



ULBS

Universitatea "Lucian Blaga" din Sibiu



PhD field: Management

PHD THESIS

**CONTRIBUTIONS TO THE
DEVELOPMENT OF THE THEORY AND
PRACTICE OF INTANGIBLE RESOURCE
MANAGEMENT AT THE ORGANISATION
LEVEL**

PhD student:

Sebastian Emanuel STAN

Scientific coordinator:

Prof. Dănuț D. DUMITRAȘCU

SIBIU 2017

CONTENTS



ABSTRACT

CONTENTS

INTRODUCTION

PART I

THEORETICAL AND CONCEPTUAL APPROACHES TO ORGANISATIONAL
INTANGIBLE RESOURCES

CHAPTER 1

1. TANGIBLE AND INTANGIBLE AT AN ORGANISATION LEVEL

1.1. Introductory Considerations on Organisational Resources

1.2. Tangible (Traditional) Resources

1.3. Intangible (Intellectual) Resources

1.4. Importance of Resources to Create and Enhance the Value of an Organisation

CHAPTER 2

2. RISE IN KNOWLEDGE IMPORTANCE – ORGANISATION-WIDE CHALLENGES

2.1. Transition from Traditional Economy to New Knowledge-Based Economy

2.2. Requirements and Mutations Needed in Organisation Management Generated by the
Rise in the Importance of Intangible Resources

CHAPTER 3

3. INCURSION INTO THE STAGE OF ACKNOWLEDGING ORGANISATIONAL
INTANGIBLE RESOURCES AND RELATED CONCEPTS

3.1. A Review of the Literature Relevant to Research

3.2. Intellectual Capital

3.3. Intangible Assets

3.4. Intellectual Property

CHAPTER 4

4.CATEGORIES OF INTANGIBLE RESOURCES

4.1. Analysing Structural Dimensioning Methods of Intangible Resources Established in the Specialised Literature

4.2. A New Taxonomy of Intangible Resources

CONCLUSIONS OF PART I

PART II

THEORETICAL AND PRAGMATIC CONSIDERATIONS ON MANAGEMENT AND ASSESSMENT OF INTANGIBLE RESOURCES

CHAPTER 5

5.INTANGIBLE RESOURCE MANAGEMENT OF AN ORGANISATION

5.1. Concept and Role of Intangible Resource Management in Current Organisations

5.2. Specific Processes of Intangible Resource Management

5.3. Phases of Implementing an Intangible Resource Management System

5.3.1. Phase 1. Identifying Intangible Resources

5.3.2. Phase 2. Measuring Intangible Resources

5.3.3. Phase 3. Monitoring Intangible Resources

CHAPTER 6

6.RECOGNISING AND ASSESSING INTANGIBLE RESOURCES –MAJOR DIFFICULTIES IN ORGANISATION MANAGEMENT

6.1. Organisational Resources, seen from a Strategic Perspective

6.2. Intangible Resources, seen from an Accounting Perspective

6.3. Methods for Assessing Intangible Resources

6.3.1. Qualitative and Quantitative Methods for Assessing Intangible Resources

6.3.2. Presentation of the Assessment Methods Established in the Specialised Literature

CONCLUSIONS OF PART II

PART III

ANALYSIS OF THE IMPACT OF INTANGIBLE RESOURCES AT MACROECONOMIC AND MICROECONOMIC LEVEL

CHAPTER 7

7.ANALYSIS OF THE IMPACT OF INTANGIBLE RESOURCES AT MACROECONOMIC LEVEL

7.1. General Considerations on Intangible Resources and their Impact on Economic Growth at the Nation Level

7.2. Models of Assessing National Intangible Resources: an Incursion in the Specialised Literature

7.2.1. Analysis and Classification of Assessment Methods

7.2.2. Differences between Academic Models and Models of International Organisations

7.3. Assessing Romania's Position in International Context regarding Intangible Resources

CHAPTER 8

8.ASSESSING THE IMPACT OF INTANGIBLE RESOURCES ON ORGANISATION PERFORMANCE

8.1. Substantiation of Variables in the Analysis (methodology)

8.2. Data Selection

8.3. Research Questions and Assumptions

8.4. Statistical Research Methods Used

8.5. Results

8.5.1. Applying ANOVA Test to Test Null Hypotheses

8.5.2. Regression Analysis

8.5.3. Correlation Analysis

CONCLUSIONS OF PART III

PART IV

SELECTIVE SCIENTIFIC RESEARCH ON THE EXTENT TO WHICH ORGANISATIONS USE INTANGIBLE RESOURCES. NEW PROPOSALS FOR THE ASSESSMENT OF INTANGIBLE RESOURCES

CHAPTER 9

9.SELECTIVE SCIENTIFIC RESEARCH ON THE EXTENT TO WHICH ORGANISATIONS HAVE THE CAPACITY TO IDENTIFY AND USE AVAILABLE INTANGIBLE RESOURCES

