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THE ROLE OF INTANGIBLE ASSETS IN THE BANKING VALUE CREATION PROCESS

KNOWLEDGE MANAGEMENT APPROACH

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BUSINESS AND MANAGEMENT PH.D. PROGRAMME

Corvinus University of Budapest

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BUDAPEST, 2018

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1. INTRODUCTION

1.1. Motive

Knowledge and its management has been at the focus of serious interest of philosophers, university researchers and corporate leaders for hundreds, even thousands of years. Plato, Aristotle and Descartes already discussed knowledge and its circumstances [Nahapiet – Ghoshal, 1998]. In this dissertation my aim is to rediscover this topic, as I can see several unanswered questions in this realm. This is however not surprising, as with time the result of the change in the economic environment is that we now have to think about knowledge in a new context.

I base the relevance of this research area, which has long been explored by numerous authors, on the below assumption. The key assumption I am making is the following: postindustrial societies function based on knowledge economies, the results of which are (1) a need to understand knowledge management processes more thoroughly, as well as (2) the rise in prominence of intellectual capital management. Following this train of thought, my dissertation aims to examine the functioning of intangible factors of production and the fundamental value creation mechanisms related to their management in the Hungarian banking sector.

I believe that this research gap has on the one hand already become so ingrained in business life that people are able to identify the reason for the existence of intangible factors of production, however it is suitably unexplored, taking into account that the degree of consciousness in the management of intangible resources is far from that of other resources which are considered in mainstream economic theory.

1.2. Acknowledgements

Three things are needed essentially in preparing a dissertation. On the one hand, a good deal of perseverance and tenacy, which I thank my family for, as they have continuously encouraged me all along my doctoral studies and been by my side at every important milestone of this lengthy process. On the other hand, appropriate professional control is necessary, which automatically prunes back the scientific wild shoots, which grow due firstly, because the student is interested in everything, secondly, because the student's fantasy knowns no limits, and thirdly, as he has not gained several decades of scientific

experience. Over the course of my doctoral studies and during the preparation of this dissertation, the critical filter of my advisor, Dr. György Boda has been the constructive professional energy, which has accompanied and guided my work. For this I am truly grateful to him. Lastly, for a doctoral student it is indispensable to be working in such an inspirational and supporting milieu, which ensures professional-scientific development and progress. I have been granted this at the Department of Business Studies of the Institute of Business Economics at the Corvinus University of Budapest, which I would like to hereby thank them for.

1.3. Relevance of the topic

Although, the subject of intellectual capital has already been discussed and researched for decades, this is still as of now a controversial question [Giuliani - Marasca, 2011]. The leaders of today need to assess and manage the socio-cultural values, the knowledge processes, organizational routines and practices, however due to their intangible nature, the typing and handling of these assets is much more difficult, than that of tangible assets [Lerro - Iacobone - Schiuma, 2012]. However, in the current modern knowledge economy the gap between the book value and the market value keeps widening, which implies the danger of certain valuable factors remaining hidden in the organization, which are not in the scope of vision of the corporate leadership with regard to their manageability. This can manifestly cause disruptions in the efficiency of processes, and therefore in organizational performance and the optimization of activities contributing to value creation. By definition, managers aim to avoid this situation, one possible means of which is dedicating more attention to invisible assets, trying to understand their nature, identifying them within their own company, aiming to measure their magnitude, as well as attempting to consciously channel these assets into corporate value creation. Bőgel [1998, p. 24] phrased this as *"knowledge content is gradually edging out physical content, meaning that instead of carrying out physical work, employees are spending an increasing amount of time with thinking. In many respects the behaviour of intellectual capital differs from capital in the form of physical assets and money, as a consequence of which the related management tasks are different as well."*.

On the one hand, the relevance of the topic is due to researchers, practicing professionals, big consulting companies and corporate leaders having realized this situation, however the

global research community has yet to define the practical schemes and frameworks leading to the solution, which are to be used in daily operations, and they have not yet reached the state where intangible assets are managed consciously and systematically. Despite their considerable potential, relatively few managers have begun to even outline the possibilities resulting from intellectual factors of production [Zadrozny, 2006]. As a consequence, there is plenty to be investigated scientifically. On the other hand, the topic of the dissertation is made relevant by the period of reflection seeking the means of managing the changes resulting from the 2008 global economic crisis, considering that the bank crisis took its toll on the companies operating on the cash and capital markets, therefore on the banks at the focus of the current dissertation. This however does not mean, that in the absence of a recession the practical significance of intellectual capital management would be in any way reduced, instead demonstrating that in more difficult periods of business cycles leaders are more likely to be open to alternative solutions, which heightened interest in Intellectual Capital Management (henceforth: ICM[1]).

Consequently, the credit institutions operating in Hungary, who constitute the target group of the research, are also part of the process whereby banks are seeking to develop innovative management practices, which may provide an effective answer to the challenges triggered by the changed economic reality. In my opinion, one of the possible directions of such innovations could be for managers to dedicate an increased proportion of their attention to intangible assets and their role in value creation.

1.4. Introduction of the dissertation topic

As the knowledge-based economy gained ground know-how and intellectual capital increasingly became the basis of competitiveness instead of tangible resources [Thurow, 1996]. Despite this, we can encounter several questions of cardinal importance in the field of intellectual capital management, responding to which would considerably assist managers in operating corporate processes in an optimal manner. For this reason, these questions examined by the domains of knowledge management (henceforth: KM) and intellectual capital management have grown in prominence in the professional and scientific communities.

[1] ICM is the abbreviation for the term Intellectual Capital Management

This exciting multidisciplinary research area has attracted the attention of many excellent university scholars. Besides recognizing the achievements of these researchers, I would like to highlight three authors, whose works constituted the basis of my knowledge in this area and at the same time inspired my research. In discussing this topic I consider Karl-Erik Sveiby's works fundamental, who phrased his first thoughts about knowledge management for the first time in 1986[2], which could also be read in Hungarian in 2001 in his book "The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets". Sveiby is considered the pioneer of knowledge management, who examined the value generating effects of knowledge and creativity, instead of the traditional value creation process. Over the course of his research activivity he has, among others, created the concept of the invisible balance sheet, with which he emphasized the particular nature of intangible assets and the subsequent measuring and managing dilemmas.

Furthermore, I would like to highlight the doctoral dissertations of Péter Juhász [2004] and György Boda [2005]. In my opinion these two dissertations significantly raised awareness of this research area in the Hungarian scientific community. For this reason, my current doctoral thesis aims to strengthen these professional and scientific foundations and aims to reflect further upon their findings wherever possible. Juhász [2004] explores the reason for the difference between the market and the book values through company valuation methods and accounting adjustments. He has uncovered the possible sources of corporate added value by empirical examination of the role of off balance sheet items. Boda [2005] reflects further on the measuring and valuation dilemmas not handled by the traditional financial and accounting system, and discusses these questions. However based on Sveiby [1986], Boda has also empirically confirmed that with the emergence of knowlege-based organizations, the structure of the corporate balance sheet changes and new intangible assets are the drivers of corporate value creation processes. In addition, he has proved its effect on knowledge capital strategy and corporate value through his own corporate analyses.

After studying through these fundamental works and other pieces of scientific literature discussed in the dissertation, I have identified the focal points of the scientific literature on

[2] Sveiby K.E. [1986]: Kunskapsföretaget, "The Knowhow Company" co-auth. Anders Risling, Liber

the management of intangible factors of production in the present state of scientific knowledge:

1. **Asset focus**. By this I am referring to the fact that previous research examined intangible factors as assets, and in several cases did not make corresponding conclusions on the liabilities side, namely indicating whom the asset belongs to. In absence of this the logic of the balance sheet is not respected and it is not possible to arrive at satisfactory conclusions regarding the behaviour of the assets, as their ownership is still unclear.

2. **Added value focus**, indicating that those who have explored the topic have confirmed that the gap between the value in the accounting information system and the real market value keeps increasing. This difference can be interpreted as a type of added value, and discussing its composition and management can only be done with significant limitations and at a high level of uncertainty. Consequently, the examination of the components constituting corporate added value has not yet gained prominence in the form of unique and focused contributions in the area of intellectual capital management.

3. **Registery focus:** In scientific literature a debate has been going on for several years about what is the solution for handling the gap found between the book value and the market value. According to one point of view, the conservative set of rules governing accounting should be renewed and expanded with methods, which would enable the identification and the registry of the real value of off balance items. However, according to the other point of view, the accounting information system still satisfies all the requirements for which it was initially created. Upon its conception the evaluation of assets was not a critical requirement, for this reason there is no point in adjusting the system with measuring and evaluating rules based on company valuation and financial considerations, since this is classically not a bookkeeping task.

4. **Value creation focus**. Currently the negative effects of knowledge management are little discussed, which are due to the overuse of knowledge, its unidentifiable nature or even the more difficult manageability of intangible assets. However these factors are real risks of strategic significance for the given company, therefore if these risks occur organizational value creation may turn into value destruction.

The above outlined main focal points constitute the target of research in this scientifc realm. Naturally, these present countless smaller and larger research questions. Among these I am endeavouring to examine the following research areas in my dissertation:

1. **Liabilities focus.** Over the course of the research I am dedicating significant attention to clarifying the right of ownership of intangible assets, as I believe nobody questions the logic of the balance sheet neither in the scientific, nor in the professional community, yet the origin of intangible assets is less clear than the origin of tangible assets.
2. **Process focus.** Methodologies have been conceived which provide an approximation of the existence of intangible factors of production, however analyses which demonstrate the intangible asset demand of each main business process, at the level of the process itself, have not yet been prepared to the best of my knowledge.
3. **Risk focus.** With the purpose of triggering a debate I would like to flag the dangers in the idea of *"the more knowledge, the better"*. In my research I am revealing for what purposes companies use intangible assets, as well as what kind of risks these assets mean for the owners.

My purpose is to achieve a scientifically sound contribution by examining these focus areas, which would enable a deeper understanding of the above mentioned topics and their embedding into the business mindset. In light of the above, this dissertation aims to explore the operating mechanisms of intangible factors of production in the banking processes. The research focuses on how intellectual capital management can be identified in the daily operation of the banking value chain.

The dissertation does not wish to upset the princples of the accounting system or to question its necessity. The purpose of the dissertation is to show a more nuanced, closer to reality picture of the operations of knowledge-based companies stepping beyond the common interpretation framework, while accepting and respecting the set of rules and methods of accounting. The goal is to interpret the operations and manageability of these organizations in real market circumstances, by placing intangible assets at the focus of the examination.

The paper continuously takes into consideration, that accounting constitutes the basis of corporate valuation, but the latter is not the purpose of the former. For this reason, it is

inevitable to provide an overview of the topic in relation to the subject of the dissertation. In the current paper we will be discussing the dilemma which has not yet been satisfactorily resolved in accounting systems, which is due to not keeping a registry of value-bearing intangible assets, resulting in an undemonstrated, although monetizable gap in the balance compared to the real market conditions. I would like to indicate, that the topic is not entirely new, as for several decades numerous authors have explored the imperfection of accounting data, such as Lee [1986], Schult [1983] or Paton – Sterling [in Barker, 2001] or the recently mentioned Juhász [2004] and Boda [2005], however the range of suggestions for resolving this problem is unlimited.

1.5. Classification of the topic by research field

Knowledge management is a marginal research field [Fehér, 2006], which has several points of connection with different disciplines, and in order to generate intellectual capital it employs information technology, psychology, sociology and leadership sciences. My doctoral dissertation discusses several branches of social sciences. Namely, economic sciences, business administration and organizational sciences (business sciences), as well as sociology. Within the domain of business and economics, the areas most related to the topic are strategic management, human resources management and financial management. As we are speaking of knowledge management, from the domain of engineering sciences, informatics and information technology are also relevant fields, however in this dissertation the technological aspect of the topic will not be at the forefront of discussion. In addition, I would like to highlight psychology and philosophy from among the humanities, upon which I must rely in the detailed analysis of some subject areas (see Figure 1).

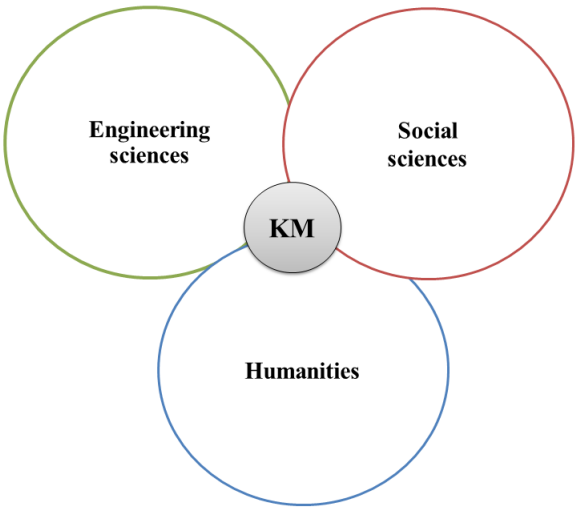


FIGURE 1: THE INTER-SCIENCE POSITION OF KNOWLEDGE MANAGEMENT

1.6. Research objectives

The purpose of the current research is to provide a deeper insight into the world of management challenges related to intangible factors of production and how to handle them. Furhermore, it is also a goal of the research to uncover the operating mechanisms of those intangible assets, which play a real role in value creation in banking.

Intangible assets are at the focal point of the research, including their origin, measurement, contribution to corporate value and ownership possibilities. I am concentrating on those assets, which cannot be detected as they lack physical substance, however they do possess real value from a business perspective. I would like to revise this aggregate, initially necessarily broad approach and draw it closer to daily business reality by my research exploring intangible valuable resources.

Objective 1: Identify to what **extent** main banking processes rely on intangible assets.

Objective 2: Identify what **composition** of intangible assets main banking processes rely on.

Objective 3: Determine whether the organization uses intangible assets for **research** or **operational** purposes.

Objective 4: Determine the **liability structure** of the invisible wealth, namely the right of ownership of intangible assets.

In order to accomplish the research objectives, over the course of the research I am examining each banking process from a process perspective with the help of the banking value chain.

In light of the above mentioned, the comprehensive research question is the following: How can the role of intangible assets in value creation be captured in the Hungarian banking practice?

1.7. Research methodology

In regard to the research methodology, my PhD dissertation is qualified as a primary, qualitative research, which can be divided into two sections, with one based on the other. The first section is a preparatory phase, whereby based on semi-structured interviews I constructed the structure and content of the research survey to be used during the later interview phase, that is the research model itself. In this phase of the research, I consulted will several senior bank managers, financial market consultants and financial professionals about the content of the research model, as well as about the objective function used in the research. This was followed by the second phase, where I collected the information by means of structured face-to-face or telephone interviews. Subsequently, I summarized the data and carried out the analysis needed to draw the conclusions.

It can be concluded that on the basis of the balance sheet total, the research explored the opinion of 77% of the Hungarian banking sector by means of the 50 structured interviews. This survey was preceded by a preparatory and model validation phase consisting of 12 semi-structured interviews, and a trial interview phase consisting of 5 interviews.

1.8. Expected research results

The expectation is that the final conclusions of the present research will be suitable to complement, or even further develop, the tools and techniques applied by managers in practice.

I am deducing the expected research results from the research objectives, as follows.

Objective 1: Identify, to what **extent** main banking processes rely on intangible assets.

Expected results:

- Identify the intangible part of the value creation process
- Process efficiency implications

Objective 2: Identify, what **composition** of intangible assets main banking processes rely on.

Expected results:

- Findings on corporate valuation (possibly stating the partial contribution of intangible assets to corporate value)

Objective 3: Determine whether the organization uses intangible assets for **research** or **operational** purposes.

Expected results:

- Examining the relationship between operational effectiveness and intangible assets
- Estimation of the organization's innovational activity

Objective 4: Determine the **liability structure** of the invisible wealth, namely the ownership of intangible assets.

Expected results:

- Findings on accounting and finance (balance sheet structure with intangible items)
- Identification and mitigation of HR risks arising in the organization
- Optimization of capital allocation processes

1.9. Structure of the dissertation

The scientific part of the dissertation can be divided into three units. These units are structured based on one another ensuring, that the scientific findings that are stated as a results of the research are placed in the appropriate context, as well as making them easy to interpret for the reader.

Literature review: In this chapter those results and models found in scientific literature are introduced, which are relevant to the topic of the paper from the perspective of knowledge management, intellectual capital management and banking value creation. The theoretical foundation, which served as the basis for the following methodology and empirical sections, is hereby presented. As the end of the theoretical section, the terminologies used in the following part of the dissertation is determined, which is necessary, as several such definitions are introduced in the theoretical framework, which could not be suitably used to examine the research objectives with their original content.

Methodology: The complete research framework is presented, starting with the research model, followed by the research objectives, up until the set of applied research methods.

Empirical section: Lastly, the analysis and evaluation of the research results is described, as well as their scientific interpretation.

2. LITERATURE REVIEW

In every period of history, valuable experiences and knowledge was generated, which had to be managed, structured in some way, this could be considered as an initial knowledge management method [Gaál et al., 2009; Obermayer-Kovács-Csepregi, 2013]. In this section, I am highlighting those concepts of knowledge management, which are necessary for establishing the foundations of the research and interpreting its results.

2.1. Theoretical background of knowledge management

In this chapter, I present the theoretical concepts which are most important from the perspective of my research topic, the models related to knowledge management, as well as the relevant management questions.

2.1.1. The fundamentals of knowledge management

Knowledge is essential for a firm to be able to develop a competitive advantage and create value [Kirkman, 2011], as the management of tacit and explicit knowlege generates significant return for the organization. It is important to discuss tacit and explicit knowledge separately. Tacit knowledge is mostly in people's minds, it is difficult to share and copy [Szulanski, 1996]. Tacit knowledge is personal and subjective, in most cases it is developed through practical experience. By explicit (articulate) knowledge we refer to a set of knowledge which is easier to formalize, code and verbalize, which usually changes owners through communication [Grant, 1996]. The distinction between tacit and explicit knowledge was first stated by Polányi [1966], who compared them to an iceberg, where explicit knowledge is like the top, visible part, while tacit knowledge is represented by the invisible part, below the water. This simile reveals, that people actually know much more, than they are able to express.

According to Easterby-Smith and Prieto [2008], on the one hand, knowledge can be considered as the possession of an individual, a group or an organization (knowledge as possession), on the other hand, it can be interpreted as the activity of individuals, groups or organizations (knowledge as practice).

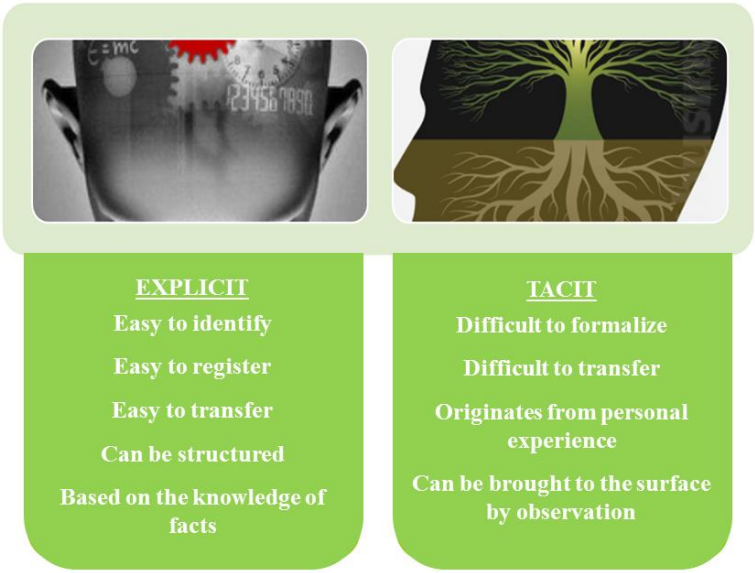


FIGURE 2 : THE TWO-DIMENSIONAL DIVISION OF KNOWLEDGE

SOURCE: BASED ON POLÁNYI, 1966

Therefore we can examine knowledge at two levels, as people possess explicit knowledge, which can be captured and is easy to transmit, therefore it does not represent such a challenge from the perspective of manageability. The other element, tacit knowledge is linked to an individual and embodies his ability to act based on previous experience, which is thus difficult or impossible to formalize, consequently, many organizations do not dedicate enough attention to unlocking the employees' tacit knowledge (see Figure 2).

