing, the increase in size pushed organizations to decentralize autonomy, the scarcity of resources required rationality in use and the consolidation of information needs monetary translation"¹⁷.

Due to the complexity of the information provided by managerial accounting, but also to the arguments we brought in the previous paragraphs, we consider the topic "*The usefulness of information provided to management through accounting and administrative control*", and its approach involves an activity of dynamic and persevering research.

¹¹ Kaplan, R. S. & Norton, D. R (1992). The Balanced Scorecard: Measures that Drive Performance, Harvard Business Review (Jan./Feb.): 71-9.

¹² Kaplan, R. S. & Norton, D. R. (1996). The Balanced Scorecard: Translating Strategy into Action. Boston, MA: Harvard Business School Press.

¹³ Kaplan, R. S. & Norton, D. R (2001). Transforming the Balanced Scorecard from Performance Measurement to Strategic Management, Accounting Horizons, Part I (Mar.): 87-104; Part II (June): 147-60.

¹⁴ Simons, R. (1995). Levers of Control. Boston, MA: Harvard University Press.

¹⁵ Simons, R. (2000). Performance Measurement & Control Systems for Implementing Strategy Upper Saddle River, NJ: Prentice-Hall.

¹⁶ Ștefan, M. (2018). Performance Analysis Methods Within Manufacturing Companies and their role in managerial decision, p. 336, [website](#)

¹⁷ Albu, N. & Albu, C. (2003). Instrumente de management al performanței, Vol. II., Control de gestiune, Editura Economică București, p. 12.

Objectives and motivation of the research topic

As a research methodology, this paper is based on a deductive research from general to particular that combines quantitative research with qualitative, theoretical and practical research in the way in which the information provided through managerial accounting can respond to successful management, leading to improving managerial decisions in the lighting industry.

Taking into account the arguments of this research, the main objective of this paper is to outline an overview of managerial accounting and costing, laying the theoretical and conceptual foundations of the research topic to finally get into practice to study the behavior and practices of electrical lighting equipment industry.

We consider necessary such a study that has both theoretical and practical utility, which complements the existing literature, because the literature and practice in the field of administrative accounting allow new approaches in redefining strategic objectives by analyzing the efficient use of resources, in order to implement the general strategy through managerial control.

The content of the six chapters of the doctoral thesis, as a methodology, falls between positivism and normativism, presenting the specifics of managerial accounting and their influences on managerial performance in an unstable environment. The cost information and the main role they play in assisting managerial decisions were characterized.

In order to achieve the proposed main objective, the present research pursued five operational objectives that will be discussed during this paper:

- the systematization from a theoretical perspective of the general framework of managerial accounting in order to highlight its specificity and modern guidelines, so that it can be useful in an integrated system adapted to current requirements;
- the systematization from a theoretical perspective of managerial accounting through the revision of the specialized literature, of the main meanings and evolutions, as well as of the instruments of its exercise in the electrical lighting equipment industry;
- exemplifying how the Target Costing method and the activity-based costing method (ABC) can be applied in the lighting industry;

- analysis of environmental costs in the electrical lighting equipment industry in terms of using environmental management accounting as a strategic tool for piloting economic entities in this industry;
- analysis of the evolution and prospects of the electrical lighting equipment industry based on global and national data using modern statistical methods.

The development of cost calculation systems, as the main determining factor in the transformation of strategic managerial accounting, will be applied directly in the lighting industry. This scientific approach aims to analyze the evolution of managerial accounting between the past and its perspectives at national and international level, presenting concepts of managerial accounting and their role in studying the financial dimension of performance in the field of lighting equipment production.

We consider important the description of the legislative, environmental and technological particularities specific to this field of activity, subject to special regulations different from the other industries. The case study focused on presenting the importance of improving managerial accounting and costing in the lighting industry. It was based on previous research in the field at the national level, "The usefulness of modern forecasting methods in the lighting industry"¹⁸, which demonstrated with the help of questionnaires that most economic entities in the field used in 2015 the traditional methods of cost calculation, and the standard cost method in forecasting production costs was successfully implemented.

We considered it very important to improve modern costing methods in this branch, and the case study was conducted through a critical approach to the management accounting system at an entity in the field of lighting production, highlighting and improving its performance by implementing Target Costing and ABC methods.