9.1. Presentation of Methodological Aspects Related to the Research

9.1.1. Substantiation of the Need and Purpose of Research

9.1.2. Establishing Research Objectives

9.1.3. Metodologia cercetării

9.1.4. Statistical Observation Errors

9.2. Analysis and Interpretation of Results

CHAPTER 10

10.PROPOSAL FOR DEVELOPING AN INTANGIBLE RESOURCES REPORT AT ORGANISATIONAL LEVEL

10.1. Preliminary Considerations on the Need to Report Intangible Resources at Organizational Level

10.2. Intangible Resource Report – Concept, Content and Advantage

10.3. Substantiating, Describing and Measuring Intangible Resources of the proposed RRI

10.4. Presentation of Intangible Resource Report

CHAPTER 11

11.PROPOSAL FOR A SIMPLIFIED MODEL FOR ASSESSING INTANGIBLE RESOURCES BY FACTORIAL METHOD

11.1. Preliminary Considerations

11.2. Substantiating Component Indicators of the Intangible Resources in the Model

11.3. Methodological Aspects of Research and Obtained Results

CONCLUSIONS OF PART IV

FINAL CONCLUSIONS

BIBLIOGRAPHY



Motivation and Importance of Research

In the turbulent and complex present environment, any manager tries to maximise the value of the organisation s/he leads, which is the core objective of his/her business. An important way to achieve this goal is to efficiently combine available – tangible and intangible – resources in the production and marketing of goods or services with the aim of gaining a significant share of the market in order to increase profitability and increase the value in time of the organisation, implicitly of the owners' wealth.

The entire PhD thesis is called into great certainty of this century, namely “change”. As a great politician of the last century (John F. Kennedy), said, “Change is the law of life. Those who only look at past or present will surely lose the future”.

There is inevitably the question of redefining and reallocating financial resources – aflate under the impact of knowledge revolution and financial explosion that will lead to the disappearance of financial borders – as the implications of change shall be clarified. As a result, the **main question** we have started our research from is whether there is any impact of intangible resources on an organisation's performance, and if so, how can it be assessed?

The topic proposed for research, “Contributions to the Development of the Theory and Practice of Intangible Resource Management at the Organisation Level”, is of great relevance and falls within the research directions of Sibiu School of Management. From the point of view of developing the PhD field, the topic is in line with the objectives pursued in the National Strategy for Research, Development and Innovation RDI 2014 - 2020 approved by GD 929/2014. The topic thus fall within the objectives of the program “Increasing the Competitiveness of the Romanian Economy through RDI, a Component of the National Plan of

Research, Technological Development and Innovation 2014-2020” (PNCDI III)¹, into those of the “Competitiveness” Operational Program - priority axis “Research, Technological Development and Innovation for Business Support and Competitiveness”, as well as in the strategy “Europe 2020 – A European Strategy for Smart, Sustainable and Inclusive Growth”, launched by the European Commission², where it is stated that smart growth can only be generated by an economy based on knowledge and innovation.

Through this research, we have proposed a desirable scientific approach to clarify at least some of the less discussed issues in the literature and to highlight the importance of intangible resource management at the organisation level through theoretical and empirical studies conducted at national and international level.

If PhD thesis **fundamental objective** is to improve knowledge about intangible resource management at the organisation level, concerning the method to evaluate them, **the specific objectives** refer to:

- highlighting the importance of knowledge and intangible resources to create and increase value in today's organisations;
- increasing intelligibility about intangible resources by carrying out a critical analysis having in mind the following criteria for the concept and content of this resource (along with the analysis of related concepts);
- analysing the methods of structural dimensioning of intangible resources established in the literature and proposing a new taxonomy of intangible resources at the organisation level;
- analysis of the concept and the role of intangible resource management in an organisation;
- proposing a model for implementing an intangible resource management system at the organisation level;
- analysing the methods of assessing intangible resources, identifying the advantages and disadvantages of each;
- conceptualising, measuring and monitoring intangible resources at macroeconomic level;

¹Executive Unit for Financing Higher Education for Research, Development and Innovation, RDI Financing. Available on: <https://uefiscdi.ro/p2-cresterea-competitivitatii-economiei-romanesti-prin-cdi>

²* * *, Strategy Europe 2020. Communication available on: https://www.mae.ro/sites/default/files/file/Europa2021/Strategia_Europa_2020.pdf

- analysing the theoretical and practical aspects of mathematical knowledge in the field of assessing and monitoring intangible resources by assessing the impact of intangible resources on macroeconomic growth and microeconomic performance of the organisation;
- proposing new models for assessing and monitoring intangible resources.

As we have outlined the presumptions and objectives which constituted the lines of action in drawing up the work, we have determined **the research area** which had several purposes, such as:

- highlighting the awareness of the Romanian managers on the extent of the foreseeable changes taking place in the external and internal environment, under the conditions of the knowledge-based economy, by carrying out a selective scientific research on the extent to which organisations use intangible resources and implement an intangible resource management system;
- making a proposal to develop an intangible resource report at the organisational level that shall become a useful tool for identifying and evaluating types of intangible resources and which to conclude the entire system of managing these resources;
- proposing a new model for assessing and monitoring intangible resources, materialised in an index of intangible resources, possible to be globally used for comparisons, based on publicly available data.