Regarding their value in use, today's knowledge management systems are mainly suitable for managing explicit knowledge elements, since it is the characteristic feature of tacit knowledge elements, that they cannot be formalized. As a consequence, it is difficult to draw conclusions about the value in use of the different kinds of knowledge, as we feel that tacit knowledge is more exciting, but it is not necessarily more valuable, considering that for example we respect great scientist for being able to transform knowledge into an explicit form, thus creating great value for all. In this context the critical question is whether the knowledge can be formalized or not. Therefore knowledge is not only tacit, because it is difficult to formalize, but also because it cannot be formalized.

The value in use of knowledge is however closely related to competitiveness. Nonetheless, the key to competitive advantage is mostly not the knowledge which is easily accessible and simple to copy, it is rather tacit knowledge, which differentiates from the competitors

and could improve a company's competitive position. Naturally, certain elements of explicit knowledge increase the given company's competitiveness and contributes to value creation, therefore explicit knowledge is also a valuable resource for the business. An example could be the regulated technological processes applied in mass production. Consequently, explicit knowledge also has an impact on corporate competitiveness, but affects it differently, than the tacit knowledge possessed by individuals.

The fact that knowledge originates from people indicates that, by nature, knowledge appears as a continuously changing, however inexhaustible resource in a business organization. As a consequence, if knowledge is such a dynamic and developing organizational resource, then particular attention needs to be dedicated to its management. The branch of leadership studies, which explores organizational questions related to knowledge is named knowledge management. Several definitions explaining this term can be found in scientific literature:

- According to Wiig [1993] knowledge management is a system, which summarizes the activities, which are necessary for the management and application of the organization's wealth of knowledge, as well as for ensuring its conditions.
- Sveiby [1997] claims that knowledge management is the science of value creation from the organization's intangible wealth.
- In Allee's [1997] definition, the purpose of knowledge management is the creation of appropriate conditions at the company, such as technology and internal organizational structure, which guarantee the rethinking of existing knowledge and communication for the employees.
- According to Seeman et al. [1999] knowledge management is an ensemble of fine-tuned processes, supporting structures and tools, which serve the purpose of increasing, renewing, sharing and developing the use of knowledge in an organization.
- Koltai [2000, p. 210.] states that *"content-wise knowledge management is a double set of standards: firstly it means the process of quality renewal of intellectual capital, secondly the practice of using intellectual capital in the most efficiently manner"*.
- According to Davenport - Prusak [2001, p. 28.] *"knowledge management is a business model, which uses knowledge, as the organization's wealth to achieve*

competitive advantage. It is a management tool, which is meant to support the identification, evaluation, implementation, creation, enhancement, protection, sharing and application of the organization's intellectual capital in an integrated approach".

- Fehér [2006, p. 4.] says that *"knowledge management can be interpreted as such a management approach, whose goal is to manage the different forms of knowledge with the purpose of achieving competitive advantage and increased performance".*

From the definitions we can deduce, that the primary goal of knowledge management is to enhance financial performance, by converting individual and organizational knowledge into marketable products and services. Knowledge management is founded on the cyclical process of exploration [identification], maintenance, development and sharing.

Over the course of the literature research I have encountered several definitions of knowledge management, but none of them fully expressed the complete interpretation framework for me. For this reason, I have developed a unique definition, which is closer to my own interpretation:

Knowledge management is a business philosophy supported by technology, which transforms the internal and external informations surrounding the organization into applicable knowledge, with the purpose of enabling optimal decision-making and innovative thinking. The driver of knowledge management is the knowledge that can be activated, which generates such synergies through directed use, that significantly enhance the company's ability to generate added value.

2.1.1.1. Information or knowledge?

We are living in an age of information overload, when information spaces are flooded by often contradicting pieces of information. Corporate information management serves the purpose of structuring these informations and increasing their usability in the firm. These systems manage basic elementary data. Information however is not identical to knowledge, which is in fact a subsequent level, which supposes that the individual is able to attribute value in use to the information. This process is however limited, since the increase in quantity of knowledge often leads to coordinational anomalies, therefore is not sufficient, to speak of knowledge increment or knowledge transfer. The process also needs to be managed. Fortunately, organizations now possess advanced infocommunication tools to

manage their wealth in knowledge. Internal databases and knowledge management platforms ensure the access to the knowledge of the organization for those who would like to make a use of it. At this point it is important to note, that infocommuncation tools cannot bring tacit knowledge to the surface. Figure 3 below roughly demonstrates, how the division of tasks between information and knowledge management can be delimited.

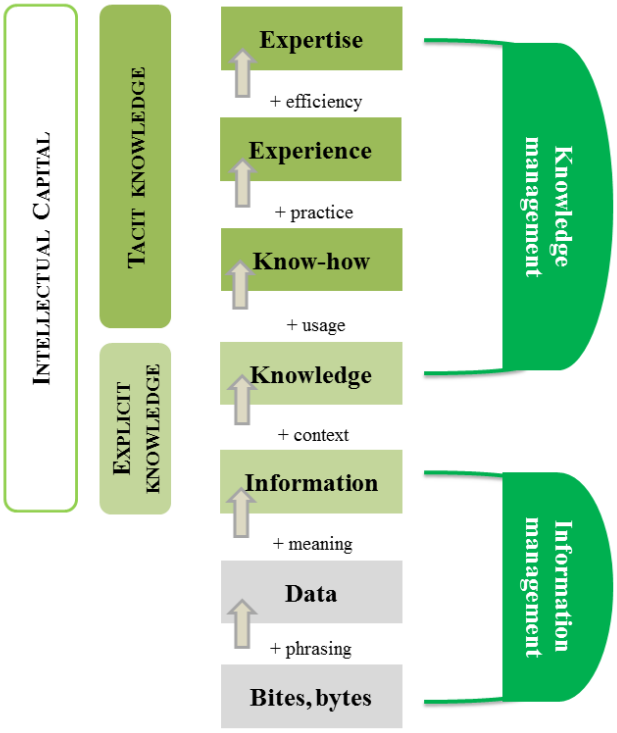


FIGURE 3 : THE BASIC INTERDEPENDENCIES OF KNOWLEDGE BUILDING

SOURCE: LUDO PYIS, 2005

Elementary data and informations belong to the realm of information management. In turn, profiting from the value in use of information and enhancing the capacity to act belong to the area of knowledge management. Knowledge management methods, systems are essentially favourably considered platforms in the corporate sphere, there are however situations, which break the momentum of knowledge sharing. There are individuals who, in accordance with their – often righteous – self-interest and due to their specific goals, to be later analyzed in the dissertation, do not cooperate with the knowledge sharing system, claiming that this is their single, unique capability which can be converted to economic goods, which represents considerable value. This is the source of a serious dilemma for senior leaders, as the system is much more efficient, if experienced employees share their

knowledge with younger, new joiners, who can thus shorten work processes, as several years of professional experience and its results are immediately accessible, and they do not need to generate it by primary, first-hand means. For economically rational reasons these individuals are not eager to share these informations, experiences, practices, as for many of them this is the results of a lifetime's work. The duality of openness and closeness leads to the dilemma on how it is worthwhile to operate the knowledge management system and what organizational culture this requires. The possibilities of the system and their utility need to be shown to the members of the organization, in addition they need to be motivated to consciously use knowledge platforms, since the basic conditions of knowledge cumulation are mutual trust between colleagues, cooperation, openness, as well as the compatibility of organizational and individual goals.

It is important to mention, why knowledge management is important and what benefits it can bring to the firm. The factors which are most common and are most relevant for organizations according to the survey conducted by KPMG [1998] are the following:

- better decision-making (86%)
- reduction in costs (70%)
- quicker reaction to problems (67%)
- increase in productivity (67%)
- spread of best market practices (60%)
- better business opportunities (58%)
- increase in profit (53%)

I would like to expand this list with a few softer factors, which step beyond the basic concept of cost-benefit, and indicate those benefits of knowledge management, which are essential for the organization and ultimately strongly impact the cost and benefit structure of the firm, but due to their nature are more elusive:

- organizational renewal,
- stronger organizational culture,
- in the case of turnover the knowledge of key people is preserved,
- organizational flexibility,
- fostering organic growth,
- faster adaptation than industry average.

Further benefits include, that by implementing a knowledge management system the time required to gain information is reduced, the risk of only a few key people possessing the knowledge critical to competitive advantage is mitigated, while it is also possible to prevent previously accumulated knowledge from going unrecognized or being forgotten.

Overall, it can be concluded that knowledge management has received some "new blood", by which I mean that the transfer and development of knowledge has always been a fundamental goal of human existence. One novelty is information technology, which facilitates the learning process and offers IT solutions supporting knowledge transfers, which no one could have dreamt of before. Today's firms are implementing a myriad of possibilities with respect to the extent and combination of knowledge sharing, with the assistance of IT. Based on this, knowledge management could even be a management fashion [Scarbrough - Swan, 2001], as the management of knowledge is worth nothing without informatics.

Indeed, knowledge management is not an "omnipotent system", but it can only superficially be called a useless management fashion, since those, who explore the topic in depth, can easily acknowledge wherein lies the significance of KM in a world, where in a global knowledge society the globe is a network of knowledge economies, founded on knowledge firms, which in turn employ knowledge workers.

2.1.1.2. The concept of the knowledge economy

In 1962 Machlup was the first to raise the term "knowledge economy", which was followed by Peter Drucker who in 1969 came up with the notion of "knowledge workers". The fundamental concept of both approaches was that the primary factor of production of value added work is not tangible capital, nor natural resources, but instead knowledge. The future vision of the raw material saving economies is completely in synch with the theory of economies built on knowledge capital [Schwartz, 2004]. Drucker [1969] goes on to introduce the notion of "knowledge society", which further accentuates the central role of knowledge, but no longer focuses solely on its function in economic value creation. Knowledge is the basis of economic and social action.

We now know already, that knowledge workers are at work in a knowledge economy, there is however still a missing link, which would connect the economy with the work carried out, which is the firm itself. Knowledge companies have not yet been mentioned,

for this reason I am defining the term according to Nonaka [1991]: in an environment, characterized by constant changes, such as technological development and an increasing number of competitors, the successful companies will be those, which consistently create knowledge, impregnate the organization with it and implement the knowledge as soon as possible to create new products and services. Organizations, which mainly work with knowledge-based factors of production are to be called knowledge-based companies. Knowledge firms differ from traditional companies in that the majority of the market value of corporate assets are represented by intangible assets, therefore it is clearly a characteristic of knowledge companies, that the role of tangible capital is taken over by a difficult to measure and invisible asset, namely knowledge capital.

2.1.1.3. Human knowledge, as the source of competitive advantage

Human knowledge is can be found at several levels of our lives. It is present in every person at the individual level, in communities at the organizational level, and it is present at the national level, as the collective knowledge of the individuals constituting a nation. A common feature is that the notion of competition can be interpreted at every level, as there is competition between people, competition between organization, just as the competition betweeen national economies. Where competition evolves, it is inevitable that the parties will begin to seek the source of competitive advantage, since these are the factors, by implementing which, it is possible to gain competitive advantage. Below I will be examining the relationship between human knowledge and competition at the aforementioned three levels.

1. Micro level – the individual knowledge

Individual human knowledge has durable and temporal elements. The durable part is the knowledge that is secured and left behind, in other words transmitted (books, teachings, patents), which endure after a person's life ends. In comparison, the temporal part corresponds to the wealth of valuable knowledge, which cannot be used without the individual's active contribution or cooperation. Competition forces the individual to maintain both types of knowledge, since according to Bőgel [1998] those have a chance in the competition who learn faster than the others, therefore knowledge and learning are becoming the most important competition factors.

From the perspective of the dissertation topic, it is worthwhile to consider knowledge as one part of a firm's human capital. In this manner, it may be easier to phrase what human knowledge means for the company, as it can be linked to its performance. Laáb [1999, p. 3] defines that "human capital is in part an individual's accumulated knowledge and experience, in part congenital and developed capabilities, and in part the willingness to act". Therefore, for the individual's performance to be optimal for the firm, s/he needs competencies, practical experiences and a certain level of motivation. Extending this reasoning, as based on the listed characteristics each individual is different, with time these differences will turn out to be advantages for some, and disadvantages for others. In practice, this is a function of an individual's ability to promote one's interest and performance. This process of differentiation is the competition itself. The competition selects inviduals based on performance. According to Bőgel [1999] individually accumulated knowledge, ability and experience enable the individual to place his or herself into a monopolistic situation compared to other competitors. As a consequence, the invidual's goal is continuous self-development and learning in order to not fall behind in this competition.

2. Mezzo level – the organizational knowledge

This level is in fact an aggregate, since an organization gather individuals in order to reach a certain goal. Individuals do not only contribute to achieving this goal with their individual capabilities, but along some sort of synergy individual knowledges are collected, thus creating a higher level of organizational knowledge. This organizational knowledge constitutes a separate, active unit, which is nowadays usually named a learning organization. According to Fiol and Lyles [1985] organizational learning is no other, than a process, where the organization's ability to act is developed through the growing knowledge base and better understanding. These organizations are the building blocks of a knowledge economy. In this case the question is whether knowledge is a competition factor or not? The answer is relatively trivial, as on the markets the purpose of the competition is to attain consumers' limited financial resources, companies acting on the market are obliged to compete with one another for the limited and solvent demand of consumers. In this competition, the firm clearly relies on the human resource base and the organizational knowledge built from it. As a consequence, in practice the fact is that behind the legal entities of companies on the market, organizatinal knowledge bases are

competing with one another. Just like in the case of individuals, continuous self-development and learning can support organizations in being able to tackle the obstacles, the challenges they encounter in the competition. The primary purpose of individual and organizational learning is to ultimately enhance people's and then in turn organization's ability to act. Over the course of this process, the organization's task is to promote the conscious management of knowledge, and to embed the part of it which can be utilized by the company into daily business operations.

The notion of intangible investment gains meaning at this point. Intangible investments are all the expenditures of a firm, which are made to acquire, create and develop intangible assets, which are expected to increase the profit of the company in the future [Corrado et al, 2005; Webster–Jensen, 2006]. According to the advocates of human capital management, people make such investments in their own production potential through education and training. These investments increase their production capacity, productivity and thus the market value of their work [Laáb, 1999]. This same logic can be applied to organizational and national level education, its effect on productivity and finally on increase in value.

3. Macro level – the national knowledge

The highest level, where knowledge can be interpreted beyond the individual and the organization, is the nation itself. The national level encompasses the national mass of knowledge, which drives the national economy's performance. National knowledge is the aggregate of the knowledge bases of individuals and companies which constitute the nation. Naturally, this mass of knowledge and the utilisation of knowledge is distinct by nation, in this way differences may form between countries with regard to their national performance. Competition can therefore also be identified in a nation's ambition to excel, just like at the individual and organizational levels.

There is no better descriptor of knowledge at the national level than the quality of education, as building and maintaining the national knowledge base is fundamentally the task of the education system[3]. According to Eurostat [2011] statistics the public funds

[3] There is however a conceptual problem, which in some sense distorts the explanatory ability of numbers. The problem is that national knowledge means the acccumulated knowledge stock. On the contrary, the education system emits the flow. Therefore it only indirectly characterizes the stock. As the stock is difficult to measure, we can deduce information

spent on education as a proportion of the GDP[4] was at an average of 5.3% in the European Union in 2011. This rate was at 4.3% in Hungary, compared to the proportional educational spending of some countries such as Denmark (8.8%), Sweden and Finland (6.8%), Belgium (6.6%), the United Kingdom (6%), the Netherlands (5.9%) and Austria (5.8%).

Compared to OECD countries the lag is also serious, since the educational spendings of OECD countries as a proportion of the GDP stood at 6.1% in 2011, with Argentina, Denmark, Iceland, Israel, South Korea, New Zealand and Norway topping the list with above 7% expenditure as a percentage of GPD [OECD, 2011]. KSH [2013] reports also confirm a continuous decrease in investments in human capital and knowledge capital, considering that this indicator was 5.69% in 2003, which has unfortunately dropped to 3.93% by 2012, resulting in a significant cut in resources in primary, secondary and higher education.

If we compare these educational statistics to the IMD [2014] competitiveness ranking[5], the placement of the above countries are as follows: Sweden 5th, Denmark 9 th, the Netherlands 14 th, the United Kingdom 16 th, Finland 18 th, Austria 22 nd and Belgium 26 th. These are the most competitive countries in the world. Meanwhile Hungary is placed 48th th in this ranking, falling behind countries such as Romania, Slovakia, Poland and the Czech Republic. According to the report the three most competitive countries in the world are the United States, Switzerland and Singapore. According to World Economic Forum [WEF, 2014] research[6] the situation is even less favourable, as Hungary has fallen to the 63 rd

about it from the quality of the flow, however this may often lead to errror. Moreover, stock is qualified by whether it guarantees the functioning of the national knowledge capital (see production function). For more information see the Stiglitz, Sen, Fitoussi report. http://www.insee.fr/fr/publications-et-services/dossiers_web/stiglitz/doc-commission/RAPPORT_anglais.pdf

[4] The education spending as a percentage of the GDP indicates the total educational spending in government expenditure as a percentage of the GDP. This in an input type of indicator, which measures the change in the investments made in human capital in a time series. As all indicators constructed from statistics, this also has faults, because the equation is sensitive to the change in the GDP, therefore in the case of a possible decline in GDP with unchanged educational expenditure the indicator will be distored upwards, even though the nominal value of the real spending on education did not increase. The opposite may also occur, when alongside the same educational spending GDP increases, then this indicator will be distorted downwards and will indicate more a lower level of education spending that the reality.

[5] The IMD competitiveness index is edited by the IMD in Switzerland, one of the world's leading business schools, in cooperation with the independent research institute ICEG European Center and other national partners. In the 2014 edition, the competitiveness ranking of 60 countres is listed.

[6] The WEF Global Competitiveness Index is calculated from more than 100 components, which examine a total of 12 pillars which are of key importance for competitiveness.

place in the world competitiveness ranking. Intangible investments have both micro (corporate) and macro (national economy) level impacts, for this reason research and development activities need to be supported at the state level as well, by tax reduction or accessible state loans, because innovative projects boost economic growth [Borisova – Brown, 2013].

In conclusion it is an inevitable fact, that there exists a correlation of some magnitude between a country's competitiveness and the state funding of education. For this reason, the support, development and funding of the education system is indispensable at the macro level, since this system generates the knowledge base, which in turn fundamentally defines the country's competitiveness. Consequently, it is the national economy's goal to strengthen education, essentially managing knowledge at the national level.

2.1.1.4. The evolutional milestones of knowledge management

Knowledge management as we know it today was formed through progress made over several periods. I am presenting a short summary of this historical evolution based on the research of Anklam [2005], Gurteen [2008], Noszkay [2009], Pörzse et al. [2012 a] as well as [Fejes, 2015 b].

KM 1.0 – first generation

Initially knowledge management was considered as an informatics solution, characterized by a focus on technology. Knowledge was primarily handled as an information resource. The purpose of the knowledge management systems of this period was to provide quality content. The platforms of knowledge storage were databases, electronic documents, data warehoues and online portals (see Figure 4).

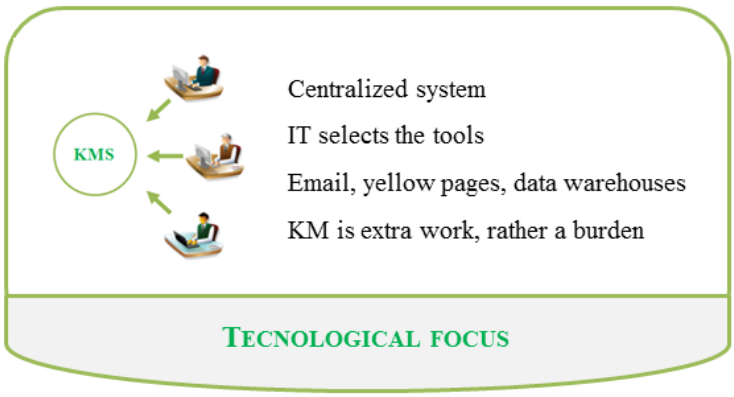


FIGURE 4: THE FOCUS OF THE FIRST KM GENERATION

KM 2.0 – second generation

The lever of the generation change was the practical distinction between tacit and explicit knowledge, whic brought about the increased relevance of human resources. Davenport and Prusak [1999] stated that making collective organizational knowledge accessible, handling, developing and applying it need to figure among the company's strategic objectives. The development of IT applications made it possible to satisfy this strategic need, therefore companies have made the transition from data recording to managing the creation of new knowledge. The advances in methodology clearly aimed to gain a deeper understanding of tacit knowledge and its value creation function. Interpreting the mechanism of knowledge generation and identifying "best practices" came to the fore. In this period the effects of motivation, leadership style and organizational culture on the effectiveness and efficiency of the knowledge management system were being explored (see Figure 5).