The paper addresses the environmental costs in the electrical lighting equipment industry in terms of using environmental management as a strategic tool for piloting the economic entity. The study carried out within the economic entity studied on the basis of a mathematical model allows us to: identify the products that generate waste in large quantities; to outline some managerial strategies in order to optimize products and reduce waste generated.

¹⁸ Cucui, I. (coord.), Stanciu, P. M. (2016). Utilitatea metodelor moderne de previzionare a costurilor în industria echipamentelor de iluminat. Rezumatul tezei de doctorat. Disponibil online [website](#).

In this context, the measurement and control of performance in the industry of electrical lighting equipment was addressed by strategic managerial accounting by using mathematical and statistical methods to analyze the implementation of modern methods of costing.

The five main directions that were pursued during the paper led to the establishment of several *general objectives*. These are:

O.S.1: Analyzing the current state of managerial accounting and highlighting its evolution from simple cost calculation to managerial performance, as well as the role of cost information as the main tool in assisting managerial decisions;

O.S.2: Theoretical analysis of the management control through the revision of the specialized literature, of its main meanings and evolutions, as well as of the instruments of its exercise in the lighting equipment industry;

O.S.3: Demonstration of the possibilities of integrating some fundamental methods of managerial accounting in the administrative accounting system used by an entity producing electrical lighting equipment;

O.S.4: Analysis of environmental management accounting (EMA) from a theoretical perspective, systematization, evolution and factors of its implementation;

O.S.5: Theoretical analysis of mathematical and statistical methods for identifying and quantifying costs in order to develop and implement management decisions and demonstrate the integration of these methods in the analysis of environmental costs in the lighting industry in Romania and the EU;

O.S.6: Analysis of production costs and sales prices in order to predict future developments in the electrical lighting equipment industry using mathematical methods;

OS7: Analysis of the evolution and perspectives in the electrical lighting equipment industry through an explanatory and prescriptive approach based on documentation, data analysis, chronological study, processing and comparison of them through a graphical method for visual presentation of the research study .

Hypotheses of scientific research

The research hypotheses that have been formulated previously define and delimit the main objective in the proposed fundamental study. In response to the main objective of the thesis we will propose the following research hypotheses:

H1: In order to increase the performance in an economic entity in the industry producing electrical lighting equipment, we must know that it is necessary to improve the accounting of the production activity;

I2: Awareness of identifying and analyzing environmental costs is very important to improve environmental performance but also to ensure a guarantee of management decisions;

I3: The importance of strategic analysis is identified in the use of activity costs (ABC method) and target costs (Target-Costing);

I4: The implementation of the activity cost method (ABC) leads to the registration of significant results in terms of cost calculation, improvement of cost control and management, respectively measurement of performance in the lighting equipment industry;

I5: The development of the Target-Costing method within the electrical lighting equipment industry contributes to the development and realization of products that will be sold at a price accepted by the market generating competitive advantages;

I6: The role of strategic analysis of environmental management is determined in the impact of production on environmental costs (empirical study);

I7: The role of managerial control is determined in the analysis of production costs and sales using mathematical models;

I8: Knowing the limits by using the two costing methods, ABC and Target-Costing, leads to the organization and improvement of production managerial accounting in the lighting industry provided that a balance between the cost of measurement and the error from an inaccurate information is known.

Epistemological positioning of scientific research

The methodology is in fact the logical way to follow in achieving the objective of scientific research. Economic science, regardless of its particularities, is and will remain a component of science as a whole. Scientific knowledge can be easily differentiated from common knowledge. In terms of its formation, scientific knowledge is characterized and circulates in the form of scientific theories that explain the processes and phenomena underlying it. Common knowledge does not have a theoretical framework, but forms a conglomeration of practical knowledge that is acquired and developed during work.

Economic science is a component of the common science as a whole regardless of its particularities. In this capacity, economic science must preserve and preserve both its particular elements and those common to other sciences at all stages of its life.

"Today, most policy decisions contain a scientific and technological dimension. Therefore, they must be based on transparent and accountable opinions, based on ethical research. In this context, it is necessary to strengthen the ethical foundations of scientific and

technological research, to assess the risks inherent in progress and to manage it responsibly, taking into account the lessons of history. "¹⁹.