Research Methodology

The approach taken, as a result of an interdisciplinary approach, has imposed a very varied research methodology, which mainly focused on:

- the study of a general and specialised bibliography on the theoretical and practical situation, aimed at assimilating and deepening the knowledge necessary for the drawing up a scientifically founded work;
- mathematical and statistical approach to several economic models that have become necessary for the use of concepts;
- carrying out casuistry for the empirical support of the economic models approached;

- the use of general – particular or particular – general analysis in the development of concepts and phenomena;
- carrying out a rich scientific research, aiming to deepen some of the aspects presented above, from the point of view of the concrete situation at companies level.

We have therefore combined within PhD Thesis qualitative and quantitative research, as well as theoretical and pragmatic approach in order to deepen the topic investigated. By using this scientific tool, we have tried to meet companies' needs by carrying out substantial and pertinent research and analysis on certain elements that are extremely important in the management of intangible resources at organisations level.

Synthetic Presentation of the Content of PhD Thesis

In order to meet the objectives of PhD thesis, the work is structured in four parts, briefly summarised below.

In the first part of the thesis, entitled *Theoretical and Conceptual Approaches to Organisational Intangible Resources*, we intend to present various theoretical and conceptual considerations and approaches regarding intangible resources. Starting from the current knowledge revolution in all areas, the need for in-depth study of this subject arises, this being a first argument in the need for the research to come. Through the objectives pursued, this report integrates perfectly into the structure of PhD thesis. These mainly concern:

- increasing the intelligibility of the resources of an organisation by carrying out a comparative analysis of tangible and intangible resources;
- highlighting the importance of resources to creating and enhancing the value of an organisation;
- identifying the necessary requirements and mutations in the management of the organisation as a result of increasing the importance of intangible resources;
- performing a synthesis of literature relevant to the research;

- making conceptual clarifications related to the most important terms used in this field, which are extremely important for further research since there is much confusion in the literature about these terms;
- exploring the methods of structural dimensioning of intangible resources established in the literature;
- proposing a new taxonomy of intangible resources at the organisation level.

Given the above-mentioned elements, this first part is structured in four chapters in order to meet the proposed objectives. The first chapter addresses the organisational resource categories, namely traditional (tangible) resources and (intangible) intellectual resources, and it details the unique nature and characteristics of the resources. Thus, the attributes of the two types of resources are presented in comparison and in contrast, showing that tangible resources and intangible resources are significantly different.

In Chapter 2, one perceives the phenomenon of reinforcing the knowledge stock in all fields of activity, together with the loss of importance of physical resources. In this respect the challenges for organisations are therefore emphasised, by highlighting key mutations occurring during this period at the level of the main components of intangible resources, enshrined in literature.

After studying a large volume of specialised literature (a selective presentation of this is made in the bibliography of this work), we have noticed that there is confusion and plenty of misunderstanding about the real meaning of some of the most important elements in this field. Consequently, in Chapter 3 each concept used in this study is clarified to avoid confusion and conceptual misinterpretation, calling on the literature relevant for this research.

Taking as its starting point the study of literature in the established methods of structural dimensioning of intangible resources, especially the existing difficulties identified in conceptualising and structuring intangible resources, Chapter 4 aims at developing a taxonomy through which those elements are highlighted that we consider representative for analysing and understanding the intangible resources at the organisation level.

In the second part of PhD thesis, entitled *Contributions to the Development of the Theory and Practice of Intangible Resource Management at the Organization Level*, we intend to present various approaches of a theoretical-conceptual and pragmatic nature regarding the

management and assessment of intangible resources. Through the objectives pursued, this second part integrates perfectly into the structure of PhD thesis. They refer to:

- analysing the concept and highlighting the role of intangible resource management in current organisations;
- analysing the specific processes of intangible resource management;
- identifying the phases of implementing an intangible resource management system;
- analysing the intangible resource ratio as a conclusive tool of their management process;
- the analysis of intangible resources, viewed from an accounting perspective;
- identifying and recording intangible resources - capitalisation versus expensing;
- making proposals on the current state of registration and recognition of intangible resources in accounting;
- analysis and presentation of qualitative and quantitative methods for assessing intangible resources;
- identifying the advantages and disadvantages of assessment methods.

Taking into account the above mentioned elements, the second part of the thesis is structured in two chapters in order to meet the proposed objectives.

Intangible resource management is a major area not only in terms of theory but also in the practice of organisations. However, reality shows that organisations face unexpected challenges in developing and implementing intangible resource management strategies and processes. The most thriving challenges relate to: identifying the available intangible resources and also the ones required to meet the objectives; resource development (as a permanent “flow” that result in the enrichment and maximum use of the “stock” of of intangible resources) in order to maintain or increase their ability to generate a sustainable competitive advantage; identifying their impact on organisational performance.