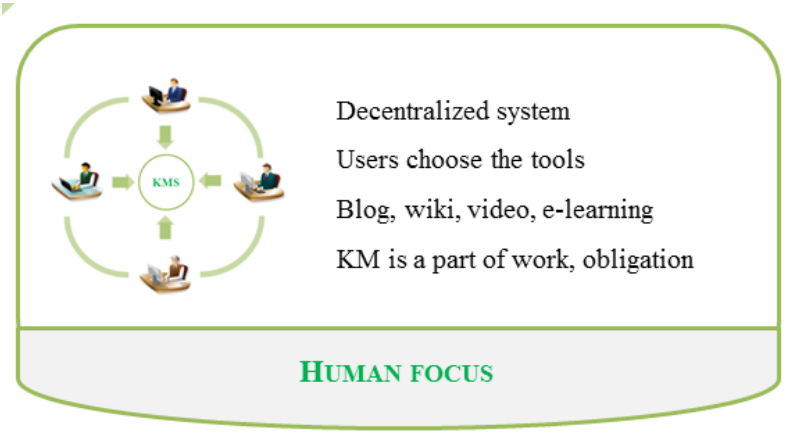


FIGURE 5 : THE FOCUS OF THE SECOND KM GENERATION

KM 3.0 – third generation

The third generation was brought to life by the rise in prominence of networking and the network economy, when it became obvious that social networks also play an important role within firms. The other driving force of the paradigm change was the innovational pressure, which forced companies to develop ever newer knowledge management solutions and to adapt to the continuously changing environment. Simultaneously, the management dilemmas related to intellectual capital attracted the attention of the business and scientific communities, since accounting distortions and measurement anomalies still limited the effective management of knowledge and the design of the optimal knowledge organization (see Figure 6).

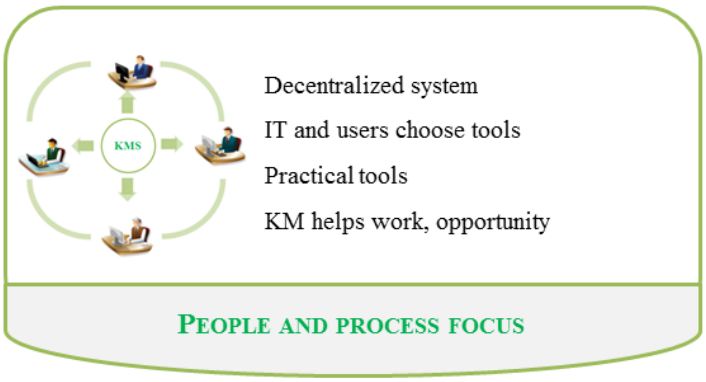


FIGURE 6: THE FOCUS OF THE THIRD KM GENERATION

According to certain opinions, the fourth generation of knowledge management is emerging, which interprets knowledge as a distinct form of capital, and aims to establish measurement and management techniques going beyond the traditional accounting representation. In this new direction knowledge also appears as an investment and valuation problem, considering that it is difficult to interpret the return on the money invested in a person from a business perspective, since if this individual leaves the company, the previously calculated financial returns model is upset. The first international pioneer of this approach was Karl Eric Sveiby [1997], based on whose works György Boda introduced the practical considerations of intellectual capital management in Hungarian management literature [Boda-Szlávik, 2007; Boda, 2008].

In conclusion, it can be stated, that the spectacular proliferation and dynamic development of knowledge management is driven by the expansion of the available set of IT tools [Wiig, 1997], as well as by the need to gain deeper understanding of intangible assets. As there are plenty of questions waiting to answered in both areas, the further development of the knowledge management approach is inevitable.

2.1.2. Knowledge management models

2.1.2.1. The creation of knowledge

Ikujiro Nonaka and Hirotaka Takeuchi [1995] introduced a model (see Figure 7), which helps to understand the dynamic nature of knowledge creation. Nonaka and Konno [1998] further developed this model into a spiral model, which became known as SECI. The SECI model comprises four conversion steps, which all create new knowledge at the level of individuals, groups and the organization. This model presents the possibilities for interaction between tacit and explicit knowledge and the cyclical process of knowledge creation.

The authors introduced a new kind of management thinking into the model, whereby in each phase knowledge conversion is aided by a different "ba". According to the definition of Nonaka and Konno, "ba" is the scene of forming connections, which may be real (e.g. an office), virtual (e.g. electronic message), mental (e.g. shared ideas) or a combination of these. The "ba" is the platform for developing individual and collective knowledge.

1. **socialization** >>> (*originating ba*) >>> from tacit to tacit

In this quadrant knowledge is created by an individual sharing his/her feelings, emotions, experiences and mental being through physical contacts.

2. **externalization** >>> (*interacting ba*) >>> from tacit to explicit

   In this quadrant the creation of knowledge happens by means of dialogues and conversations in appropriately composed groups.

3. **combination >>>** (*cyber ba*) >>> from explicit to explicit

   In this quadrant knowledge creation is based on interactions in the virtual world and on information technology.

4. **internalization** >>> (*exercising ba*) >>> from explicit to tacit

   In this quadrant knowledge is created through active participation and by embedding certain habits, practices until they become tacit knowledge.

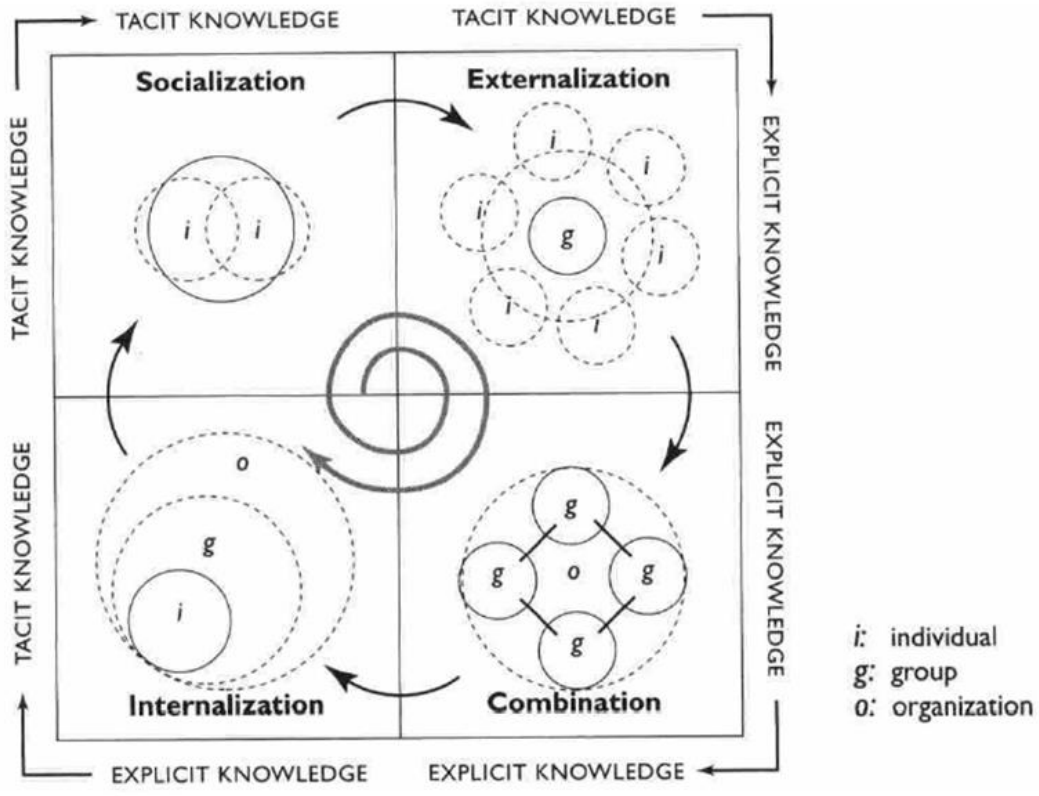


FIGURE 7 : KNOWLEDGE SPIRAL

SOURCE: NONAKA - KONNO, 1998

For the long term management of knowledge, it is essential to make knowledge management an integral part of work processes, as well as to motivate the workforce to share knowledge [Obermayer-Kovács-Csepregi, 2013].

2.1.2.2. The levels of knowledge

From the perspective of utilization, Quinn, Anderson and Finkelstein [1996] divided knowledge into four distinct levels.

1. Cognitive knowledge - know-what: possessing information
2. Advanced skills - know how: knowledge that can be applied in practice
3. Systems understanding - know-why: comprises the underlying factors and causes
4. Self-motivated creativity - care-why: continuous use, aiming to adapt and change

From a business perspective, it is much clearer to group knowledge according to how it relates to competitive advantage, since truly valuable knowledge yields competitive advantage on the market. According to Zack [1999] these categories are the following:

1. Core knowledge
2. Advanced knowledge
3. Innovative knowledge

In this division, core knowledge acts as a type of barrier to entry in the given industry, which does not ensure long-term success. Advanced knowledge guarantees competitiveness for the firm, but it does not indicate any surplus or advantage compared to the competitors. The key to competitive advantage is innovative knowledge, but this type of knowledge is only able to maintain the leading position for a finite amount of time, because as the use of the innovative knowledge spreads, it is likely that it will eventually be degraded to core knowledge and thus loses the associated competitive advantage [Hasznics - Nuridsány, 2004]. Since knowledge is not a static resource, a knowledge which is now labeled as innovative, will as time progresses become advanced and then core knowledge [Zack,1999]. This cycle ensures the dynamism of knowledge economies and their role in stimulating the economy.

In conclusion, the most pertinent notion of knowledge was however phrased by Mihály Polányi [1966], who claimed that there is no theoretical or practical knowledge, instead

only usable and unusable knowledge. Consequently, if knowledge is usable, the theoretical and the practical part form one unit [Boda, 2005].

2.1.3. The leadership questions of knowledge management

In this section, I am presenting the main topics related to knowledge management, which are particularly important from a management perspective. Principally, those topics which have an effect on the final conclusions and results of the dissertation.

2.1.3.1. The strategic aspect of knowledge management

The productivity of every person depends on knowledge [Grant, 2008] and this productivity does not function automatically, it needs to be managed, and if something needs to be managed, it is wise to develop a strategy for it. The detailed examination of the strategic questions in knowledge management is attributed to Hansen, Nohria and Tierney [1999], who conducted a survey among consulting firms, in order to explore what strategies companies apply in managing knowledge. As the result of the research two main concepts were identified: a people focused strategy (personalization) and an IT focused strategy (codification) (see Table 1).

PERSONALIZATION STRATEGY		CODIFICATION STRATEGY
Creative, precise expertise, demonstration of individual experiences be experts	**Competitive strategy**	Reuse of codified knwoledge, supported by reliable, quality information systems
Experts	**Economic model**	Reusability
Face-to-face connection	**KM strategy**	Person-document connection
Modest investments Personal information exchange Helps ito share knowledge	**Role of IT**	Considerabl investments Easy accessibility Helps to reuse knowledge
Experienced experts Personalized education Reward for personal knowledge transfer	**Human resources**	Fresh graduates Reward for using knowledge bases
Unique, customized	**Service features**	Standard, standardized

Innovation	**KM objective**	Cost saving
New knowledge is generated through conversations	**Means of knowledge generation**	No new knowledge is generated, rather the application of existing knowledge happens
People oriented	**Orientation**	Technology oriented
Strategic consulting firms	**Example**	Auditing firms

TABLE 1: KM STRATEGIES

SOURCE: HANSEN ET AL, 1999

The codification strategy presumes a well constructed IT system, which is able to ensure recording, collection, storage and extraction of knowledge. The purpose of this approach is to ensure the quick and complete availability of informations. The cost savings are due to a reduction in time spent searching and to using past experiences immediately. On the contrary, the personalization strategy encourages corporate innovation and thus, enhanced competitiveness by sharing individual knowledge. The space for transmitting knowledge is not a technological platform. A myriad of personal interactions guarantee, that existing knowledge flows to where knowledge is missing and fills informational voids in the organization. The role of IT is limited to identifying information, the knowledge conversion of information is not executed through technology, but instead through human interactions. The advantage of the people focused strategy lies in being able to enhance an organization's ability and capability to innovate. The most prominent difference between the two strategies is that the dissemination of knowledge is done in verbal form in the case of personalization (dependently of a person), while it happens in electronic form in the case of codification (independently of a person). In order to decide which strategic approach is worth using in certain cases, the following rule serves as guidance: if tasks are easy to standardize and are routine, then solutions supported by technology are much more precise and suitable, however if the tasks are not of this kind, then the people focused solution is more effective [Easterby-Smith - Prieto, 2008].

A few years later an English research group [Truch - Bridger, 2002] examined the above mentioned two KM strategies and made the observation, that not only these two approaches exist, but that there is a so-called mixed strategy, which is built as a combination of personalization and codification. Later on, a European research [Fehér,

2008] reinforced this opinion, according to which the knowledge management strategy of knowledge-intensive companies is heading towards the mixed strategy approach, which may be explained by the fact that organizations are aiming to avoid the shortcoming of the distincts strategies.

I would like to indicate further dimensions of knowledge management according to the works of Zack [1999] and Fehér [2007, 2008]. This is in fact the differentiation between aggressive and conservative strategies. The first is the aggressive scenario, where the organization is experiencing a lack of internal knowledge, thus not possessing the adequate knowledge needed to run business operations successfully, therefore it has to take action to expand the organizational knowledge base, otherwise it will fall behind in the competition on the market. In the consersative scneario, the organization's knowledge base is adequate to maintain its competitive position in the industry, but the organization senses that it could derive further advantages from using knowledge more intensively than before. An example could be using another company's knowledge to revise and perfect its own business activity. Those who expand – following the aggressive strategy – create knowledge, while those who exploit – following the conservative strategy – get ahead by using knowledge. Innovative firms aiming to expand knowledge from every source apply the aggressive knowledge strategy, while companies interested in exploiting existing knowledge to an ever higher degree can be characterized by the conservative strategy. However these two activities are not exclusive, moreover the company that acts in the best possible way is the one that is able to find the optimal balance between exploitation and expansion within its own knowledge management strategy. The choice between the two strategies is often not the result of an internal organizational motivation, but that of a pressure coming from the market, which in turn is a function of the competitors' level of knowledge, considering that if the company senses that it is falling behind compared to the industry average, that it must shift towards the aggressive KM strategy, in order to catch up and not lose its market position.

All in all, such a company is able to construct a successful knowledge strategy, which takes into consideration the competitive strategy, the business model, the internal organizational characteristics and the conditions of the external environment, while handling the knowledge management activity in such a way, as to align it with the organizational strategy and the fundamental aspiration of dual value creation.

2.1.3.2. The systematic joining of strategy and structure

The scientific literature treats several questions, such as the goals of a knowledge-based organization, knowledge management strategies, the process of knowledge conversion, the elements and process models of the knowledge management system in several works, however I found no mention of the context of interdependencies in which these relate to one another, save for in the paper of Fehér [2006]. Fehér presents the concepts need to manage knowledge with a remarkably systematic vision. In this dissertation, I am aiming to update this model dated from 2006 based on the results of the most recent knowledge management approaches. In light of this, I have re-tailored the model, which synthesizes the cycle of knowledge management objectives, strategies and structural elements (see Figure 8). The model dedicates accentuated attention to profit generation, indicating that ultimately the main benefit of all knowledge management considerations is profit. The primary goal of any business management system – in the present case the knowledge management system – is to enhance financial perfomance and increase return on investment. When examining knowledge management systems or are preparing a strategy, many have a tendency to forget that knowledge needs to be considered as a resource, and the money invested in knowledge is a capital investment, therefore our expectations should be expressed as return on investment. Numerous purposes of knowledge management, such as creating a pleasant organizational culture, granting greater independence to employees, rewarding quality knowledge sharing, encouraging innovative thinking, supporting knowledge transfer with exciting IT solutions, building organizational memory and a learning organization all lay the basis for increasing the monetary assets of the company and support reaching the profit expectations. Phrasing it differently, it can be stated that knowledge management serves the purpose of regrouping personal knowledge, which is more risky for the company, to a less risky type of asset, in practice making individual competencies a part of corporate capital.

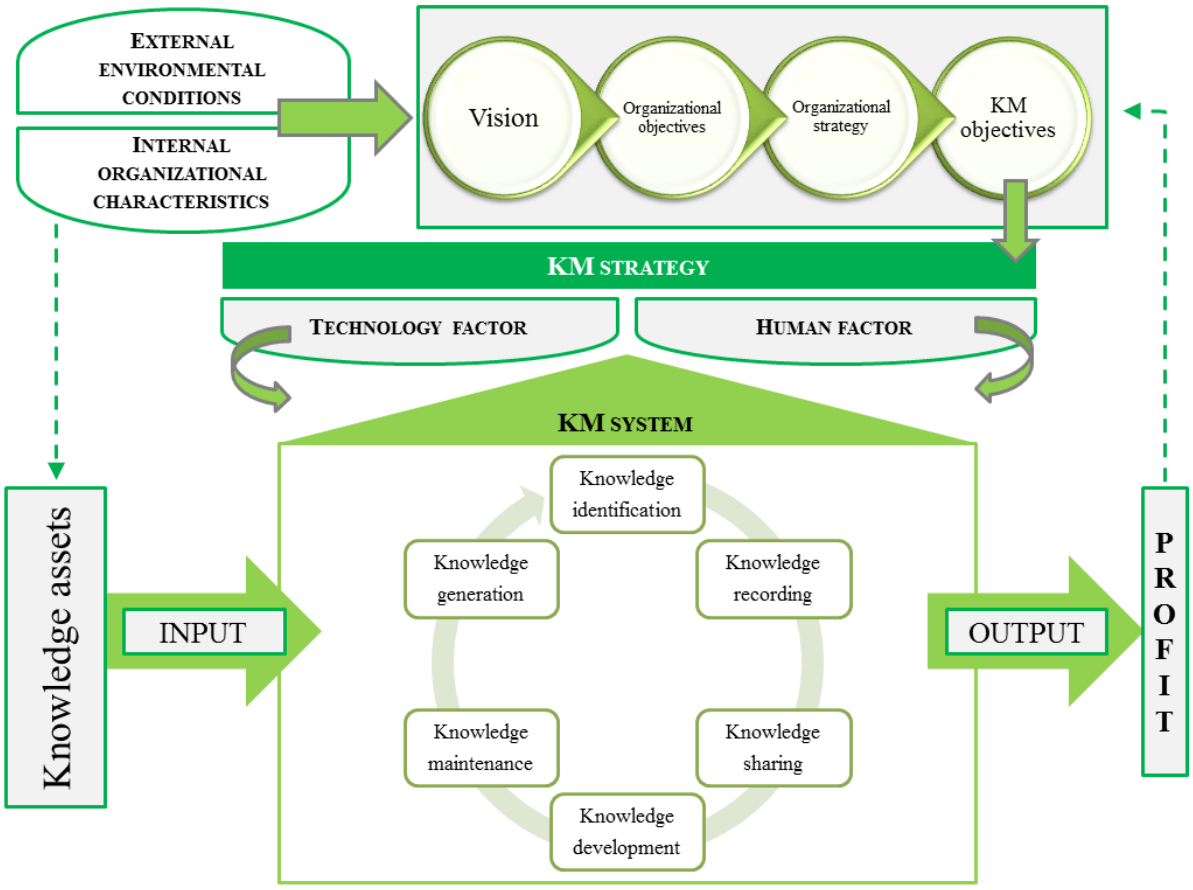


FIGURE 8: THE HOLISTIC APPROACH OF THE STRATEGIC ASPECT OF KNOWLEDGE MANAGEMENT

Knowledge management needs to extend to the strategic and tactical level [Vera - Crossan, 2003], for this reason the model takes into consideration both dimensions. The above model was built to demonstrate this, which presents the context of interdependencies of knowledge management with a holistic approach, in a type of value chain perspective.