"Scientific epistemology is considered by Piaget as the theory of scientific knowledge. This refers to the systematic study of the procedures of investigation and knowledge inherent in scientific thought, without dissociating, however, from the philosophical theory of knowledge in general. The formation of a truly scientific approach requires putting the problems in such a way that they can be solved by different teams of researchers, regardless of their personal philosophy. "²⁰.

Research can be defined as a methodical process designed to improve one's own knowledge, but also that of others by discovering facts and visions about the researched objective. In order to achieve research success it is necessary to add new knowledge in the researched field. Scientific research could also be defined as a process of broadening knowledge carried out in a careful and objective observation, investigation and experimentation, aiming at the discovery or interpretation of new information.²¹.

From a philosophical point of view there are two main types of research: empirical research and theoretical research, and from a functional point of view the research can be: basic research and applied research. In an epistemological approach, scientific research can be positivist or constructivist. Positivist research involves a process of knowledge in which accounting statements expressed theoretically are accepted only by demonstrating them in practice, and constructivist research is characterized by formulating assumptions or opinions and by validating them in demonstrations that can be interpreted using both scientific validations as well as experimental validations.

The present research can be positioned on the positivism-constructivism research axis, because in the first three chapters we approach theoretical notions, joining the line of positivist research, essential in the development of mathematical methods and models for improving production in electrical lighting equipment, which will be carried out through case studies in the final chapters of the paper, thus including the paper in the sphere of constructivism.

¹⁹Niculescu, M. (2011). Epistemologie, Perspectivă interdisciplinară, Editura Bibliotheca, Târgoviște, p.25.

²⁰Idem p. 38

²¹Groșanu, A. (2010).Calculația costurilor pe centre de profit, Editura Irecson, București.

Scientific research methodology

The research methods approached for the study "The usefulness of information provided to management through accounting and administrative control" with exemplification in the electrical lighting equipment industry consist mainly of descriptive, exploratory and causal research. In order to achieve the above objectives, several research methods were used such as: documentation, analysis and centralization of information, generalization of information, induction, deduction, comparative analysis, mathematical and statistical analysis, case study.

As a summary, we can say that this methodological path combines qualitative research with quantitative research and ends by validating the hypotheses after the following approach:

1. Documenting and approaching the theoretical-methodological notions of accounting and managerial control between genesis and evolution at national and international level;
2. Preliminary documentation in order to understand the technological, legislative and environmental particularities and their influences within the electrical lighting equipment industry;
3. Preliminary documentation in order to understand the evolution of managerial accounting generated by the instability of the economic environment and the influences on the performance of economic entities.

The opinion of the researchers in the area of accounting and managerial control was presented, aiming at integrating the theoretical notions with the results obtained in the case studies. Based on the specialized literature, almost 200 existing bibliographic materials were consulted in publications and studies both in Romanian and international magazines and publishing houses. Applied research complements the theoretical notions and comes as an answer to the questions we launched at the beginning of this scientific approach.

The structure of the doctoral thesis

The doctoral thesis is structured based on the objectives and research directions presented in the scientific research methodology. The writing of the doctoral thesis begins with an "introduction" and presents the context of scientific research, the objectives and motivation of the research topic, the methodology of scientific research and the structure of the doctoral thesis followed by six chapters that give a clear picture of managerial accounting as a determinant for performance. economic in the lighting equipment industry.

In the first chapter entitled *"Theoretical-methodological approaches to accounting and managerial control"* whose objectives are the analysis of managerial accounting between genesis and evolution at international and national level, the research is theoretical. In this chapter we used qualitative research to analyze the legislative and environmental features in the lighting industry, presenting different notions, concepts and theories to highlight the technological features and their influences on managerial accounting in the field of activity analyzed.

In the second chapter entitled *"Changes in the management accounting system generated by the instability of the economic environment and the influences on the performance of economic entities"* whose objectives are the analysis and evolution of managerial accounting from simple cost calculation to managerial performance, the research is theoretical. In this chapter we used qualitative research to analyze different concepts, notions and theories, as well as the comparative and typological method, used to distinguish between the concept of managerial accounting and strategic managerial accounting as a tool to drive the performance of organizations.