Chapter 5 therefore attempts to contribute to improving intangible resource management at the organisation level by building a model that describes the process to be followed by organisations wishing to implement a intangible resource management system. Our study highlights the need for three phases: identifying critical intangible resources related to value creation, measuring these resources through a set of indicators, and ultimately monitoring resources and intangible activities. However, one should keep in mind that the process of

management, monitoring and reporting on intangible resources is very idiosyncratic and unique to each organisation. There is no universally valid recipe; each organisation should develop its own process.

In this chapter there are also shown the premises underlying our approaches on the major importance of intangible resource management, the concept of intangible resource management is substantiated, some general principles regarding the substantiation and implementation of this type of management are formulated. There are also examined here the specific processes forming the action object of the management at the organisation level, which may be grouped in five phases corresponding to the functions of intangible resource management.

Measuring and assessing intangible resources and intellectual capital have become a major area of investigation for researchers and practitioners, with increasing concerns about monitoring and assessing this type of capital. Despite this, harmonisation of approaches on these issues has not been achieved, so management is currently experiencing real difficulties in the assessment and measurement of intangible resources. Chapter 6 begins with bringing into question the way in which traditional accounting succeeds or fails to solve in a pertinent manner relevant elements such as recording and assessment of intangible resources. At the same time, proposals are developed regarding the current situation of the registration and recognition of these resource in accounting.

The measurement of intangible resources, although subject to many scientific studies, is quite controversial. Any assessment methodology can be challenged in some ways because each model has its advantages and disadvantages, depending on the reason and objectives of the assessment. Thus, having as a starting point the study of various methods and models for assessing intangible resources used by theoreticians and practitioners, the methods are grouped into two large groups, from the point of view of the determination of intangible resources, in value and non-value terms: quantitative and qualitative methods. Within them, another classification criterion is pursued, which covers the scope of assessing intangible resources, which means the distinction between holistic methods, in the sense of the unitary examination of the entire intangible resources system of an organisation; atomistic or partial methods involving the examination and assessment of each intangible resource, that is, on components. Subsequently, the advantages and disadvantages of assessment methods are identified.

In the third part of PhD thesis, entitled *Analysis of the Impact of Intangible Resources at Macroeconomic and Microeconomic Level*, the importance of intangible resources is examined in macroeconomic, nation context, followed by the impact analysis in organisational microeconomic context, focusing on the types of impact they can manifest at the two levels. Through the objectives pursued, this part integrates perfectly into the structure of PhD thesis. They refer to:

- setting out general considerations on intangible resources and their impact on economic growth at the nation level;
- examination of national intangible resource assessment models through a foray in the literature;
- analysis and classification of national intangible resource assessment methods;
- identifying the differences between academic models and the models of international organisations;
- assessing Romania's position in the international context regarding intangible resources;
- assessing the impact of intangible resources on the organisation's performance;
- documenting the need to report intangible resources at the organisational level.

Taking into consideration the above mentioned elements, the third part of PhD thesis is structured in two chapters in order to meet the proposed objectives.

The substantial impact of macroeconomic dynamics on firms and industries and the inability of traditional monitoring tools to prevent crisis have highlighted the increasing need for monitoring and analysing trends in the value of national intangible resources. At national level, economic growth is increasingly based on knowledge and other intangible resources than on physical ones. To test this hypothesis in the case of our country, Chapter 7, entitled *Analysis of the Impact of Intangible Resources at Macroeconomic Level*, examines how intangible resources affect economic growth, respectively correlation indices are calculated between different types of intangible resources and gross domestic product value. The analysis carried out demonstrates the existence, in our country, of very strong positive correlations between GDP and most of the intangible resources variables. In this chapter the models for assessing intangible national resources are also examined by a foray into literature and the most popular assessment methods are classified in academic models and models of international organisations, being also identified the most important differences between them. In order to assess Romania's position in the

international context regarding intangible assets, the European Innovation Scoreboard - EIS and the World Economic Forum annual reports on Global Competitiveness are taken into account.

In Chapter 8, entitled *Assessing the Impact of Intangible Resources on Organisation Performance*, we have intended to explore the relationship between the intangible value of firms and their financial performance. This is all the more so as researchers have most often studied the impact of physical and financial capital on a company's performance, neglecting to investigate the relationship existing between intangible resources and performance at its level. The objective of this chapter is to empirically check whether intangible resources have any impact on companies' performance. Statistical methods of research are used within which as independent variable, an indicator of intangible resources, Tobin Q ratio is used. This indicator uses financial data and data on the market and it shows the advantage of easy access to data. It is a simple but well defined indicator of intangible resources. Dependent variables include financial performance indicators: return on assets (ROA), return on equity (ROE) and a size-based performance indicator: net profit.