The KM model is composed of the following elements:

External environmental conditions: The daily operations of the firm cannot be considered independently from the economic – political – environmental – social – legal circumstances in which the company operates.

Internal organizational characteristics: With a similar logic, the internal organizational characteristics that the company has need to be taken into account, as this provides a framework and focus for strategic thinking.

Vision: It defines the goals that lead towards the vision for the future, such as upcoming innovational activity, strengthening the market position, the expansion of the scope of activities. In additon, a well-defined, focused vision can be interpreted as a "calling" with regard to the future for the company's internal stakeholders: how they would like to see their company some years from now. The vision serves as a pillar for strategy makers, which clearly sets the focal points of the company, making it possible to avoid a series of unnecessary actions and reactions.

Organizational objectives: Which direction does the company want to take? At this point, the firm clearly knows every element of opportunities and limiting factors, may they be external or internal forces, which affect and shape the organization. Defining the objectives concentrates on what the company wants to achieve through its operations. The strategic objectives to be reached and the associated target values are determined in this phase.

Organizational strategy: What is needed to keep going in the right direction and to reach the previously defined objectives? Strategy is in fact, the system of assets linked to a system of objectives, which gets the company from the current situation to the situation set forth in its objectives through different measures and actions.

KM objectives: After having set the overall corporate strategy, the definition of each functional sub-strategy follows, which is in practice the breakdown of the central strategy. Managers hereby encounter the questions related to the knowledge management function. Objectives must be defined, which refer to what the company aims to achieve by managing knowledge.

KM strategy: The perspective of each functional area is embedded in the corporate strategy, which implies a reciprocal relationship between the sub-strategies and the central corporate strategy [Dobák, 2001]. The KM strategy essentialy has two functions: firstly, to underpin the organizational strategy and to contribute to successfully executing it, and secondly to identify the means of achieving the determined KM objectives. According to Fehér [2006] the knowledge management strategy in fact regulates the knowledge management tasks.

KM system: The KM system is actually the tool for executing the KM strategy. The KM system may differ from firm to firm. The indirect goal of KM is to improve corporate

value creation, while its direct goal is to activate the knowledge concealed in the company and to convert it into profit.

I have encountered numerous KM systems over the course of my research and experiences, based on which I designed this system, which best follows my own logic. This diagram is not a definite truth, but rather an opinion of how the KM system is brought to life. The system is composed of a cyclical process and contains the following elements:

1. *Knowledge identification* → the systematic exploration of the knowledge base existing in the organization and of the usable knowledge from outside the organization.
2. *Knowledge recording* → recording the identified knowledge after quality control, to ensure its future accessibility and retrieval.
3. *Knowledge sharing* → the distribution of recorded knowledge, ensuring its dissemination within the organization, in order to facilitate and speed up the work of users, as well as to increase the level of collective knowledge.
4. *Knowledge development* → further developing the valuable elements of knowledge which is in use, expanding them in an innovative manner or freely combining masses of knowledge.
5. *Knowledge maintenance* → filtering out knowledge which has become unnecessary, the continuous refreshment of usable knowledge, as well as rearranging or restructuring it in accordance with the business environment, in order to make sure that the knowledge contributes to reaching real KM objectives, not ad hoc illusions. In summary, maintaning knowledge with the purpose, that the knowledge contents should continuously reflect valid and usable informations.
6. *Knowledge generation* → a series of attempts to generate new knowledge applicable in the business, aiming to connect and interpret the new elements of knowledge which are the result of knowledge development and knowledge maintenance. Integrating the new knowledge into the existing system, which is generated by the combination of masses of knowledge.

Knowledge assets: the totality of all intangible tools, which are necessary for performing knowledge-based activities.

Profit: It must not be forgotten, that KM is not a facultative leisure activity for the firm, but a corporate management philosophy, owners and managers expect that its practical benefits generate additional profit for the company.

In my opinion, this cycle keeps a firm's knowledge management system alive. Naturally, the weight of certain element in the system may vary or their order may change depending on company-specific factors and the strategic orientation. Based on the analogy of factors of production, on the input side of the model knowledge assets are indicated, which through transformation generate both knowledge, and monetary capital for the company in the form of profit. According to this systematic cycle it can be concluded that operating a knowledge management system has three fundamental goals:

1. Optimize the usage of knowledge based production facors.
2. Increase the yield of corporate knowledge capital.
3. Reduce the risk in knowledge capital management by consciously converting individual knowledge assets into corporate capital.

To summarize the message of the model, it can be concluded that for a knowledge-based company knowledge is not one of the many resources, instead it is "the" resource, meaning that in a well-functioning knowledge organization the most reliable – and often only – profit generating asset is knowledge.

2.1.3.3. The technological aspect of knowledge management

Today's economy has moved past the information age, when access to information was one of the factors ensuring competitive advantage for businesses. Nowadays the key question is rather, how the nearly unmanageable mass of information, whether it be from internal or external sources , can be selected and put to use. The emphasis is on the ability to transform, on how information is turned into knowledge, moreover usable knowledge, which ultimately generates added value and reappears in the organization in the form of profit. The conversion process mainly relies on information technology solutions, as it was detailed in the previous examination of the evolutional phases of KM. The technological aspect of KM indicates that knowledge management and information technology are intricately linked to one another. With regard to KM, we are speaking of a bipolar system, at one end of which are "soft" human and behavioural sciences, psychology, while at the opposite pole "hard" informatics and other related technical sciences can be found. This is

in fact a mutually dependent co-existence, as neither of the poles is able to satisfy the complex requirements of knowledge management on its own. The "soft" side represents the human factor, while the mechanical-technical aspect is embodied by the "hard" technology factor, and both are needed in knowledge management.

In this section, I am focusing on the "hard" factor, look at it outside of the KM context of interdependencies for a close-up examination of the technology side, in order to avoid the mistake of considering a simple information management technology as a KM system. It is only an illusion, that the mere existence of the IT infrastructure is sufficient to conduct serious knowledge management activity at a company, since IT only ensures the possibility to do so. The difference in the efficiency of KM between companies with a given level of IT equipment is due to user knowledge. In my opinion, user knowledge is composed firstly of the strategic dedication of company leadership towards knowledge management, and secondly, the knowledge, abilities and motivations of the active users of the KM system. The KM system can be successful, if the business objectives and the users' interests are combined in the technological platform which serves as the basis of KM (see Figure 9).

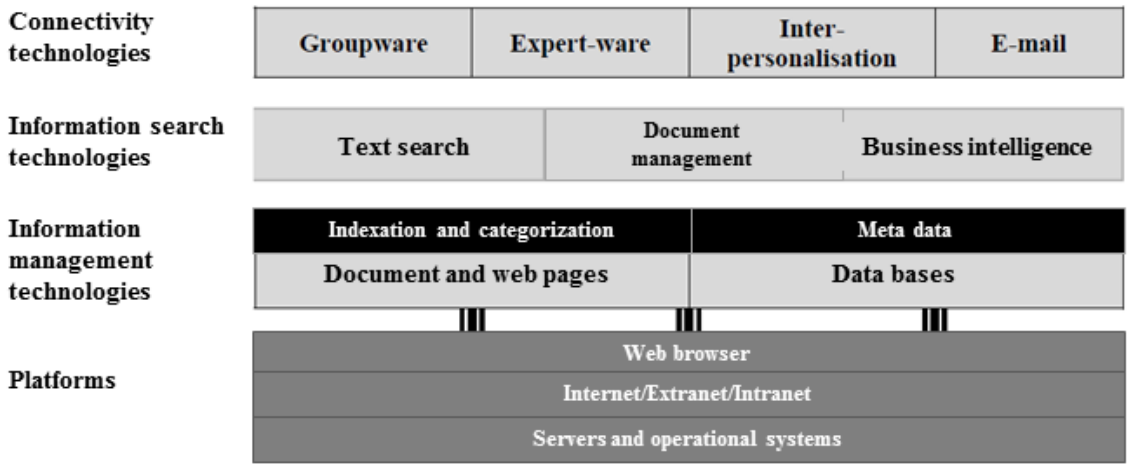


FIGURE 9: KNOWLEDGE MANAGEMENT TECHNOLOGIES

SOURCE: BAIR, 2004 IN OBERMAYER-KOVÁCS, 2007

After Bair [2004], based on platforms the following knowledge management technologies can be distinguished: connectivity, information search and information management technologies.

Information search technologies: It focuses on the generation, sharing and disposal of text-based documents. An element to be distinguished are business intelligence systems, which aim to provide solutions on how information can be turned into usable knowledge (based on OLAP and data mining methodology). The main providers of business intelligence and document management technology on the market are Oracle, IBM and Microsoft.

Connectivity technologies: Through its use by a group, groupware supports communication and collaboration. The connection is usually established with a network solution. The most prominent examples are Lotus Notes and Novell GroupWise. Expert-ware indicates an expert network which aims to uncover individual expertise. Inter-personalization is a kind of collective filter, which makes it possible to learn the preferences and habits of a filtered group. I believe I do not need to go into detail about the practical benefit of using email.

Information management technologies: These technologies encompass the entire document lifecycle starting from generation, through modification and identification up until storage. Databases are meant to carry out the collection, classification and management of external and internal information related to corporate operations, in the simplest manner possible.

As in any subject area, this one also has another side, voicing the opinion that numerous opportunities for improvement can be found in the IT support of knowledge management. The current practices of the technological aspect of knowledge management can be criticised from three main points of view [Easterby-Smith - Prieto, 2008]:

1) information cannot be managed systematically,
2) knowledge management technologies are able to manage the easy to handle elements of knowledge, rather than the tacit knowledge which is the key to real competitive advantage,
3) knowledge management focuses on technology-driven solutions and often overlooks complex socio-political factors.

Up until now, we have considered knowledge as a resource of critical importance, which plays a prominent role in corporate value creation. It has been shown, that it is a factor of production which is inalienable from the person. Furthermore, it has been identified that these individual masses of knowledge add up at the organizational level and create a certain corporate knowledge base, and in turn, by developing and exploiting it the firm can gain real competitive advantage. These findings remain valid based on previous justification, but when we speak about knowledge in the 21st century, then we cannot disregard technological modernization. Several modern technologies attempt to develop a problem-solving capability similar to human knowledge in machines, which in practice supports or replaces the people's role in a given process. To put it more simply, the human factor has become unnecessary, as a result of which a system with no human intervention is formed. Nonetheless, several intermediate phases can be observed related to this phenomenon, as there are technologies which complement, in a way even enhance, human capabilities, there are solutions which partially replace human knowledge, and the extremity is when machines simulate human behaviour, moreover in a self-developing manner. These modern technologies benefit humanity in the areas of medicine, warfare, stock market professional systems or computer gaming, however on the other hand it must be highlighted, that it reduces the human resource need of certain industries. This reduction is due to the fact that machines are characterized by a larger capacity, more reliable technical precision, increased resistance to monotony, programmable behaviour and so on. Fortunately, there are a few quite particular human features, which counterbalance and prevent that the extremely turbulent technological development surpasses humanity, reversing the subordinate relationship between men and machines. These human characteristics, which are difficult to express as an algorithm are: intuition, empathy, decision-making, cooperation, trust. The application of these valuable factors in problem-solving and perfomance works differently in the case of humans and machines [Fischer, 2015].

It is not the goal of this PhD research to provide an exact answer to the questions raised by this topic, however I wanted to by all means remark, that human knowledge has its artificial competitor, which nuances the mainstream theoretical convictions, considering that artificial intelligence is gradually being embedded into the day-to-day lives of firms

and households, which in the long term may even induce irreversible changes in knowledge management.

2.1.3.4. The connection of organizational culture and knowledge

According to Castelles [1996] the fuel of the knowledge-based economy is knowledge itself, which is inexhaustible and gains value during its use, while the key to knowledge accumulation is not taking knowledge from others, but instead increasing it through sharing. The willingness and determination to share knowledge is not sufficient, an inclusive, supporting and motivating organizational culture is also necessary, which rewards the creation and sharing of quality knowledge. Deducing from capitalistic logic, it is easy to sense that there is only a fine line between sharing and expropriation, since by sharing I relinquish a part of my own knowledge to the benefit of someone else, moreover in such a usable manner, that s/he becomes able to apply the knowledge. We have seen that the efficiency of knowledge sharing not only depends on the individuals involved in the knowledge transfer, but also o the quality of the knowledge. Grant [2008] claims that the quality of knowledge transfer is a function of the following factors:

- **Transferability** >>> the ability to transfer knowledge (tacit or explicit)
- **Aggregability** >>> linking new knowledge to the existing knowledge base
- **Exploitability** >>> 100% of tacit knowledge cannot be transferred, in addition it must be examined, whether extracted from its original context the knowledge represents the same value for the new user as well
- **Bounded rationality** >>> the cognitive limitations of humans in the capacities of recognition, perception, memory and reception

The quality of knowledge sharing depends on the motivation of the knowledge owner, the attitude of those receiving the knowledge and the quality of the transferred knowledge. According to Tomka [2009] the motives of knowledge transfer are : reputation (promotion, secure job, professional recognition), reciprocity (I dedicate time now to helping my colleague, if I believe that s/he will be able to return the help in the future), altruism (the natural desire to help) and finally, community (helping atmosphere, group work, human connections). In the definition of O'Reilly and Chatman [1996] organizational culture is a system, composed of common values (determining, what is important) and norms, which define the adequate attitudes and behaviours for the organizational members (how they should feel and behave) [Sorensen, 2002].

When we are constructing such a supporting culture, it is important to understand the deeper layers of organizational culture, since just like in the case of knowledg typing, where the challenge was due to the tacit dimension, in this case the goal is the understanding of concealed values and feelings.

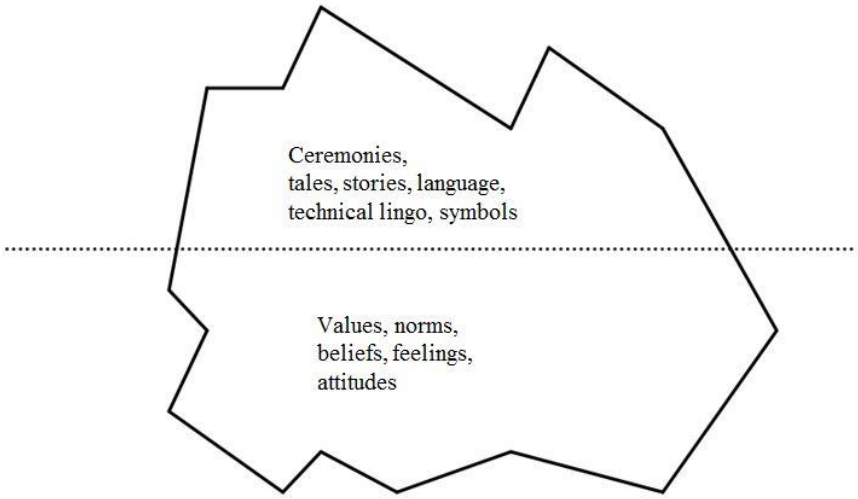


FIGURE 10: LAYERS OF ORGANIZATIONAL CULTURE

SOURCE: BAKACSI, 2004

Examining the organizational culture is a critical step in designing a KM system, because not all cultures ensure the appropriate medium for the success of KM. Success is premised on an inclusive knowledge culture, in which knowledge workers are motivated to transfer and receive knowledge, as well as to participate in its continuous quality development. In my opinion, the organizational culture which is able to manage knowledge well enhances the employees' creativity, their willingness to renew and innovate, even in a continuously changing economic context

When discussing organizational culture, we must mention the emotional (EQ) and intellectual (IQ) contribution of organizational members to business success. Namely, an organizational culture can support the strategy the most efficiently, if the employees are in harmony with themselves, their colleagues, managers and clients as well. By harmony, I am referring to the fact that the foundation of success is not only lexical, interpretative knowledge, professional knowledge, but also in providing quality customer service the

relative significance of social sense, establishing connections, empathy and self-control has increased, resumed by the term: emotional intelligence.

This detailed examination of organizational culture is important, because the goal is to develop such a knowledge sharing culture, which guarantees the adequate context for the long term and effective operation of KM.

According to Bair [2004] the characteristics of a knowledge-sharing culture are:

- the degree of trust is high,
- intensive interactions reaching beyong organizational bounders,
- the possibility of error is accepted,
- calling for competition between individuals and groups is not a permitted motivational tool,
- knowledge sharing is rewarded and recognized.

In light of the above, the purpose of corporate leadership is to create such a culture, which provides room for the cognitive, emotional, social, ethical and pychological development of employees [Alford - Naughton, 2004].

2.1.4. The knowledge-based explanation of intangible value creation

2.1.4.1. Reporting and recognizability

It is increasingly difficult to express the real wealth of today's companies in an explicit form with accounting statements. This phenomenon has attracted growing interest and research, which is not surprising, considering that if there really is a sort of intangible asset between the book value and the market value, then managers need to dedicate more attention to this type of asset which seems unknown and intangible, because it is valuable. Consequently, if something represents value then it ought to be managed, this is the basis of value creation. Nowadays it is increasingly common, that the market value can be a multiple of the book value, which means that a large part of the firm's total assets is composed of elements which cannot be identified on the balance sheet. This unidentified asset element are the intangible assets, which appear as a type of added value compared to the book value demonstrated on the balance sheet. This flaw in the statement will throw the management off track sooner or later, if they do not dedicate adequate attention to the management of intangible factors of production. This is a prominent question with regard

to the relevance of accounting information, considering that as the share of intangible assets in a company increases, accounting statements encompass an ever smaller part of corporate assets. This will force corporate leaders to use other, alternative methods to gather information about the intangibles assets which are not considered by accounting rules, but are gaining increasing business relevance.

One of the main objectives of my PhD work is to present an alternative type of solution, which contributes to an efficient as possible management of the registry and valuation problems surrounding intangible factors of production.

The fundamental goal of reporting is to uncover and record those informations, which are relevant to the operation of a company. This is at the root of the problem, since the accounting information system and reporting is not able to meet the self-established principle of relevance due to some of its basic axioms, as the information about intangible asset elements is an important part of decision-making, they are however not fully demonstrated in accounting statements. This premise has been demonstrated by many authors on several occasions:

- Lev [2000] found a dramatic increase in the proportion of market value to book value when examining stocks in the USA. He claims that this ratio was 1 in 1970, while at the turn of the millenium it was 6. This is how he proved, that of every 6 dollars of corporate value 5 dollars are missing from the balance sheet.
- According to Personnel Today, the book value of US companies in 1978 represented 95% of market value on average, and in comparison by 1987 this ratio decreased to 28%, all the way down to 20% in 2002 [Personnel Today, 2002].
- Core and his co-authors state that the market value/book value indicator was a little below 1 in 1970, compared to which it increased to 5.2 by 1999. For this same time span this ratio in US high-tech companies increased from 1.81 to 10.8, thus showing the ever increasing relevance of intellectual capital [Core et al, 2001].
- According to IMA [2010] research, companies only state 35% of their assets in their books. This problem has however been familiar to economic decision-makers and regulators for a long time, for this reason the tendency is increasing to including a rising number of intangible items in the statements.
- Pearl [2001] concluded by analyzing a sample of 3500 companies, based on survey conducted by the MIT Sloan School of Management, that with an additional 1% in

R & D expenditure the quotient of equity market value divided by equity book value is increased by 4.3%. In the case of marketing spending, the same rise in spending resulted in a 1.8% increase in the ratio. These research results also demonstrate the value increasing effect of intangible assets, as well as the shortcomings of accounting measurements.

Jensen and Meckling already argued in 1976, that statements with increasingly detailed content reduce the uncertainty of investors, resulting in lower financing cost and lower cost of capital [Jensen-Meckling, 1976]. Guthrie and Petty [2000] as well as Li, Pike and Haniffa [2008] also suggest the introduction of intellectual capital in accounting practice, but in their opinion this should be expressed by logical interdependencies, and not by numerical integration.