Regarding the third chapter entitled *"Developments and perspectives in the electrical lighting equipment industry"*, descriptive, exploratory and causal research methods were applied, identifying some causes of the evolution and perspectives of electrical lighting equipment in national and international level, while emphasizing the importance of legislative rules at the global level. Based on the literature, we presented the main results obtained globally based on documentation, data analysis, chronological study, processing and we made a comparison using the graphical method for the visual development of the research study.

Chapter four entitled *"Methods of improving managerial accounting and costing applicable to economic entities in the lighting equipment industry"* was carried out using an exploratory study (through quantitative research methods) measuring and controlling economic performance in the electrical lighting equipment industry by integrating modern costing methods, ABC (activity-based costing method) and Target-Costing (target costing method).

The analysis of production costs and sales following the implementation of modern methods of cost calculation in order to forecast revenues within an entity producing electrical equipment was performed using a data set over a period of 4 years, respectively 2016-2018, and a number of 45 products, through a mathematical model, calculating the ratios between benefit and material costs.

To study the trend of these values for the following year (2019) we identified the functions that best approximate the history of these values by polynomial functions. A function provided by the Excel application (TREND) was used to automatically calculate the change trends for prices and costs. For the calculation of the probabilities of orders, but also for the sales simulation for the next 12 months, we used the Excel software, the results can be consulted in section 4.7.6. of Chapter 4.

Using mathematical bases, the forecasts and decisions made by the management of an organization are much closer to reality.

In chapter five entitled "Implementation of environmental management accounting - a way to improve the management accounting of economic entities in the lighting industry" whose objectives were to implement environmental management accounting in the lighting industry we used both qualitative research for analysis of different concepts, notions and theories, as well as the comparative method by presenting the evolution of the EMA and its policies, business analyzes performed by specialists, including the benefits obtained from the implementation of the EMA. All these objectives are translated into a case study carried out at a company in the energy sector.

With the help of an exploratory study (through quantitative research methods) we will analyze the extent to which the production of electrical equipment and specific manufacturing technology influence environmental costs, on each component and on the total; identifying the types of waste generated from the production flow of the analyzed company, as well as identifying the interaction between production and the environment. All these were aspects that led to the creation of a total mathematical model for the organization.

The study continued by investigating the dependence between the resulting waste and the volume of production by categories, an analysis that required a ranking of product types (depending on the weight of production of the organization in the analyzed period of 48 months). At the end we will study the impact of production on environmental costs, as a sum of the three components. The impact of the new LED technology on the production of electric lighting fixtures is the subject of the study of the penultimate section of this chapter. An OLS model was tested on the panel data, the results can be consulted in the sections: 5.4.3; 5.4.4; 5.4.5; 5.5.1; 5.6 of Chapter 5.

The innovative character of this thesis consists in presenting a structure of strategic managerial accounting to substantiate the relevance of applying modern methods of costing in the lighting industry in order to measure managerial performance towards a "sustainable" development. The integration of modern methods of strategic managerial accounting have

been concretely demonstrated by their implementation within the existing system of managerial accounting in the electrical lighting equipment industry.

The general framework of environmental management accounting was also presented, as well as the analysis of the legislative environment specific to the production of electric lighting equipment in order to identify environmental costs in this industry and demonstrate how mathematical and statistical methods are useful for identifying and quantifying the total environmental cost in the electrical and electronic equipment industry, but also for the analysis of production costs in relation to revenues to predict future developments.

The evolution and perspectives of electric lighting equipment was presented by studying normative acts and regulations in the field of electric lighting equipment, the analysis was based on previous studies by other authors, and using the statistical method used for numerical data we highlighted the evolution and prospects this market. In order to achieve the proposed objectives, we have used in this paper a series of bibliographic sources consisting of articles published in international and national journals, relevant specialized books in the field of reference. We conclude this paper with a series of conclusions, limits and proposals that can be considered the starting point for new research in the field of electrical lighting equipment.

The scientific research concludes with "conclusions", which highlight the innovative nature of the topic of well-founded scientific research through the applied analyzes that were presented during the paper. At the same time, we present our own contributions and the future perspectives of the research, perspectives that capitalize on the present approach, because it illustrates the author's clear desire for research, as well as the limits of the research. On the one hand, we face problems in dealing with topics that could be of interest or could obtain sufficient results to support the research hypotheses and on the other hand, these limits can be many advantages and the research can gain scope, the results it can have a significant impact on the economic and academic environment.