The last part of the thesis, entitled *Selective Scientific Research on the Extent to which Organisations Use Intangible Resources. New Proposals for the Assessment of Intangible Resources* includes the research activity carried out in order to substantiate, from a practical point of view, certain aspects approached theoretically and methodologically within the PhD thesis. Through the objectives pursued, this part integrates perfectly into the structure of PhD thesis. They refer to:

- examining the extent to which organisations capitalise on intangible resources and implement a system for managing this type of resource;
- documenting the need to report intangible resources at organisational level;
- presenting the concept, content and benefits of an Intangible Resources Report (RRI)
- substantiating, describing and measuring the intangible resources of the proposed RRI;
- presentation of the Intangible Resources Report;
- proposing a new model for assessing and monitoring intangible resources that should be useful in external comparisons through the use of transparent public information with relatively easy access.

Taking into account the above mentioned elements, the fourth part of the PhD thesis is structured in three chapters in order to meet the proposed objectives.

In chapter 9, entitled *Selective Scientific Research on the Extent to which Organisations have the Capacity to Identify and Use Available Intangible Resources*, a selective survey is carried out among those involved in knowledge and operationalisation of these concepts (managers), by using a questionnaire asking them to express their opinions on the topic mentioned above, in the form of answers to those questions mentioned in the questionnaire.

The objectives pursued in this first research (whose method of gathering information is embodied in statistical survey, based on a questionnaire administered to a sample of respondents, consisting of company managers) are:

- Identifying and capitalising on human capital;
- Analysis of the factors for impelling human capital (enablers);
- Identification and capitalisation of innovative capital;
- Analysis of the factors for impelling the innovative capital (enablers);
- Identification and capitalisation of structural capital;
- Analysis of the factors for impelling the structural capital (enablers);
- Identification and capitalisation of relational capital;
- Analysis of the factors for impelling the relational capital (enablers);
- Analysis of intangible resource management performance;
- Identifying the structural, essential mutations seen by the respondents in their organisations and their management, having as the origin the predominance of intangible resources;
- Identifying viable measures to avoid knowledge moral obsolescence.

In recent years, there has become increasingly evident that the information systems existing at organisations level do not allow for an effective management, since they fail to capture a wide range of intangible resources that, in the economic context described above, are among the fundamental factors of organizational success. It is also known that annual financial and accounting reports may not provide a sound basis for making accurate estimates of future cash flows that can be made by companies, nor to assess their associated risk. As a result, Chapter 10, entitled *Proposal for Developing an Intangible Resources Report at Organisational Level*, states the need for reporting intangible resources at organisational level. Subsequently, the

concept, content and advantages of an Intangible Resources Report (RRI), are shown, and finally an RRI is proposed and presented for which the substantiation, description and measurement of intangible resources included in the analysis are shown. The proposed RRI contains a wide range of possible intangible resources, which should then be adapted and integrated on a case-by-case basis. This Intangible Resources Report has the advantage of providing a generous and documented framework for managing and disclosing intangible resource information for any type of organisation.

In Chapter 11, entitled *Proposal for a Simplified Model for Assessing Intangible Resources by Factorial Method*, I have grounded an intangible resource assessment model based solely on publicly available data for each of the elements proposed in its substantiation. By using the factorial method, a four-orthogonal factor structure shall be obtained, as a final solution that shall accumulate the greatest amount of common variability of intangible resources. This model will contribute therefore to the practical implementation of intangible resource management by providing an objective and independent tool that uses only publicly available data, thus facilitating business comparisons.

Synthesis of Conclusions, Own Contributions and Future Research Directions

In order to present the results obtained in the work, but also to highlight our own contributions, we will pursue the degree attaining the purpose and objectives originally proposed in turn.

The first objective followed in this PhD thesis referred to *highlighting the importance of knowledge and intangible resources to create and increase value in current organisations*.

For an organisation to be efficient, the question equally arises of the efficient allocation of resources and the transformation of intellectual resources in economic value. Thus, in this study we have identified and analysed in detail the unique nature and characteristics of the two categories of organisational resources: traditional (tangible) resources and intellectual (intangible) resources, concluding that the attributes of the two types of resources are significantly different.

According to the perspective supported by the theory of endogenous growth and other approaches, traditional factors of production (natural resources, labour force and capital) have gradually diminished their importance. At the same time, the importance of intangible assets has increased, such as information, knowledge and creativity. Constant economic, social and technological changes and competitive advantage imply a permanent need for restructuring and improving the knowledge management system, which is seen as a defining factor in economic growth. In the new economy, both at micro- and macroeconomic level, there becomes essential to manage efficiently the new accepted intangible factors of production. Knowledge is a new resource, a true capital of modern economies. In this context of the primacy of knowledge, as the main capital of the company, we have highlighted the essential mutations occurring during this period at the level of the labour force - the human capital, at the level of capabilities and systems - the structural capital, at the level of the clients' performances - the relational capital.

Intangible resources are those elements of the business that exist alongside tangible assets and circulating capital. These are the elements that ensure the running of the business and which are often the main contributors to the company's winning power. Investments in intangible assets are important factors of competitiveness and convergence. Whereas land, capital and labour are subject to the law of decreasing yields, knowledge and information induce increasing yields³. Thus, investing in intangible assets leads to firms' rapid and flexible adjustment to the market⁴, these being sources of competitive advantage.