Westland [2004] says that evaluations based on the current acccounting systems have become obsolete. In order to gain some historical insight to understand or solve the debate around the shortcomings of accounting, it is worthwhile to return to 1494, as the theoretical foundations of bookkeeping, registry and property inventories began to be defined already in the Middle Ages based on the mathetical work of the Venetian friar Luca Pacioli entitled "The Totality of Arithmetic, Geometry, Proportions etc." [Laáb, 2004]. This accounting system focused on the recording of tangible assets in accordance with the economy of the industrial age, therefore it may not be a realistic expectation, that this same information system should be able to handle in a compact manner the intangible assets, which have become increasingly valuable factors of production in the knowledge-based economy which has since begun. All in all, the system is not bad, it just wasn't conceived to assess knowledge-based companies, therefore on its own and without corrections it is not suitable, nonetheless it can serve as a good initial foundation, since it demonstrates in a closed system, in a precise and strictly regulated manner the change in assets triggered by the economic reproduction process. Basu and Waymire [2008] write that one of the main features of intangible assets is that they are developed in-house, therefore it cannot really be expected, that the accounting statements which are published outside of the company contain information about these internal secrets and ideas.

The gap between the book value and the market value keeps increasing and this difference cannot be explained by accounting principles. This phenomenon however may bring about the danger, that accounting statements will be put to the side, because they do not fully

show the value managed by the company [Finchman - Roslender, 2003]. As a result, the lack of the possibility to record intellectual capital eroded users' trust in traditional finance-focused accounting activity [Zéghal -Maaloul, 2010].

2.1.4.2. The accounting of knowledge

Skinner [2008] states that we can perceive the accounting information system in two ways when considering its use in business: on the one hand from the contractual approach, on the other hand from the investor's perspective. According to this theory, the contractual approach is aligned with the objectives of accounting, since contractual partners only recognize the impact of precisely recorded transactions, effects which constitute a part of the company's assets even in the event of a possible bankruptcy or liquidation. Examples are the agreements, contracts established with the company's suppliers or banks. This approach immanently rejects including non-permanent and uncertain assets in contracts (whether as hedge value or as tradable asset). For this reason Skinner [2008] does not think including intangible items in the balance sheet is a good idea, as intangible factors of production often cannot be considered to be independent assets, but rather as complementing or being related to a tangible asset. Therefore it is difficult to determine the value of these intangible assets, as they do not have a secondary market, they are difficult to isolate and generally cannot be sold on their own. Consequently, attributing a value to them can be done with a broad estimation, which is not satisfactory according to the contractual approach. Harangozó's [2012, p. 64] opinion also reaffirms this, saying that *"intellectual capital is a rare combination of resources, therefore the given configuration of intellectual resource items is in most cases only characteristic of one single organization"*. Boda and Szlávik [2010] also claim that the caution is justified, considering that in many cases the original cost of intellectual assets is not the same as its useful value. One of the reasons for this could be that oftentimes intellectual assets are present embedded into one another and are thus difficult to distinguish.

Accounting for intangible asset items on the balance is also difficult and according to Skinner [2008] altogether impossible task, because due to their characteristics and use, intangible assets behave differently in each industry, therefore owing to these differences it is difficult to unify them in the framework of an accounting statement.

Ragini's [2012] research identified 180 intangible items in the financial statements of companies in the USA, India and Japan. As a result of the research it was concluded, that

US companies mainly published information about the market, the consumers, the strategy and the competition, the Indian companies discussed their research and development activity and human resources, while the Japanese companies mostly disclosed information about the owners and the environment in their statements.

Currently in Hungary, as stated by Kovács, the dogmatic regulatory dominance of accounting[7] is in force in the daily practice of financial reporting, one of the main reasons being that the capital market is not developed to such a degree, that it would force companies to publish information about intangible assets [Kovács, 2015].

2.1.4.3. Registering human investments

From a leadership perspective, a resource or an asset is valuable if it contributes to the profitability of the firm. Knowledge is an asset item, which is not represented in traditional accounting statements or only to a limited extend (as intangible assets). For this reason, expressing the value of knowledge capital, as well as measuring the return on the money invested in knowledge is a serious problem that managers need to face. The measurement of costs is evident, however the benefits are much less tangible [Szabó, 1998].

From an accounting perspective, the majority of human investments are registered as costs in the accounting sense of the word, meaning that they need to be recognized in the period when they was incurred, thus reducing the period's revenue and profit [Boda, 2005]. This approach does not provide a realistic image of knowledge investment costs, because it does not consider them as investments, although a human investment also has an impact after the period when it was incurred and increases the value of intangible assets. The current accounting rules provide very little opportunity to register intangible asset elements in the statements. In the case of a transaction, when the market in fact recognizes the value of intangible asset items, it is possible to indicate it as goodwill in the balance sheet. This is however a half-way measure only, because intangible factors of production have a relevant impact on the business not only in the case of transactions, but also in daily operations.

According to the valid accounting standards a cost does not constitute an asset, but this is not the case of costs related to intangible assets [Boda, 2005]. Boda notes, that after

[7] The transition to the IFRS has begun in 2017, which no longer regulate the accounting methodolgy by law, but instead by means of accounting guidelines and standards. In addition, the Hungarian law on Accouting was modified effective 1st of January, 2016.

incurring a cost and thus creating an intangible capital asset, such as customer asset, human asset or organization asset, then this continuously generates benefit for the company, since the asset functions as invested capital and creates value beyond the accounting period when it was incurred. For this reason, it would be wiser to account for the operating costs of these types of assets as capital expenditure (CAPEX), instead of operating expense (OPEX), considering that as a result of incurring this cost such an intangible factor of production is created, which contributes to corporate value creation.

2.1.4.4. Measuring intangible wealth

The seemingly impossible task of managing intangible wealth has attracted the interest of many scientists and researchers, therefore over time several models of measurements and grouping frameworks have been proposed in order to be able to identify and measure these intangible assets more precisely. For the sake of completeness it must be noted, that none of these succeeded in the alternative recognition of intangible assets in the mainstream accounting set of rules. The theoretical work carried out by these researches is relevant for leaders in practice and for the scientific community, as their purpose is to resolve real life business anomalies, nonetheless these theories are still to be embedded into practice. The most widely recognized are the following:

- Skandia Navigator [Edvinsson – Melone, 1997], which instead of aiming to measure the quantity of intellectual capital and its monetary value, aims to track the changes in its quantity. Leif Edvinsson, the world's first "*Corporate Director of Intellectual Capital*" constructed the model, which has accompanied the accounting statements of Skandia since 1994. The model examines the evolution of intellectual capital in five dimensions:
    1. financial
    2. customer
    3. human
    4. process
    5. renewal & development

- Kaplan and Norton developed the Balanced Scorecard in 1992 based on the Skandia Navigator methodology. The BSC is a strategic management system, which is defined as a balanced strategic indicator system. Its significance lies in

that in order to execute the organizational strategy, the firm looks beyond the financial perspective and integrates non-financial data in its mindset framework, which makes it easier to interpret financial data as well. Kaplan andd Norton [1992, 1998] also clearly state the limitations of leadership founded on the traditional financial approach. The Balanced Scorecard was created with the purpose of replacing simple valuation systems with such a management information system, which strategically observes the present and the future vision of the organization. The BSC enhances the strategic mindset of the organization by joining organizational objectives, introducing measurability, with a logical network of connections and by decreasing complexity [Fekete - Mészáros, 2008]. The BSC enables organizations to translate their vision and strategy into business actions, which simultaneously looks beyond short-term market considerations and excessive operative execution. The BSC aligns the strategics and operative level, as well as short and long term strategic objectives.

The system of measures is composed of four well-defined areas, which are the following [Kaplan - Norton, 1992; Bodnár, 2010]:

1) Financial perspective
    - How should we position our company towards investors?
2) Customer perspective
    - What performance do customers expect from us?
3) Internal process perspective
    - In which processes must we achieve exceptional performance?
4) Learning and growth perspective
    - How will we keep our ability to learn and develop?

For each perspective the following can be identified: the strategic objectives, the indicators which make these measurable, the expectations related to each indicator [target values] and the actions that need to be taken to satisfy the expectations.

Lengyel [2002] highlighted the interdependencies between the types of intellectual capital and the four BSC dimensions:

Customer perspective = Customer capital

Internal process perspective = Structural capital

Learning and growth perspective = Human capital and Structural capital

The Financial perspective represents the tangible capital, that is the company's financial capital.

- The IAM [Immaterial Asset Monitor] was developed by Sveiby [2001] in order to be able to present intangible assets in an easy-to-manage logical structure. The methodology places intangibles assets in a 3-by-3 matrix: along the horizontal dimension, the matrix is divided into external structure, internal structure and human competencies, while in the vertical dimension, the factors of growth/renewal, efficiency and stability are indicated.

Several similarities can be identified among these theoritical frames but according to Jackson-Cox [2002] in: [Juhász, 2004] measuring intangible wealth has three main objectives:

1. Enhancing the manageability of human investments,
2. Detecting increases and reductions in the intangible capital of firms,
3. Managing the return on investment of intangible capital investments.

In my opinion, the objectives defined by Jackson-Cox fall in the category of manageability. I would like to hereby propose a wider interpretive framework. For this reason, I have expanded the above list with two additional objectives, the first being alienability, and the second being marketability. Accordingly, I divide the objectives of measuring and representing intangible asset items as follows:

1. **Alienability** – can certain assets be alienated from those who create and operate them. This is an interesting question unto itself, since at this point there is a clear separation between the right of use and the right of ownership, which is quite problematic from an accounting perspective, because it raises the question of irregularities in the liabilities side, as there are assets on the balance sheet, whose ownership is not clarified on the liabilities side.
2. **Marketability** – a company fundamentally demonstrates marketable assets in its accounting statements, as per the principle of sincerity. The more marketable assets a company can demonstrate in its books, the higher the company's value that can be stateed in an explicit manner. It is the interest of company owners and managers, to

be able to demonstrate those intangible asset elements, which have their own separate market value, as these assets increase the company's value.

3. **Manageability** – owners and managers naturally seek to ensure measurement and measurability, considering that an organization, where information about the asset composition is ambiguous cannot be optimally operated.

Monetarizing these asset items may seem like an utopistic task, as it is difficult to express the value of the willingness to innovate, several decades worth of experience, a reference list, reputation or even organizational culture. Nonetheless, stepping outside of the world of economic modeling, the task of the [knowledge] manager is precisely the identification, assessment and monetarization of the above mentioned valuable resources.

2.1.4.5. The new – realistic – balance sheet structure

I would like to continue the discussion with the new corporate balance sheet approach of Sveiby [2001]. I would like to particularly highlight it, as this theory is perhaps the closest to the mentality of the dissertation. Sveiby [2001] constructed a modern corporate balance sheet, which contains expanded categories to manage wealth that is below the surface (Figure 11). The fundamental logic of the new balance sheet structure aims to answer the dilemma of what could be the reason for the difference between the book value and the market value of companies. In this interpretation, the company is composed of visible wealth, external structure, internal structure and individual competencies. [8] This balance sheet structure is merely a theoretical proposal, as this new financial statement logic has not been validated in international accounting standards. The accounting concerns are understandable, since the measurement of intangible assets is quite ambiguous, and as a consequence it would not be practical to upset the balance and the trustworthiness of the balance sheet by introducing such unknown assets, whose form of representation and origin are in some cases not known.

[8] External structure = customer capital; internal structure = structural capital; individual competencies = human capital

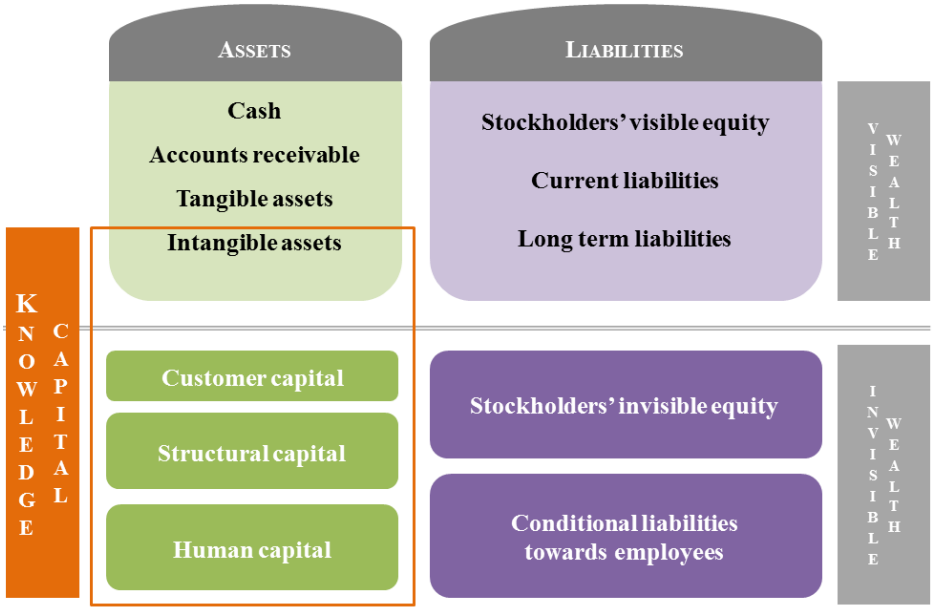


FIGURE 11: THE NEW CAPITAL STRUCTURE OF THE FIRM

SOURCE: AFTER SVEIBY 2001, BODA 2005

Sveiby's [2001] initiative to recognize intangible asset items was a pioneering work, as he was the first to raise the possibility of bringing management practice and the accounting information system closer, in particular signaling the need, that it would be worthwhile to recognize those factors of production, which accounting has not yet fully considered, but in reality they have considerable impact on the corporate value. In accordance, in the asset side of the figure the part under the balance sheet contains the capital items which are not recognized in bookkeeping, which in itself is a upsetting concept, considering that in accounting the different categories of capital are classically equity elements on the liabilities side of the balance sheet, but in this case they are considered as assets. This strange denomination was used in order to favor the term gaining ground, as the public was much more open to the term capital, than to that of structure. The thinking has since changed, and these same authors no longer use the capital denominations on the asset side. The knowledge capital under the balance sheet can be divided into the three sub-groups: customer capital (external structure for Sveiby), human capital (employee competence for Sveiby) and structural capital (internal structure for Sveiby). Upon closer observation, none of these are accounting categories, thus the accounting information system only

recognizes those asset items at best, which are visible in the form of softwares, rights considered as assets or goodwill [Boda, 2005].

The section of the liabilities side under the balance sheet demonstrates the intangible equity of stockholders and other intangible liabilities [Boda, 2008]. Following this logic, in Boda's [2008] interpretation a new knowledge management definition was created, according to which the purpose of knowledge management is to draw in competencies, share them within the organization and convert them into customer and organizational capital. The practical manifestation of this was also later proved by a study conducted in the banking industry [Kuang-Hsun, Chia-Jung, Binshan, 2010], namely that human capital has a positive effect on the organizational and customer capital of banks. Moreover in such a way, that the more developed the communication channels are, the more knowledge can be generated by employees. If knowledge is gained, then simultaneously the human capital of banks increases, which positively influences organizational and customer capital.

According to Kavida and Sivakoumar [2009] managers are motivated by three factors to deal with intellectual capital: (1) it provides a good foundation for corporate valuation, (2) influences the management to focus on what is important, (3) proves that it is worthwhile to spend on knowledge management activities.

2.1.4.6. The value creation logic of intangible assets

Boda and Virág [2010] approached the value creation potential of intangible assets based on factors of production. Stepping beyond the three factors of production indicated in microeconomic production functions (land, labour, capital), the authors proposed that the knowledge-based economy reinforces a few new factors of production (Figure 12). These factors of production are the following:

1. *External intangible assets* – all elements related to the external connections of the company [network capital] are grouped here.
2. *Internal intangible assets* – those factors, which enable the company to execute its core tasks as efficiently as possible, as well as to organize itself and operate.
3. *Personal knowledge assets of employees* – fundamentally the personal knowledge assets owned by employees belong in this group, but only those that are related to the operation of the company, thus those which contribute to the firm reaching its goals.

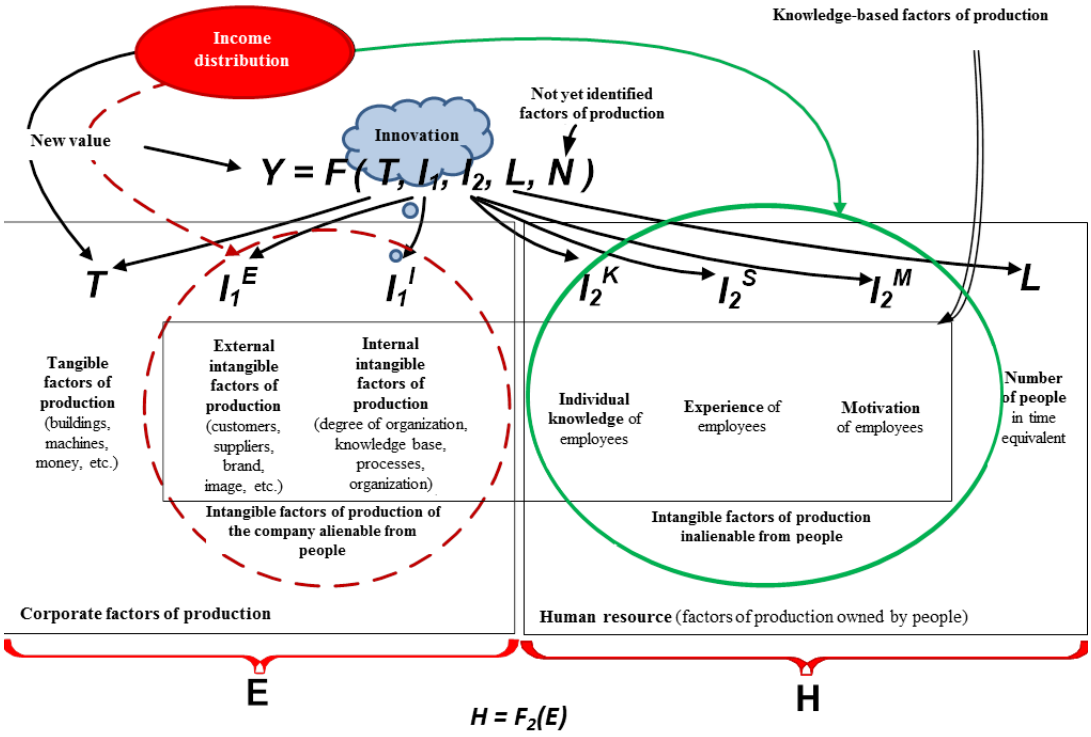


FIGURE 12: THE NEW VALUE-CREATING FACTORS OF PRODUCTION

SOURCE: BODA – VIRÁG, 2010

According to the function, new value is created by the combination of material (tangible) and intangible factors of production, which in itself does not refer to the balance sheet structure, but Boda et al. [2013] also add, that new value cannot be generated without assets and capital. Sveiby's balance sheet logic can be found in the function, as the *tangible factor of production* part of the equation is entirely registered in the balance sheet. In addition, some of the *external intangible factors of production* are recognized in the line of intangible assets. However, *internal intangible factors of production* and the *knowledge-based factors of production* linked to people are both items below the balance sheet. The main logic of the equation is that both the quantity and the structure of human resources (H), satisfies the conditions imposed by the corporate factors of production (E) [Boda-Virág, 2010]. The concept of capital efficiency must be raised here, as the formula shows, that exactly such use of intangible factors of production is needed, which is required by corporate capital. Whether this deviates from the optimum in the negative, or the positive direction, it will result in lower efficiency, and thus value destruction. Juhász [2004] has a

similar opinion, claiming that assets that can be owned by the company do not generate added value on their own, as added value is generated by an adequate combination of factors.