The second objective refers to *increasing the intelligibility of intangible resources* by carrying out a critical analysis taking into account the criteria of concept and content of this resource, together with the analysis of related concepts.

In this sense, we have tried to clarify the related concepts used in the field of intangible resources (intellectual capital – intellectual assets – intellectual property), in order to avoid subsequent misconceptions and erroneous conceptual interpretations, by resorting to specialised literature. We believe that these terms must be used differently because they differ not only in their scope, but also in terms of the fields and people operating with these concepts. Intangible

³Suciu M.-C. (2008), *Activeleintangibileșicapitalulintellectual – factoricheieaiconvergenței*, Series Working Papers no. 7, Romanian Academy, National Institute of Economic Research

⁴Dobre A. M. (2013), *Activeleintangibilecasursă a competitivitățiiîneconomiaipostcriză. Rolulmărcilor de fabricație*, Economieteoreticășiaplicată, Volume XX, 12(589), pg. 82-92

(intellectual) assets are a term used by professional assessors and finance and accounting specialists, intellectual capital is a term predominantly used in the field of human resource management, and the concept of intellectual property is commonly used by specialists in the legal field. Intellectual capital is a broad concept that includes the concept of intangible assets, and these include the concept of intellectual property.

The third objective has aimed at *analysing structural dimensioning methods of intangible resources established in literature and proposing a new taxonomy of intangible resources* at the organisation level.

Starting from the challenges identified in conceptualising and structuring intangible resources, in this study we have taken into account the development of a taxonomy through which we have emphasised those elements that we considered representative for analysing and understanding the intangible resources at the organisation level.

The analysis of the concept and the role of intangible resource management in an organisation resulted in another goal originally established in the PhD thesis.

In this context, we state that all organisations have an interest to maintain and enhance the intellectual capital assets and intangible resource management is a way to achieve this goal. Basically, generating and increasing intellectual capital is an organisational goal, while intangible resource management is a means by which this goal is met, this being a process taking place within the organisation. Intangible resource management is a concept much broader than knowledge management. Its main purpose is to increase company's value by creating competitive advantages. The intangible resource management involves identifying these resources, assessing their impact on company's current and future value, their assessment, the discovery of intangible activities and, finally, the ability to effectively manage these activities. Knowledge creation is an intangible resource that organisations need to manage just like managing other resources of this nature; as a result knowledge management is a subset of intangible resource management.

Another objective referred to *proposing a model for implementing an intangible resource management system* within the organisation.

Despite its importance, organisations face a number of difficulties related to the implementation of an intangible resource management, especially regarding the identification,

assessment and monitoring of intangible resources. Through the research carried out, we have tried to contribute to improving intangible resource management at the organisation level by building a model that describes the process followed by organisations seeking to implement an intangible resource management system. Our study emphasizes the need of three phases: identifying critical intangible resources on creating value, measurement of these resources through a set of indicators and, finally, monitoring resources and intangible activities.

Another objective of PhD thesis has materialised in the *analysis of intangible resources assessment methods*, by identifying advantages and disadvantages of each.

Starting from the literature related to intangible resources assessment methods, we state that it is very difficult to implement an assessment method universally accepted from an accounting perspective. But all assessment methods referred to provide ideas that can be adapted, developed and even implemented to some extent in practical environment, with the purpose of assigning a value to intangible resources.

Regardless of all these methods for assessing and monitoring known intangible resources, we state that in the future the methodology used for this process must be brought to the attention of the management of any organisation. There is already known the importance of financial indicators in the company, so in the context of economy, organisation and knowledge-based management, the need to assess invisible and intangible resources appears obvious.

The aim we pursue, both in this research and in the ones to follow, is basically to change the current situation, where the information and reports of the organisations related to intangible resources available to them are limited and they are based on incomplete and heterogeneous conceptualisations towards a new scenario in which we shall have consistent, reliable, verifiable and comparable information on intangible determinants of the value of organisations.

Another objective of this PhD thesis focused on *the conceptualisation, measurement and monitoring macroeconomic intangible resources*.

Literature analysis results confirm the strategic value of intangible resources in the creation of wealth and conferring competitive advantages to nations. However, there are few academic works related to intangible resources at the country level. Approximately 80% of all articles have been published since 2005. In literature several different models of intangible resources at

the country level are shown that are different from those developed to assess intangible resources in companies. At macro level, we identified two main lines, one closer to the study of intangible resources at the micro level (academic models) and another developed by international organisations and business schools (Models of international organisations) taking into account intangible resources as a means of measuring the ability of competitiveness, development and innovation.

These two models differ in the treatment of intangibles. If academic models consider intangible resources as the most important factor in creating wealth and therefore it assesses intangible assets independently of the tangible ones, the models of international organisations use both types of assets, both tangible and intangible, in all stages of the assessment. Information provided by models on intangible resources at national level and their reflecting in country's development, its competitiveness or innovative capacity allow us to understand current economic performance as intangible resources are effectively able to create wealth.