The authors enriched the scientific discussion about intangible wealth on several points:

1. They proved that the items below the balance sheet do not only visually explain intangible assets, but can also be converted into a viable production function.
2. They were perhaps the first to state, that the excessive use of intangible factors of production does not lead to achieving the optimum. None of the previous models limited intangible wealth, which is logical, if the principle is the difference between the book value and the market value, as it gives the impression, that the larger the difference the better, indicating that the company's value is increasing. However the excessive or deficient use of certain factors of production may lead to value destruction. The decomposition by factors of production shows that although a function can be visualized, it does not imply that it will work efficiently. At this point the question becomes interesting from a management point of view, considering that if factors of production are operated efficiently, the company is able to generate more new value, as a result of which the company's intangible wealth grows, and in turn so does corporate value.
3. The authors proposed connecting innovation and value creation based on intangible assets. After Schumpeter [1934] they treat innovation as a new production function, where instead of the quantity of factors of production, it is the form of the function that changes. In this manner they placed innovation at an easier-to-manage level of thinking, complementing the canalization of factors of production into production.

In conclusion it can be stated, that increasing the company's value and within that the value of intangible wealth is not simply dependent on increasing certain intangible factors of production, but it is also equally important to consciously connect and operate factors of production. Boda [2005] recalls that just as in the case of a company's tangible assets [machinery, equipment, buildings etc.] which are not commissioned at random, the connections between intangible assets must also be established, in order to ensure that the company can operate as efficiently as possible.

2.1.4.7. The set of criteria of efficient knowledge management

Continuing on the same train of thought, it must be examined how the company's knowledge assets can be managed efficiently. According to Drucker [2002, p.82] *"today's knowledge workers are not simple labourers – they represent capital. In turn, the leading companies are differentiated by their capital efficiency."* What is in fact this difference in efficiency?

Zack [1999] states that a firm can reach a competitive knowledge position, if it closes the strategic and the knowledge gap. In this interpretation, the strategic gap expresses the difference between the current activity and the future activity of the firm. More precisely the difference between *"what it is capable of now"* and *"what should be done"* to remain or become even more competitive. The knowledge gap can be interpreted along the same analogy, which is the difference between the current knowledge of the firm and the knowledge needed to maintain/gain competitive advantage. Knowledge management essentially focuses on closing these gaps. This strategic joining is a critical element, because if knowledge requirements and knowledge investments are correctly aligned, then value is created, but in case these are not harmonized, then an imbalance occurs, leading to value destruction [Reus et al, 2009].

Speaking of knowledge management, management literature usually provides the example of the state, when the available level of knowledge at the company is lower than the expected level of knowledge. In this case a void is created between knowledge levels, which results in a state of deficiency. All knowledge management actions focus on how to fill this void, and to the raise the knowledge level to the adequate level.The reverse of this scenario is much less discussed, namely knowledge spillover. In this case, more knowledge is available than the knowledge level needed to carry out the firms' activities. Economically, this is clearly not an optimal equilibrium, as knowledge is in fact wasted in corporate processes, as they tie down unnecessary resources which do not generate added value. Depending on the degree of knowledge excess, we can perhaps speak of a safety margin or temporary sub-optimal operation, when the real knowledg level slightly exceeds the expected knowledge level. In the case, when the excess implies a considerable additional financial burden for the company without being able to compensate for it with added value creation, then this is truly considered value destruction. The principle of the efficient management of knowledge leads back to fitting the combinations of factors of

production to the task. It also highlights, that knowledge management action is required not only to close the knowledge gap, but in many cases to eliminate knowledge excess.

Figure 13 summarizes and demonstrates, which efficiency scenario applies in which case:

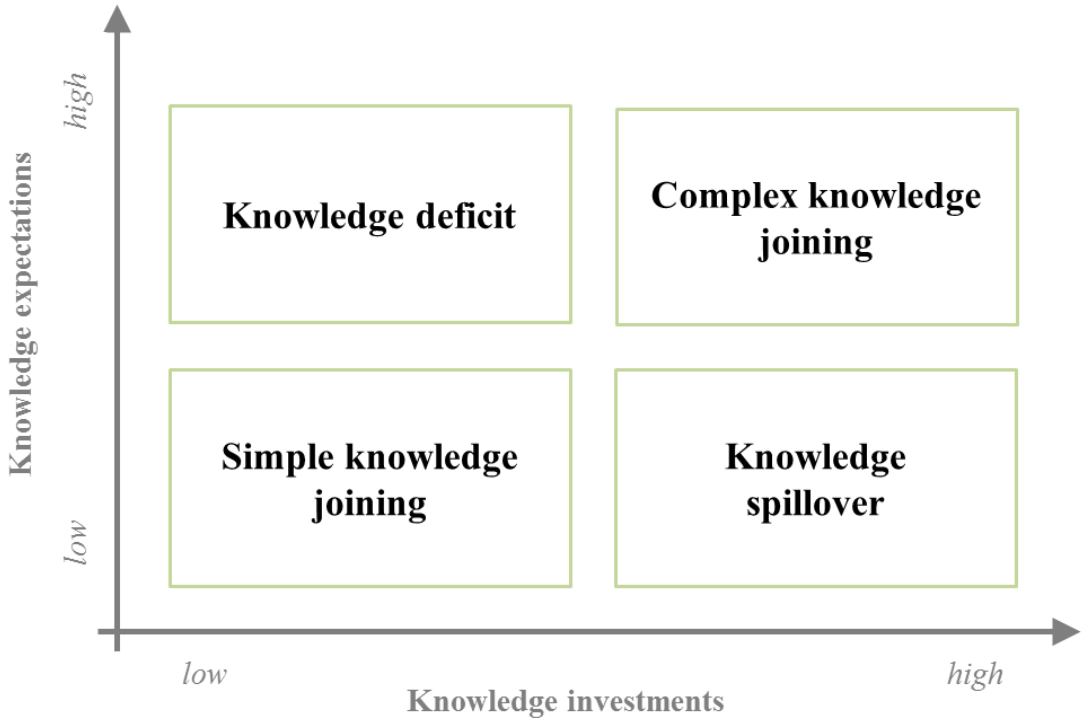


FIGURE 13: KNOWLEDGE EFFICIENCY MATRIX

SOURCE: REUS ET AL, 2009

The theoretical findings of Zack and Reus about the economically harmful effects of knowledge are considered an important step in the development of knowledge management. However, Boda [2010] went further and seeked the efficiency indicator of knowledge management in the management of factors of production. According to Boda [2010] the categorization by factors of production is indispensable, because without it *"not knowing"* is also considered efficiency. He demonstrates with a specific example, that if *we have a car and know how to drive, then as a result of our capital and our driving activity, we can drive from Budapest to Jászberény is under an hour*. In this case the input factors, the output and the production function itself are all known. Consequently, it is easy to admit, that the model has multiple factors, therefore efficiency cannot be interpreted on its

own, it can only be managed through the factors of production delivering efficiency. As a result, our investments may be flawed, as we invested only in the identified factors of production, although it may be possible that the development of others that remain unidentified would be needed [Boda, 2010 p. 79]. As a consequence, based on the principle of economic optimization, the purpose of the knowledge management system is to provide the knowledge required by the optimal corporate capital.

All in all it can be stated, that the tools used for the efficient management of knowledge can be calibrated by responding to three fundamental questions:

1. Do we know exactly what kind of factors impact the performance/the output?
2. Along which processes are the factors used in production/the service linked to value creation?
3. What is the optimal degree of factor allocation in the case of each process?

Responding to these questions brings the company closer to real problem-solving, as it can manage those factors of production which have an impact on performance, and is able to influence them in such a way as to move factor allocation towards the optimum. Considering that a company cannot be efficient without intangible assets, and intangible assets cannot belong solely to the company, the firm cannot be independent of the environment, from where part of the intangible capital originates. Corporate efficiency will always be a function of the efficiency of the environment [Boda, 2010].

Giuliani and Marasca [2011] claim, that not all organization knowledge can be considered as intellectual capital, only that which contributes to corporate value creation. I do not agree with this argument, as every intangible factor of production can be considered as intellectual capital, since it is capable of some kind of value creation, regardless of whether it is operated or not. However, I would not dismiss the value destructive effect of idle intellectual assets, since unnecessary human assets imply an unjustified additional burden for the company and do not contribute to value creation at all, nonetheless this is not a deficit caused by the existence of human factors of production, but by the inadequate capital management technique.

2.1.4.8. The source of corporate added value

From the perspective of corporate valuation, the value of the company can be in one of three intervals:

1. Book value = Market value
2. Book value > Market value
3. Book value < Market value

Henceforth, the dissertation will examine the last case, when the Market value exceeds Book value (abbreviated as BV) indicated in the financial statements. A well-functioning firm falls in this scenario, since if it operates efficiently and successfully, then its market value will very probably exceed its own book value (Figure 14). The difference between these to values is hereby named corporate added value, as per the below figure:

$$Market\ value = Book\ value + Corporate\ added\ value$$

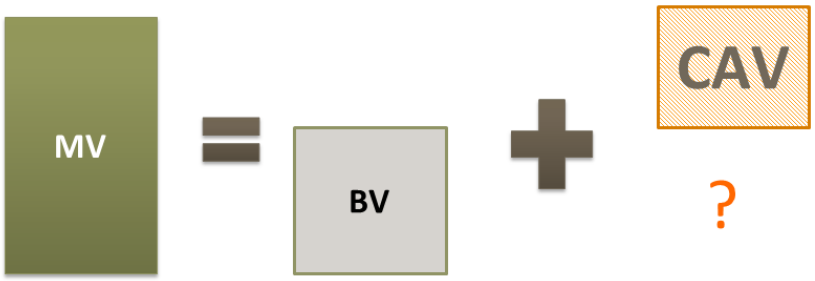


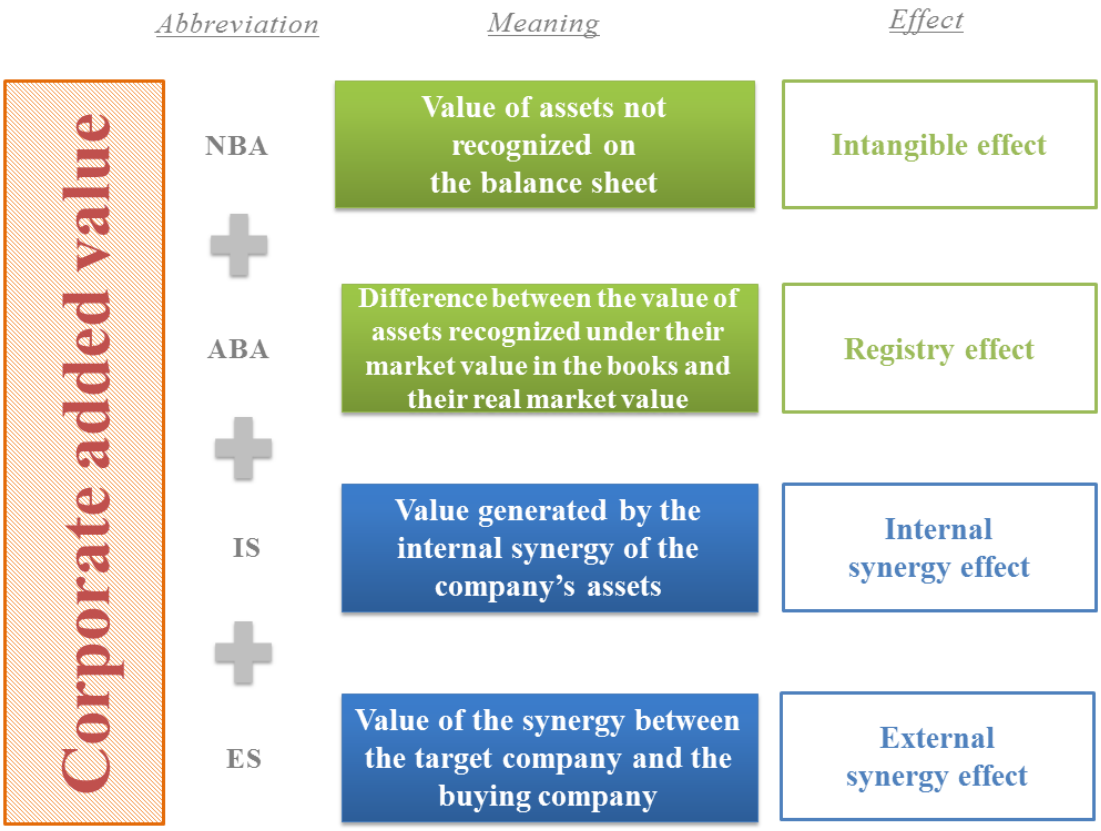
FIGURE 14: THE COMPONENTS OF MARKET VALUE

What is corporate added value? Edvinsson [2007] claims that the Market value is equal to the sum of the Book value and the Intellectual capital. In theory, this is a part of assets, which are created outside of visible wealth during the operations of the firm, but it is not recognized in accounting statements. In Anglo-Saxon scientific literature, this difference between the book value and the market value is mentioned as *accounting gap*. Since it does not appear on the balance sheet, it functions as an intangible asset item. In practice these are items below the balance sheet, which increase the company's value, but the extent of this cannot be determined from the accounting books.

The management of this type of assets has interested professionals for a long time. Economics has long ago become able to precisely indicate the difference between the book value and the market value, however its ability was limited in explaining the reason for the

difference in an exact manner, and it was not at all able to define the composition of the added value and quantify it.

According to scientific literature, the added value is the goodwill itself, which is only generated when the company is sold at a price exceeding its book value. This goodwill (business or company value) can be divided into several components as shown below (Figure 15):



Whereby:

- ***NBA*** *(Non Booked Assets)*
- ***ABA*** *(Adjusted Booked Assets)*
- ***IS*** *(Internal Synergy)*
- ***ES*** *(External Synergy)*

FIGURE 15: THE COMPONENTS OF THE CORPORATE ADDED VALUE

SOURCE: AFTER BARKER, 2001

The difficulty in assessing these added value effects is due to the fact that the corporate added value changes depending on the evaluation situation. In my opinion, the evaluation

scenario in the case of a sale should be separated from the evaluation of the operational performance. According to Juhász [2004] this is an important step also because, in the transactional case companies use countless valuation corrections, while these amendments are hardly used for the assessment or the mapping of operational performance. In Juhász's [2004] opinion the proposals discussing the accounting evaluation problems have not been implemented, because corporate leaders judged that the cost of implementing the correctional mechanisms would exceed the practical benefit. In light of the above, I believe it is worthwhile to distinguish the following two cases:

- **In the operational case** the aim is to estimate the proper operational value of the target company. In this case, there are no synergy factors which can come into consideration between another company and the target company. Therefore the corporate added value equals to the sum of the value of off balance sheet items, the fair value of assets recognized on the balance sheet and the value of the synergies between the assets.
- **In the transactional case**, when evaluating the target company, the value parameters of the merger partner or the acquiring firm must be taken into account, due to the fact that the corporate added value is complemented by synergy effects, which appear in the company's added value, in addition to the below balance sheet items, the value correction and the internal synergy. In this case corporate added value is the sum of the value of off balance sheet items, the value of the difference between the book value and the market value of assets, the value of the internal synergy and the value of the external synergy.

From an accounting perspective it is a paradox, that in the case of a transaction accounting acknowledges the added value that is in the company, but is not yet recognized in the books, and its registry is permitted as goodwill. However for this same company, the added value originating from the operational value is not acknowledged, therefore the so-called internal goodwill cannot be activated on the balance sheet. The company can only get its real value recognized through a transaction resulting in a change of ownership, and this is the only way for it to be demonstrated on the balance sheet.

Numerous researches have focused on the process of corporate value creation in money and capital market transactions, but much fewer pieces of literature discuss corporate added value not through a series of transactions. I find the latter to be an exciting question,

therefore in the present research I am aiming to respond to the question of how to track corporate added value in the operational case.

2.2. Tthe theoretical background of Intellectual Capital Management

In the following section an approach will be presented, which is a higher level of knowledge management according to some researchers, others believe it developed as a part of KM, and discusses questions related to intangible assets, which have not been managed consciously enough until now from the management perspective.

2.2.1. The definition of intellectual capital

I would hereby like to clarify the conceptual confusions surrounding intellectual capital, and to present the adequate interpretational framework for thinking about intellectual capital assets.

The below definitions are used to express what intellectual capital is exactly:

- Edvinsson and Malone [1997] approached the topic by defining that intellectual capital is in fact the sum of human capital and organizational capital, whereby the human capital is the part that cannot be owned by the company, while on the contrary the organizational capital can be owned by the firm.
- According to Ulrich [1998] intellectual capital is the totality of the commitment and the competency of employees.
- For Dzinkowski [2000] it is the totality of the knowledge-based assets which the company owns.
- According to the findings of the RICARDIS research supported by the European Commission, intellectual capital can be interpreted as the combination of an organization's human, organization and network capital as well as the activities related to them [RICARDIS, 2005: p. 4.].
- According to Chen et al. [2005] intellectual capital is a significant strategic asset.
- Maditinos and his co-authors [2011] state that intellectual capital is in fact the knowledge that can be converted into profit.

On the one hand it can be seen from this list, that the notions of capital and asset and their underlying meanings are mixed even in scientific literature. In a later chapter, I will attemp to clarify this definition. On the other hand, it can be perceived that intellectual capital is

starting to become the kind of phenomenon, which encompasses the interactions, transformation and other complementary activities related to intangible assets, and it is being interpreted not only from the resource focus, but also from the process focus [Giuliani, 2013]. Compared with the previously listed definitions, I would like to hereby formulate the interpretation according to which I wish to think about intellectual management in this dissertation. In my opinion intellectual capital management is in fact the extension of management to intangible forms of capital.

The approches toward intellectual capital can essentially be categorized in two groups [Kianto - Laukkanen - Ritala, 2010]. Firstly, there is a static approach, presenting intellectual capital as the totality of resources owned by the company. Secondly, there is a dynamic approach, which encompasses the activities through which these resources are managed. It is important to understand the difference between the two approaches, as the static perspective shows the result itself, while the dynamic aspect indicates the process needed to generate the result.

The dynamic approach leads us to the notion of Intellectual Capital Management (ICM), since successful companies generate profit not only by using tangible factors of production, instead the main keys to success are rather intangible information and knowledge. Nowadays, the most valuable assets in the market competition are the organization's capability to learn, experience, customer relations and other intellectual properties of the firm [Shih - Chang -Lin, 2010]. According to other authors, such as Edvinsson [2007], ICM is not a management technique, but rather a fundamental resource management approach. There is however agreement between the research communities, that the explicit and clear objective of ICM is to enhance the company's capacity to create value [Kianto - Laukkanen - Ritala, 2010].

2.2.2. The right of ownership of intellectual capital

One of the main dilemmas related to intellectual property is that there is a clear separation between the carrier, who operates the capital, and the proprietor, who owns the capital. The stakeholders do not benefit from the generated profit to the same extent, because the carrier activates the value creation potential of the capital, while the proprietor receives all of its benefits, and reinvests a part of the gains in order to ensure the reproduction of capital. The problem is two-fold: on the one hand, the proprietor does not possess true right of ownership over the capital, on the other hand, the division of capital proceeds is not

proportionate, therefore the cooperation cannot be sustained on the long run. A possible solution is applying the Wicksteed theorem[9]. In Boda's [2010] interpretation, this theorem implies that if the capital is owned by someone, then the proprietor expects to receive its yield, as the asset behind the capital requires a sacrifice to the detriment of the consumption of the asset creator. If s/he does not receive the benefits, then creating the asset and limiting consumption becomes a constraint, which ultimately results in an asset of very low efficiency.

Edvinsson and Malone [1997] phrased this by saying intellectual capital is in fact the totality of human capital and organizational capital, whereby human capital is the part that cannot be owned by the company, while on the contrary organizational capital can be owned by the firm. The source of the alienability problem is the fact that the carrier's person (the employee) is separate from the capital user's person (the employer). This phenomenon can be represented in the accounting logic in such a way, that employees' competencies would be recognized below the balance sheet and among the liabilities (Figure 16). This account assignment would demonstrate that the capital carrier is the employee, while the capital user is the employer. However, during operation, the employee's set of competences, as a factor of production, behaves as intangible external capital from the perspective of the company, as the right of ownership is not transferred to the employer, it remains with the carrier, the employee. Therefore the capital users are only seemingly its proprietors, which they know very clearly, therefore they aim to make capital investments in resources and forms of capital that can be owned by the company. This phenomenon is the potential source of numerous risks for companies, due to the fact that they do not possess a part of the factors of production they implement.