Despite the differences between models, rankings done within countries tend to converge. Indices provided by the models of international organisations are easily understandable, but they do not provide accurate information about intangible resources of nations. In addition, country rankings and comparative assessments of academic models attracted more attention for comparing nations and benchmarking. These models have shown a strong link with economic performance, allowing a better understanding of the causes of growth in the knowledge age.

By this PhD thesis we have initially proposed the aim according to which we should examine *theoretical and practical aspects of mathematical knowledge in evaluating and monitoring intangible resources* by assessing the impact of intangible resources on economic growth at the macroeconomic level (the case of Romania) and on the performance of the organisation, at microeconomic level.

In order to assess Romania's position in the international context in terms of intangible assets the European Innovation Scoreboard – EIS and annual reports issued by the World Economic Forum on Global Competitiveness have been taken into consideration. Despite the importance of intangible resources at national level and that they are an important factor in determining economic growth in the current knowledge-based economy, we consider that Romania's position in the international context in terms of intangible assets is very weak, with

many weaknesses in research and innovation performance compared to other EU member states. Therefore, there is a need that in our country areas where all efforts must concentrate to stimulate performance in innovation field should be re-evaluated, to adequately manage national intangible resources, a crucial process for improving the quality of life.

Regarding the analysis of the impact of intangible resources at the microeconomic level, after the application of statistical methods for the capital market in Romania in the second chapter, I have noticed that there is a statistically significant relationship between coefficient Q of Tobin and net profit, the return on assets (ROA) and the return on equity (ROE). From the point of view of determining the variability of dependent variable with the independent variable, considering the value of R-squared, a weak towards strong relationship is found in all three linear regressions examined.

Performing correlation analyses for the capital market in Romania, all correlations are statistically significant. As a result, intangible resources (measured by Tobin's Q ratio indicator) show a strong and positive correlation with firms' financial performance indicators, as expected.

Another objective was based on the *proposal for new models for assessing and monitoring intangible resources*.

Thus, regarding the need to report organisational intangible resources, the former approaches of the reports on intangible resources faced a dilemma. For internal management purposes, the organisation is important to use an individualised approach, i.e. to define specific elements of the strategy and intangible resources according to specific business model. For the purposes of foreign reports, on the other hand, standardised approaches are required to enable external stakeholders such as customers, investors and other partners, to compare reports on intangible resources of various organisations. These external reports shall be of low value for the purposes set by the management, where detailed information is needed on the strengths and weaknesses at the individual level. Using highly individualised approaches to intangible resources, on the contrary, will make very difficult for external readers to assess the quality of a report of intangible resources and compare one company with another.

This conceptual conflict of “individualisation vs. Standardisation” is trying to be solved by this proposal of RRI. It is based primarily on a standardised procedure, leading to a possible comparability of various documents related to the reporting of intangible resources, whereas the

specific content remains individual. A set of indicators specific to intangible resources could then be deduced by examining existing individual characteristics of intangible resources. Thus, one may compare the strengths and weaknesses in terms of intangible resources for different organisations and also for similar organisations in the same field, one may identify additional specific indicators further allowing an adequate value of individualisation for each organisation, thus facilitating the exchange of experience and learning from good practice cases in a specific area of intangible resource management.

At the same time, in order to facilitate the practical implementation of intangible resource management, we were able to propose an objective and independent instrument for assessing intangible resources which uses only publicly available data, thus facilitating comparisons between companies by using the factorial method.

Aspects underlying the *original contributions* in this PhD thesis are briefly mentioned below, in several ways:

- *in theoretical and conceptual terms:*

- we have made a critical and comparative analysis of tangible and intangible resources in organisations, identifying the existing differences according to several criteria;
- we have considered it was necessary an incursion into the stage of acknowledging organisational intangible resources and related concepts by making conceptual boundaries thereof;
- we have examined the structural dimensioning methods of intangible resources established in the literature, on the one hand, and on the other hand, we have examined the most popular models for assessing intangible resources both at micro- and macroeconomic level;
- we have examined the concept of intangible resource management, which is a much broader concept than knowledge management.

- *from an empirical point of view:*

- we have tested the hypothesis according to which national economic growth is also based on intangible resources besides physical ones. The analysis carried out shows the

existence, as well as for our country, of certain very strong positive correlation between GDP and most of the variables of intangible resources;

- another original empirical contribution consists in exploring the relationships between organisations' intangible value and their financial performance, respectively the empirical checking of the assumption according to which intangible resources have an impact on companies' performance;
- highlighting the degree of awareness of Romanian managers about the existence of changes that will take place in the external and internal environment, in terms of the knowledge-based economy, by carrying out a selective scientific research regarding the extent to which organisations exploit intangible resources and implement an intangible resource management system;

- *in terms of methodology and tools:*

- due to the fact that we have identified multiple difficulties in the conceptualisation and structuring of intangible resources, we have developed a taxonomy through which we have highlighted those elements which we have considered representative for analysing and understanding intangible resources the organisation level;
- we have built a model that describes the process to be followed by organisations seeking to implement an intangible resource management system based on three phases: identifying critical intangible resources related to value creation, measurement of these resources through a set of indicators and, finally, monitoring intangible resources and activities;
- we have proposed and developed an Intangible Resources Report at organisational level, which has the advantage of offering a generous and documented framework for the management and disclosure of the information on intangible resources for any type of organisation;
- given that the models of assessing intangible resources established in the specialised literature is mainly based on data specific to each company applying them, thus making that comparisons between companies should basically have no value, we have proposed a mathematical model to help at practical implementation of intangible resource

management by providing an objective and independent assessment tool, using only publicly available data, thus facilitating comparisons between companies.

Main innovations of PhD thesis are able to add value, to represent sources of competitive advantage for the organisations that shall implement them and to effectively contribute to streamlining and improving the activities undertaken by both practitioners (managers) and also theorists (researchers), because:

- Intangible Resources Report proposed in the thesis has the capacity to assist organisations in developing their ability to identify, measure and control these resources to increase their management efficiency and improve financial performance. On the other hand, it seeks to provide a useful guide to companies through the disclosure of information about intangible determinants of their capacity to create value, to help providers of capital to effectively assess future earnings and risks associated with their investment opportunities. At the same time, an Intangible Resources Report offers the possibility of being used as an actual progress report in the field of intangibles. It starts from an initial assessment, respectively the analysis of current situation regarding intangible resources. Given the objectives initially set, specific measures are applied deemed to be necessary to meet them. Thereafter the "term" assessment will be required in order to measure the progress obtained in terms of intangible resource management. Seen from this point of view, such a report can also represent an instrument for implementing progress in terms of the contribution that use of the report itself can bring to increasing the organisation's performance;
- The mathematical model developed and proposed in this thesis by factorial analysis. The analysis of the main components provides useful and practical information to researchers, statisticians and all managers and the opportunity to follow the progress up or down of intangible resources level and apply the necessary corrective measures;
- The proposed intangible resources taxonomy is able to facilitate the identification of such resources at the organisation level;
- The model to implement a proposed intangible resource management system manages to facilitate the achievement of intangible resource management performance in an organisation.

In terms of ways for *using research results*, we mention that this process is a continuous one, which has already started during doctoral scientific training and resulted in the publication

of scientific articles in specialised journals in the country and abroad, but also in participation in conferences. The activity of disseminating the research results shall continue in the coming period, on one hand by new participations in scientific conferences and publishing works in prestigious journals, and on the other hand by writing and publishing a scientific book that will bring added value in the field of theory and practice of intangible resource management at the organisational level.

The *future research directions* are outlined and appropriate in the directions examined in PhD thesis and refer to:

- further research by identifying tools that provide opportunities for benchmarking and comparative analyses related to intangible resource situation in the organisations. This shall be done by mathematical models which will combine different measures of intangible resources in a single index, thus facilitating its implementation within any organisation;
- it would be of interest to look at the way investors on the capital market in Romania are aware of the importance of intangible resources in enhancing the value of a company by taking them into account in substantiating their investment decision, or not;
- new contributions are required to the creation of the theoretical, conceptual, and methodological framework related to intangible resource management. Thus, for example, a direction for future research shall consist in developing a more comprehensive taxonomy proposed for intangible resources;
- examining the innovative possibilities for diagnostic of the financial health of a company relative to its performance in the field of intangible resource management could be an interesting area of research. The main objective of this research shall be to specify, check and modify diagnostic techniques appropriate to financial health of a company in a fast-changing economic environment, with the purpose of improving its financial and economic performance;
- another line of research concerns the identification of new financial and non-financial methods for measuring intangible resources as the management currently faces real difficulties in measuring and assessing such resources;

- since education is considered one of the key mechanisms by which we may act and interact on the basis of a common culture, one of the main "producers" of culture and, at the same time, a vital condition for achieving sustainable development of companies, another direction of research with great potential for future development shall focus on emphasising the importance of education in increasing the potential for innovation of economies, the need for investment in education in order to ensure sustainable human development.

In conclusion, given the circumstances of the new knowledge-based economy, organisations need to adjust in order to obtain a dominant position, in order to survive and to develop. Intangible resource management may be regarded as a basic branch of organisational management in this period. This is why the trend in economic research in the coming years will turn, perhaps, to find the realistic methods for calculating the value brought by intangible resources in knowledge-based organisations.

Key-words:

current assets

fixed assets

intangible assets

intellectual assets

tangible assets

VRIO analysis

patent

innovative capital

intellectual capital

relational capital

structural capital

human capital

Tobin's Q coefficient

knowledge

copyrights and related rights

intellectual property rights
epistemic economy
goodwill / badwill
tangible assets
management of intangible resources
trademark (registered)
qualitative assessment methods of IR
quantitative atomic IR evaluation methods
quantitative holistic IR evaluation methods
models and industrial designs
intellectual property
the ratio of intangible resources
rate of economic return (return on assets)
rate of financial return (return on equity)
intangible resources
organizational resources
tangible resources
commercial strategies
accounting value
national intellectual capital