[9] The capital functions efficiently, if it receives its own returns.

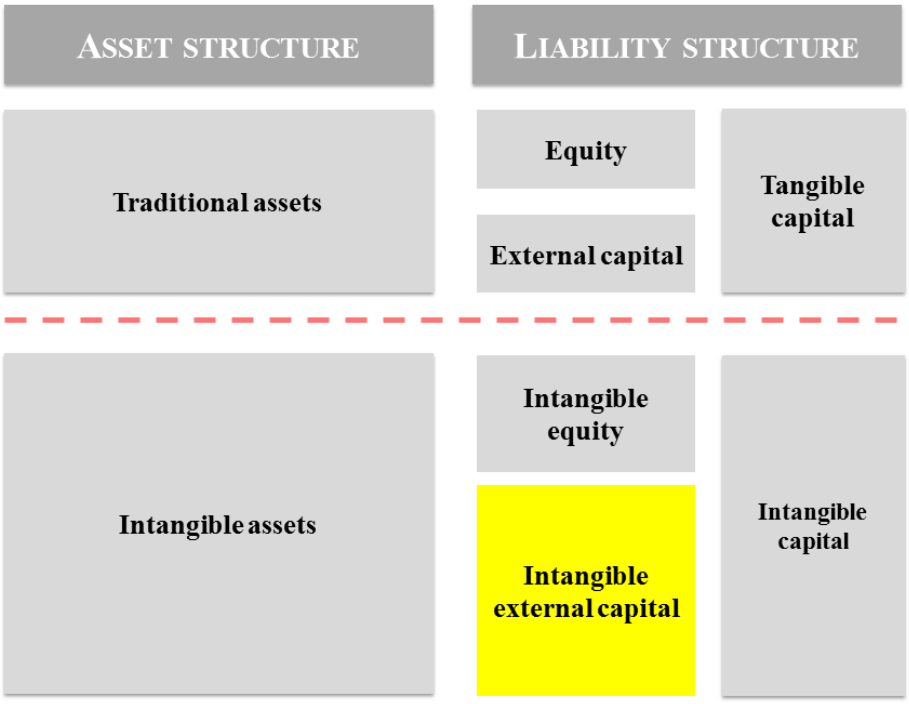


FIGURE 16: THE ACCOUNTING REPRESENTATION OF THE ALIENABILITY PROBLEM

There are several techniques, with which company owners can aim to reduce the risk of migration of inalienable intangible assets, but this dilemma in itself highlights, that in addition to the asset side of intangible wealth, the liabilities side is just as relevant, as clarifying the right of ownership of assets is a fundamental question from the perspective of asset management. In the absence of this, the specific characteristics of intangible asset items cannot be managed [Boda, 2005], because (1) they cannot be expropriated to the same extent, (2) often they can only be managed, but now owned by the company, (3) they yield gains on a varying time scale, and (4) it is not certain, that they yield any kind of benefit. In light of this it can be concluded, that expropriation and inalienability are in fact the obstacle between ownership and manageability, which in the case of certain intangible assets can be overcome to some extent (customer capital, organizational capital), while it seems insurmountable in other cases (human capital). This is reinforced by the thoughts of Standfield [2002], saying that intangibles can be grouped in two categories. Those in one category (hard intangibles) can be owned, such as brand name or copyrights, while those in the other can only be managed (soft intangibles), such as knowledge or quality. This ownership problem is considered an operational risk of strategic significance for the firm,

because the knowledge, business sense and connections of employees is available to the company, but only as long as this cooperation is mutually beneficial for both parties.

According to Boda [2010] this can be expressed in the breakdown of factors of production with a general production function (see Figure 17), by splitting factors of production into corporate assets and human assets. The division between the two categories is according to alienability. Therefore, corporate assets can be alienated from employees, while human assets cannot be alienated from them.

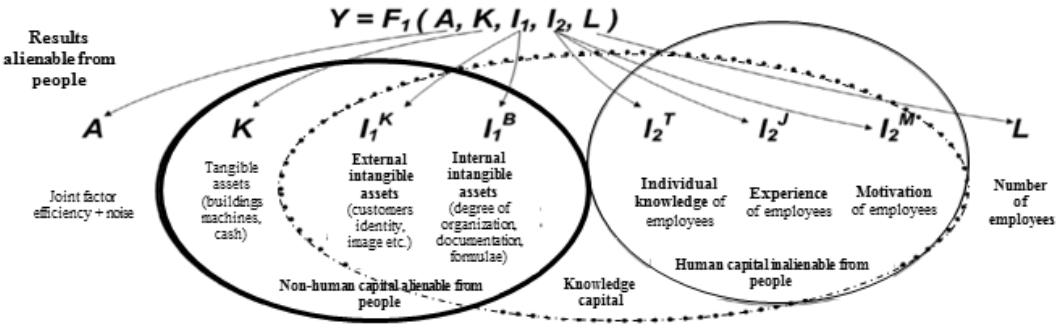


FIGURE 17: NEW PRODUCTION FUNCTION

SOURCE: BODA, 2010

Coff [1997, 1999] also discusses this question, but from a different aspect, explaining why competitive advantage cannot deduce solely from the company's books and the financial ratios calculated from them. The explanation is partially to be found in the paradox situation, whereby even though relatively more knowledge capital enhances the company's competitiveness, this does not always result in profit for the firm, because if knowledge capital is linked to individuals and thus the company's core activity is largely dependent on the human assets working in the firm, then the bargaining position of capital carriers could be stronger in the appropriation of royalties[10]. This may lead to a situation, where the owners of the capital (the knowledge workers) by the appropriation of royalties decrease

[10] Royalty is a potential money flow, which is able to incentivize the owner of the factor of production to use the resource in production [Hirshleifer, 1980].

the profitability of the firm, although efficiency has increased and competitiveness has improved. For this reason Coff [1997] claims that in light of the above interactions, the firm's level of competitiveness cannot be soundly proved based on financial returns.

This proposal reinforces the need to examine the asset side of intangible factors of production, since the set of problems highlighted by Coff is the results of the fact, that while the company uses certain factors of production, which generate royalties for the firm in the economic sense of the word, it is not clear which capital owner receives the gains generated by royalty creation. Consequently, the magnitude of the royalty received by each capital proprietor depends on their bargaining power, while in turn the bargaining power can be deduced from the singularity and tacit nature of the knowledge. This also however results in a paradox situation, because the monetary recognition of employees' intellectual contribution has an inversely proportional effect on the profitability of the company's other owners.

It can be concluded, that the seemingly eternal law of economics is reinforced, namely that *"production assets can only be created by investment"* [Boda - Juhász - Stocker, 2009, p. 127.]. However, if someone assumes the alternative costs of investment, then s/he clearly demands the returns of the investment, or a part of it. This priniciple is a rational and well-founded expectations from both the economic and human perspective. It is however a different question, to what extent it can be enforced in reality.

2.2.3. The theoretical critiques of Intellectual Capital Management

Critiques of ICM have been voiced, which question the utility of the approach based on the uncertainty surrounding the measurement and the evaluation of intangible capital items.

These elements of criticism are well summarized by Dumay [2012], who nuances the purpose of ICM with the following observations:

- The legitimity of the intellectual capital concept is highly questionable, because the number of empirical proofs, which underpin the claim that companies use the tools of intellectual capital management as a management technique that encourages value creation, is quite limited.
- The financial-accounting approach still does not recognize the value increasing effect of ICM and KM, stating that the value depends on investor expectations and

future cash flows. However, in my opinion this phenomenon is hereby in fact validated, because when responding to the question of why these future expectations lead to higher value, the impact of ICM and KM items is acknowledged. But that is why the investors invest in such company that have the enterprise value above it's booked value becaouse by doing this the investors acknowledge the existence and the value of intangible wealth.

- If accounting rules would allow to indicate these intangible assets in the books, it would again allow for creative accounting and would further unsettle the transparency of reporting.
- The balance sheet would become almost unusable, if we tried to pair apples not with apples, but with an invisible fruit. Furthermore, it would raise the risk of speculation. In my opinion, the danger of abuse is real. This however does not contradict the theoretical affirmations, considering that a theory can be true, even if it cannot be quantified in practice.

According to Bond and Cummis [in: Baruch - Hand, 2003] excessive significance is attributed to intangible assets, which is unjustified, because in their opinion the cause of the difference between the market prices and the fundamental book value is for the most part incorrect market value appraisal.

The newest researches [Giuliani, 2013] show considerable advances in the understanding of IC, however the possible negative impacts of IC are scarcely mentioned. Many studies disregard the destructive effects of IC, namely that while IC creates value and encourages development, simultaneously it increases the vulnerability of the organization and creates invisible liabilities for the owners. As a result, recognizing IC in the accounting statements would further increase the distrust towards the applicability and the adequacy of traditional accounting rules. Nonetheless, accountants will need to find a solution to how they will embed the measurement of intellectual capital items in the statements. Otherwise, they will become irrelevant for business decision-makers [Finchman – Roslender, 2003].

All in all, the question of handling intangible forms of capital, as well as that of the recognition, measurability and thus manageability of intangible wealth cannot be avoided, considering that the knowledge economy increasingly relies on resources, which are less or not at all represented in the documents on which the management and the business is based. It is conceivable, that representing intangible assets on the balance sheet, or below it

on the same page with tangible assets, is not a suitable approach. It is possible, that a separate report or statement will be the most appropriate solution. There are however already examples of this, as certain elements of the annual report, or even the CSR[11] report contain such complementary pieces of information about a company's management, which do not appear in the accounting statements.

2.3. The relationship of knowledge management and intellectual capital management

At the end of the theoretical discussion, we have reached the point where it is necessary to clarify what is the difference between KM and ICM, how these two approaches relate to one another and how the relationship of these two movements can be interpreted.

According to certain authors [Stahle –Hong, 2002] knowledge management aims to respond to the question of how the creation, sharing and exploitation of knowledge can be supported within a company, while intellectual capital management attempts to answer the question of how the added value generated by knowledge can be tracked, measured and reported. Other authors [Kianto - Laukkanen - Ritala, 2010] claim that the ICM and KM concepts are very close to one another, but KM manages informations and knowledge found at the operative and tactical level, while ICM focuses on informations at the strategic level and handles strategic processes, relationships and brand. Therefore intellectual capital management is a holistic concept, which encompasses the management techniques implemented at various levels of the organization with the purpose of identifying, measuring, controlling and developing its owns intangible resources.

In my interpretation, knowledge management is a larger concept, within which intellectual capital management is a sub-concept, focusing mainly on examining intangible assets from a financial perspective, as well as examining their measurability and impact on corporate value creation. Accordingly, in my approach intellectual capital management is in fact the transposition of knowledge management into productive assets, and their management.

[11] Corporate Social Responsibility

2.4. The practical relevance of KM and ICM

2.4.1. Accounting considerations

In the dissertation the confusion surrounding accounting-related definitions was mentioned several times. In this sub-chapter, I would like to resolve this disturbing situation, as it is necessary to use the terms correctly in order to interpret the research. Based on the currently in effect international accounting standards, an asset is a resource which is controlled by the company as a result of past events, and from which the firm is expected to gain economic benefits in the future [Barker, 2001]. This interpretive framework is however not adequate for intangible assets, therefore a different approach is needed for resources lacking physical substance.

In scientific literature, the notions of intellectual capital (IC) and intellectual asset (IA) are often reversed, which is disturbing and incorrect. When using accounting terminology, these two categories are not interchangeable. The terms of asset and capital related to intellectual wealth often appear as synonyms in management literature, even though it is important to emphasize, that the asset side always has an ownership dimension [Szlavik, 2011]. The IA is an intellectual corporate asset, which generates cashflow. In turn, IC is someone's IA. Consequently, the amount of intangible assets is equal to the amount of intangible capital. This is the reason why investors invest in certain companies above book value, because they evaluate the magnitude of intellectual capital and aim to a realize a type of intellectual premium [Grajkowska, 2011].

Along the logic of the balance sheet, intellectual assets are knowledge-based factors of production, which are at the disposal of the organization and produce benefits. Intellectuals assets do not have physical substance and do not have a financial value that can be unequivocally defined. These assets are hidden assets, it is difficult to identify and associate and economic value to them. In turn, intellectual capital indicates the right of ownership of intellectual assets, namely speaking of equity or of liabilities [external capital] [Kok, 2007]. Ideally, just like in the balance sheet, the value of intellectual assets equals the value of intellectual capital.

According to Laáb [1999, p. 1.] *"the human factor has a passive side, this is the human capital, and an active side, this is the human resource. Capital and resource are not*

synonymous terms. While one of them, the capital is the opportunity, a chance for both its owner and its possessor, the other, the resource provides the condition of utilization. The existence of opportunities and conditions together constitute the playing field, where the human factor can be used in the reproduction process."

From the accounting perspective, intangible assets are assets lacking material form, almost elusive, which accounting avoids from far according to the principle of prudence, therefore capitalizing them on the balance sheet is only permitted in two cases. One case is when the company purchases the asset through a market transaction. The other case is when a change occurs in the ownership structure of the company as a result of a merger or an acquistion, it can be capitalized in the books as goodwill (company value). In the third case, which is a natural result of daily business activity, whereby the company creates intangible assets internally, in the vast majority of cases the accounting rules do not make it possible to capitalize these on the balance sheet.

Bőgel [1988, p. 26] states that *"the prudence of official accounting is of course understandable: if your intellectual capital can allow itself to not come back in the morning, then investors should not be under the assumption that they own it in the same way as the lands or the machinery in the factory. However it must also be seen, that if there is no attempt to grasp, measure, register something in some manner, then it is quite difficult to manage it."*

In order to establish the set of definitions which I am using in my research, I have determined those fundamental principles, which I consider to be important and useful in separating the assets and the liabilities categories from one another.

I have formed my own interpretation based on the following principles:

1. I consider the logic of accounting as the starting point (balance sheet approach).
2. Thus I also accept the principle that the sides of the balance sheet must balance in the case of intangible items.
3. I consider assets as naturalia, meaning factors of production with value creation potential.
4. By capital, I am not designatign material goods or money supply, but instead someone's productive asset.
5. I accept that assets are often unique and company-specific.

I would like to complete the above, considering the terms of intellectual and intangible as synonyms, therefore *intellectual asset = intangible asset* and *intellectual liability = intangible liability*. In light of the above, an intangible asset is a factor of production used in production, the totality of resources applied by the company in running the business. In turn, intangible liabilities express the right of ownership of the assets used in production (factors of production) and responds to the question of in whose ownership these factors of production are.

The figure below illustrates the definitions in the structure of the balance sheet.

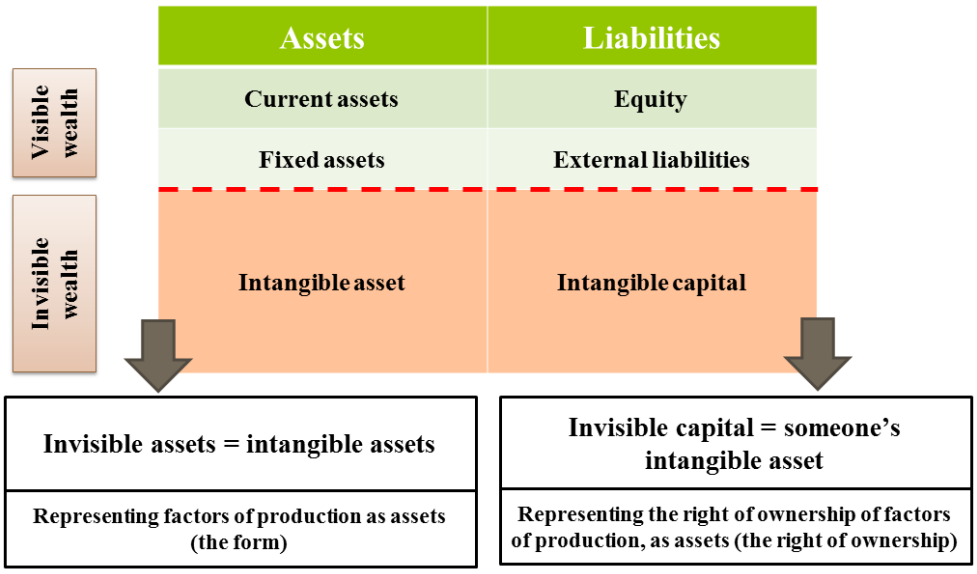


FIGURE 18: PRESENTATION OF INTANGIBLE ASSETS AND LIABILITIES

Seeing the imperfections of the standard balance sheet used in accounting, Standfield [2002] proposed the possibility of intangible accounting, where the economic events would be registered on intangible asset, liabilities, cost and income accounts, whereby the evaluation would be based on the capitalization of [a part of] the expenditures. He was however not the first, since Hekimian and Curtis [in: Giles - Robinson, 1972] raised in their 1967 publication entitled *"Put People on Your Balance Sheet"* in the Harvard Business Review, that it would be best to register employees as assets in a quantitative measurement system, and the value of human capital could be quantified through profit centers, in the form of investments. In his article entitled *"Human asset accounting"*, McCowen [1968] in: [Giles - Robinson, 1972] also called for introducing human resources

into the set of definitions of asset management. Neither is it a new idea, that the financial impact of intangible assets should be represented not on the balance sheet, but instead in the income statement, because what truly matters is the impact of intangible asset items on income, rather than the asset value attributed to them in the balance sheet [Penman, 2007; Basu – Waymire, 2008].

It has been discussed, that if intangible assets are accounted for as a cost, then it seemingly decreases the returns gained by shareholders on their invested capital. This information is not realistic, recognizing a possible increase in intangible assets as a loss of income is misleading to say the least. This shows, that intangible assets contribute to corporate value creation and to the value of the company below the balance sheet, however from an accounting perspective they are currently not compatible with the balance sheet.

Along the same logic, Bacsur and his co-authors [2014] divide intangible assets according to the right of ownership into two categories, corporate asset and corporate capital, which encompass the factors of production owned by the company. To complement, the factors of production owned by the employees are human assets, corresponding to human capital on the liabilities side. In their opinion, an efficient capital structure can only be formed if the invisible part of the balance sheet is also managed. In this framework of thinking it can be stated, that in order to be able to define the actual equity of a company, the invisible equity must also be considered, meaning the part of capital below the balance sheet, which is owned by the company but is not found in the statements. The company's actual external capital equals the sum of the liabilities found on the balance sheet and the intangible liabilities found below the balance sheet, thus the totality of tangible and intangible items which are not owned by the company.

At this point, the paired definitions of knowledge asset and knowledge capital gain meaning. In agreement with Bacsur and his co-authors [2014] knowledge asset is equal to the sum of all below the balance sheet intangible assets, while knowledge capital equals the sum of all intangible capitals. This definition is similar to the concept laid down by Sveiby, there are however two important differences between the two approaches. Firstly, the intangible assets found on the balance sheet are not comprised in the knowledge asset category, since only the items found below the balance sheet are considered here. Secondly, compared to Sveiby's model this definition put the notions of capital and asset in place and does not indicate capital items on the asset side. Both differences are significant

scientific results, as the authors thus laid down the conditions for resolving the ownership problem, also called the alienability problem.

Why is it so important to clarify the theoretical framework from the management perspective? On the one hand it is important, because conscious and efficient capital management is needed for successful and productive management, however according to the above it is a requisite to manage the actual capital of the company taking into account the totality of the human capital. On the other hand, value creation strongly depends on the quality of corporate leadership, therefore it is important to draw leaders' attention to the fact that the capital only works efficiently, if it receives its part of the benefits. Speaking of tangible or intangible, corporate or human capital, according to the Wicksteed [1894] proof the owners of the factors of production divide the income produced according to the factor's marginal products. This means that the owners of these factors of production want to receive a part of the benefits in return for making them available to the companies. As a consequence, if the capital owners do not receive their proceeds, then the ability of capital to create value decreases. In practice this would imply, in the case of material factors of production, that if we do not dedicate adequate attention to maintaining machinery and equipment, then its functionality will decrease and thus its performance will worsen. In the case of intangible factors of prodcution, if the employee does not receive benefits or motivation proportional to the energy invested into his/her work, then his/her contribution to value creation will decrease. The fundamental principle of the capitalist economic system is to maximize returns to capital, and as a consequence, if the capital element does not receive the amount of capital returns, which is proportional to the investment made in, and to the benefits resulting from its operation, then the capital owner will either decrease its functionality, or move the capital item into an environment where a higher remuneration of capital could be realized. In this case remuneration of capital does not only indicate material benefits, the remuneration could be social, mental or ethical. Finding and identifying invisible capital items and clarifying their right of ownership is essential to ensure that company leaders can organize and direct value creation processes along those capital management principles, which result in efficient operations.

It is also necessary to put end to the confusion between the terms of asset and capital and clarify the definitions, in order to be able to resolve the previously discussed alienability problem. It must be determined who truly owns certain intangible factors of production, which in certain cases may make a critical contribution to generating and increasing

intangible wealth, stating whether they are under the ownership of the the company or the employee. One of the pillars of the mission of this research is to examine the intangible capital side, which is unduly scarcely discussed in scientific literature, and if possible clarify the theoretical foundations of the question of right of ownership and the numerous leadership questions derived from it. This necessity arises from the fact that the value creation capacity of a company in the 21st century rather depends on the right of ownership and the development of intellectual capital, than on the management of traditional financial resources [Lerro - Iacobone - Schiuma, 2012].

2.4.2. Valuation considerations

The measurement and tracking of the performance of companies has already been considered an important management task decades ago. At the time, informations that were easier to monetarize dominated, since the given company's success was best indicated by financial data. Initially only accounting data was used to make financial decisions, which we now know is not satisfactory, because it does not provide comprehensive information for making business decisions [Juhász, 2004]. With time, the economic environment became increasingly complex, the markets developed, customers' demands have changed at pace that is nearly impossible to follow, industries began to be increasingly characterized by intricate networks, therefore companies had to make increasingly complex decisions. In these decision-making situations the leaders' focus shifted from time to time, initially increasing financial perfomance, then maximizing shareholder value was at the center of attention, while nowadays managers examine the symbiosis of strategy and value creation.

An interdisciplinary approach is needed for the valuation of knowledge-intensive companies, because evaluation from a financial perspective has its limitations, which are presented in Figure 19 below. These limitations can be overcome to some extent by involving other branches of science. Events vested with economic meaning are at the focal point of financial valuation, while the economic judgment of knowledge capital moves on a quite wide scale. In my opinion, evaluating this part of the assets should not be approached with the *"homo economicus"* mindset, the „*homo socionomicus*" perspective would more useful. In the current state of science there is only consensus about the fact, that attention should be dedicated to measuring knowledge capital, since it has an uncontestable role in value creation.

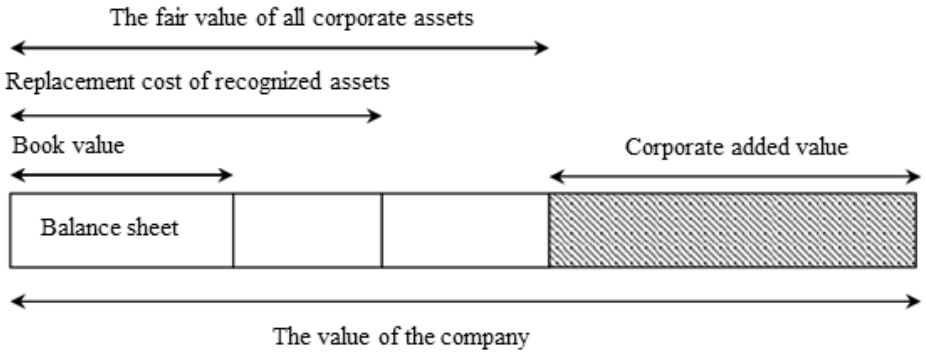


FIGURE 19: THE CATEGORIES OF BELOW THE BALANCE SHEET ITEMS

SOURCE: JUHÁSZ, 2004

According to Chikán [2008] companies create consumer and shareholder value by combining resources. This business economics principle was completed by Juhász [2004], saying that companies are not mere owners of factors of production, but also transform these inputs in such a way as to achieve synergy effects. These effects are not necessarily positive, but a more urgent problem is that their quantification cannot be handled by the accounting information system. This difference is the reason why data from the accounting books is corrected, to bring the value of assets closer to their real market value. This in turn is needed to be able to correct the value of the company and step beyond the historical data series provided by the balance sheet towards the direction of the real market value.

We must differentiate between economic earnings and accounting earnings, since the former, the profit in the economic sense of the word ensures a sustainable cashflow for the company. There can be many reasons for the difference between the two earnings categories, inventory evaluation, depreciation charge, interest expenditure, inflation or the time factor [Bodie, 2005]. Over the course of the valuation, it is an important question to know how close these two categories are to one another, namely how precisely can business-related conclusions be drawn from the accounting statements.

The gain in prominence of the knowledge economy draws the attention of corporate leaders to the fact that modern companies focus on intellectual added value, which is not at all or only to a limited extent (intangible assets) represented in the accounting statements of the organization. The drawback of the currently used accounting procedures is that they are unable to monetize the values of the developing knowledge economy. There is however the ability to introduce non-material assets in the balance sheet to a limited extent in the

business or company value item of the intangible assets account. The capabilities and opportunities embodied by the company, the coherent effect of organizational culture and other factors could be considered here. This goodwill category is only valid together with the company itself, it cannot be evaluated as a separate item. The corporate value can only be recognized in the balance sheet in the case of sale or purchase.

Figure 19 highlights that one of the major flaws of financial accounting is that wealth is exclusively measured based on the monetary value of the assets listed in the annual report, and the synergy-related and other value creating factors that fall outside of the statement are not taken into account, are not embedded into the corporate value. This approach can be understood to some extent from the accounting perspective, however in reality these invisible, unrecognized assets must also be considered as part of the company's assets and need to be reimbursed in case of an eventual sale [Boda - Juhász - Stocker, 2009]. In conclusion, it can be said that *"accounting valution is not sufficient in itself to provide the basis for business-focused decision making"* [Juhász,2004].

Accounting informations provide a basis for making decisions that maximize value only to a limited extent, amendments and corrections are needed [Reszegi, 2004]. What is invisible to accounting is a virtual capital, which goes beyond the totality of assets which are easy to capitalize, and represents a premium or an added value for the shareholders. The corporate leadership is interested in uncovering these value generating parameters and improving them through management, with the purpose of ensuring long term sustainability and increasing competitiveness. All in all, we can draw the conclusion that the corporate value depends on the strategy [Juhász, 2004]. Along the same train of thought, knowledge has become embedded in the output of daily activity. That is why it can be identified as a strategic resource [Brown - Duguid, 2001 ; Nag - Gioia, 2012].

According to Barker [2001], there are three reasons why an asset is not recognized at real value in the balance sheet or is not indicated at all:

1. not all goods have a market,
2. we can find several prices, values for the same product,
3. synergy, namely the phenomenon that the totality of assets is more valuable than the individual asset values.

This echoes the approach proposed by Palepu – Healy – Bernard [2000], that a resource can be considered as an asset from the accounting perspective, if

1. the resource is owned by the company,
2. the future benefit expected from the use of the resource exceeds the cost incurred to acquire the resource,
3. the benefits of the resource can be measured at an acceptable uncertainty threshold.

In light of the above, it can be seen why the valuation procedures used in the financial realm do not insist on following the strict accounting approach, since if they did so, then according to the above mentioned three conditions, intangible factors of products, such as human knowledge, human motivation, people's work experience, the degree of work organization, the network of partners, organizational culture and so on, could be omitted from among the valuable resources. Not taking into account these intangible asset items can certainly not be permitted from the corporate valuation perspective, not even if they do not completely, or in some cases hardly, satisfy the basic criteria that would qualify them as assets in the accounting sense of the word.

Damodaran [2006] claims that all assets have a value, regardless of whether it is a physical or a financial asset. It is important to know not only what this value is, but also where it originates from. Every asset can be evaluated, but there are some which are easier, others which are more difficult to evaluate. Intangible wealth is at the focus of evaluation, because it is not listed anywhere objectively how much it is worth. It is an interesting question why it is not listed, considering the fact that in some cases intangible asset can be exchanged for money, therefore they possess a provable econonomic value. Nonetheless it is not registered as an asset. According to Laáb [2007] a good can be called a part of corporate assets if the company is able to draw benefits from it in some way.

Pratt [1992] warns, that the difference between the book value and the market value is absolutely natural, since the book value is not generated as a result of valuation, therefore by definition it cannot be equal to the market value calculated as a result of valuation. Madden [1999] reinforces this thought, in his opinion the source of the problem is that we would like to use a system to measure value and performance, which was not conceived for this purpose, thus there is nothing wrong with accounting statements themselves.

Fundamentally, the measurement of intellectual assets can be approached according to two methodologies: either we try to find an exact numerical value, or we look for indicators,

which have an impact on the quantity of knowledge in the organization. This is necessary, because knowledge itself cannot be measured, only the result of its use [Kok, 2007].

Sharma [2001] divides the options for measuring intellectual capital into three groups:

1. DIC model – *Direct Intellectual Capital*
2. ROA model – *Return on Assets*
3. SC model – *Scorecard*

The troubling thing about measuring intangible wealth is that we will receive significantly different results with each of the methods are used to examine the same intangible asset [Ittner, 2008].

For the sake of completeness, let us think about whether it would be a possible scenario, that when knowledge capital is negative, then corporate added value is negative? Juhász [2004] says that the intangible assets of the company can also have a negative value, in the sense that if the resources used by the company would generate greater benefit in another operating environment, then in practice they are worth less to the company than if they were sold. In my opinion this interpretation refers to a real economic scenario, however instead of negative knowledge capital and negative corporate added value, the notion of loss of profit is closer to reality, if there is no direct value destruction, only the failure to create value.

There are however moral risks to evaluating invisible asset items, mainly because the valuation methods can be traced back to the question of the employee populations's productivity and efficiency, in essence to human performance. Therefore, when as a result of an evaluation a value is attributed to the performance of a group of people, then at the same time we evaluate the people themselves, which raises serious ethical questions in the case of a possible error of measurement or relative comparison. If we ever arrive at the state, where a person's added value to the company's performance will be able to be expressed in the form of a number, then this would instantly create the possibility to redefine the in-house competition, to start discrimination or even to manipulate performance according to a certain objective function. According to Ebersberger [1981] this presents the danger of creating a programmed society, where an individual value is attributed to each person, this will moreover be amortised with time, which could theoretically even result in the loss of the value of a person. This claim is important, but is

only partially true, since the value originating from a person does not consitute a homogenous unit which can be amortised in a predictable and uniform way. To think of an example, there is knowledge, one of the most significant value parameters, which is not amortised during use, but instead it develops and grows. From this perspective, the amortization of human assets does not at all resemble the amortization of material assets. However, to provide a counterexample, human capacity may be be amortised in function of age and degree of motivation, but this is no longer a purely ethical question, but instead rather economic, considering that from a capitalist perspective a person who has the same knowledge, but has a higher capacity, is in fact more valuable for the company, which can hardly be held against any firm is a profit-focused, development-minded market economy. For example multinational consulting firms are already applying this requirement. The categories of chargeability and realization consider each person as a profit center, and manages their performance accordingly. This is a cruel, but efficient and interesting world, because beyond the ethical aspect there is the possibility to increase individual, and then in turn corporate performance.

Therefore, we act correctly in line with both ethical norms and economic rationality, if we try to estimate not the person her/himself, but the benefits gained by the firm from his/her competencies, thus his/her contribution to value creation, separating the human being from the performance. If it is possible at all.

To summarize, the science of corporate valuation considers it almost fundamental to step beyond the data provided by the accounting information system [Schaper - Nielsen - Roslender, 2017], but still reaches back to the book value category, because this a good starting point for the valuation, as in this way the value of the object does not have to be constructed from zero, it is sufficient to correct it underpinned by rational arguments. Unfortunately, most of the intangible assets are not recognized in accounting statements, or at least not the extent, that it could itself serve as a basis for making business decisions. During valuation we must almost heroically face several assumptions, such as the divisibility of assets, the uncertain future benefits or the division of the jointly generated value [Basu - Waymire, 2008]. Science is also currently aiming to gradually fill this informational void.

2.4.3. Risk considerations

The image surrounding IC is too optimistic, even though IC develoment can have a negative side as well, in the form of value destruction and intellectual risks. Intellectual liabilities (IL) are one of the least researched, or most avoided topics in the scientific literature of intellectual capital management. Research on the intellectual balance sheet items on the asset side (IA) is much more advanced, than the identification, measurement and management of intellectual liabilities. Intellectual liabilities are not identified in the financial statements, but do decrease corporate value [De Santis – Giuliani, 2013]. Companies prefer to manage financial risks, because they already have considerable experience in it and can approach the problems with quantitative methodologies. Researches prove managers are only conscious of a few risks associated with IC, such as workforce turnover or non-documented knowledge [Brunold – Durst, 2012]. According to Kupi and his co-authors [2008] the attention that companies today dedicate to IC risk management is quite meager. Brunold and Durst [2011] go on to clearly state, that leaders must understand the risks impacting intellectual capital and their consequences for the company, in order to be able to manage the company's intangible capital. Managers and entrepreneurs cannot allow themselves to neglect the management of risks related to intellectual capital, only because they have more experience in the management of risks associated witfh financial capital [Brunold – Durst, 2012].

In practice what can be the intellectual risks / liabilities? Abeysekera [2004] examined emotional liabilities, whereby he highlighted that emotional factors are able to deactivate intellectual assets and therefore even reduce corporate value. According to Garcia - Parra et al. [2009] intellectual liabilities aim to identify those factors which lead to value destruction. Such factors could be bad ideas, lack of employee dedication, incompetence or losing people in key roles.

Most research carried out in this area is of conceptional nature, rather than relying on an empirical basis. Future research would need to focus on the weighting between IC risks, this way neglecting the management of significant risks could be avoided [Brunold – Durst, 2012]. This concept is underpinned by the economic catchphrase, stating that something can be managed, if it can be measured. Therefore nothing can be done with intellectual risks until they cannot be technically quantified. At this point it must be noted, that it is already an important progress in itself to be able to identify a risk.

2.4.4. Innovation considerations

Schumpeter [1934] claimed that the basis of economic growth is innovation and entrepreneurial activity. In his view innovation can lead the company to a temporary monopolistic state, where the capital invested in innovation produces returns due to the fact that the company can gain extra profit up until the point when the competitors adopt the innovation, or copy the product or service. Innovation is an important factor when speaking of knowledge management, because by nature it is an active knowlede-based activity, which is the result of systematic work [Iványi-Hoffer, 2010]. A knowledge-based activity indicates an activity, which is centered around innovation and thinking. Innovation relies on both tangible and intangible factors of production [Pörzse et al, 2012 b ; Sára et al, 2013], from which we can deduce that innovation is a complex corporate activity. The principal conditions for this innovation activity are the organizational culture, the willingness to take risks, the degree of liberty of the work and the learning organization [Fejes, 2014].

Adequate knowledge transfer is indispensable for increasing an organization's innovation potential, numerous researchers have highlighted that efficient knowledge transfer increases an organization's innovativeness [Hansen - Mors - Lovas, 2005 ; Janssen - Bosch - Volberda, 2006 ; Aalbers - Dolfsma - Koppius, 2014]. As a result of this the organizational planning dilemma must be faced, whereby such an organizational structure has to built and run, which can handle stability and change simultaneously [Csedő, 2006].

Innovation is an immanent part of corporate operation, which is in symbiosis with other business areas. The reason for this is that it would not be able to achieve its managerial goals on its own, therefore it also relies on other cross-functions. Leaders must explore and understand these interdependences and interactions, otherwise they cannot operate the company's innovation productively and efficiently. Innovation generates synergy by impregnating the organization with a renewing, creative culture. The innovations of each functional area exercise a collective effect on the entire company, whether it be technological or non-technological innovation. The holism of innovation indicates that it is possible to innovate at any level and in any area, a valuable idea can be formed anywhere and anytime, but it will have an impact on the entire organization [Sára et al, 2014].

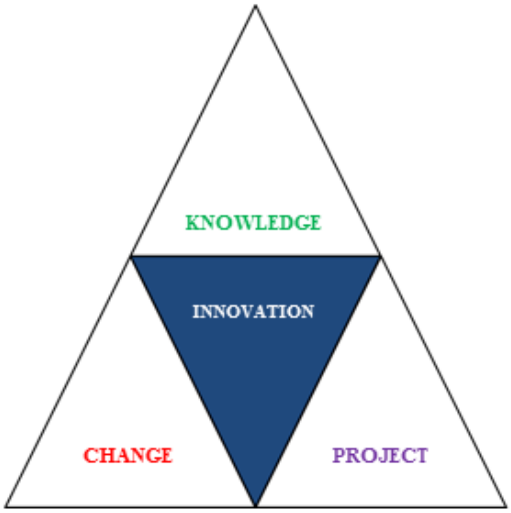


FIGURE 20: THE CONTEXT IN WHICH INNOVATION AND KNOWLEDGE ARE CONNECTED

SOURCE: FEJES, 2015 a

The above figure shows that holism within the company means that innovation cannot be managed partially, since its success is also dependent on the knowledge management, project management and change management activities of the firm, therefore innovation could be considered as an integrative function. This positioning of innovation helps to understand how innovation is a truly multidisciplinary activity, which combines elements of knowledge, change and the project mindset with the purpose of increasing the company's competitiveness [Fejes, 2015].

In the case of this dissertation focusing on knowledge management, the possible nature of the relationship between innovation and knowledge must be mentioned. According to Hámori and Szabó [2012] there are three possibilities:

- the two phenomena are contrary to one another,
- innovation is a type of learning,
- learning is a necessary pre-requisite of innovation.

The relationship that is formed between knowledge and innovation is also influenced by numerous other business circumstances.

To conclude the chapter, I would like to reinforce why it is important to highlight innovation when thinking about intangible factors of production. Innovation can be copied, however innovativeness cannot be [Stahle – Hong, 2002]. For this reason, the organization's intellectual capital must be protected against copying and imitation, because if another firm copies the activity, then revenues could be eroded by the increasingly intense competition [Kianto - Laukkanen - Ritala, 2010]. This is however not acceptable for any profit-oriented company, because nowadays the successful companies are the ones which innovate continuously, exploit the opportunities provided by new technologies and draw benefit from employees' competencies. In this context it can be set out, that knowledge assets are the motor of value creation in the global business environment [Lerro - Iacobone - Schiuma, 2012; Han – Li, 2015].

When examining value creation in banking and its relationship with innovation, we must take into account the phenomenon increasingly influencing banking services, namely FinTech, as a trend, or as an attempt to reinterpret the business model, since this is a new driving force in the configuration of banking business models. What in fact is FinTech? This is a new banking service delivery structure, based on advanced data analysis, artificial intelligence and gamification technology aiming to renew the functions of investment management, wealth management, daily banking, cybersecurity, as well as robotics driven consulting. Since implementing FinTech type of solutions is a high-risk activity, its most active representatives are mostly startup firms, which develop their various solutions after having raised the necessary capital. One of the results is that the implementation of FinTech type of solution is more advanced in those countries, where the innovation ecosystem is more developed, and it is easy for new companies to raise a sufficient amount of capital. This conclusion is also demonstrated by the Deloitte [2016] study, according to which the most active global FinTech players are New York, Singapore, Silicon Valley, London, Chicago and Hong Kong. In 2016 a total of 17.4 billion dollars of venture capital investment was made in startup companies operating in the FinTech sector, of which China represented 7.7 billion dollars, while the Unites States accounted for 6.2 billion dollars, followed by Europe in third place with a significantly smaller contribution to the development of this sector with 783 millions dollars invested [Deloitte, 2017].

The change in financial services can be principally traced back to four reasons according to Weichert [2017]:

(1) the more advanced ability to connect tools used in service delivery,

(2) the change in customers' mobility habit,

(3) the changes in consumer expectations which can be concluded from demographic tendencies, as well as

(4) the rapid development of artificial intelligence and data analysis.

These trends encourage banks to expand their investment in the domain of FinTech solutions and rethink their sales channels, especially on the B2C market. At the focus of these changed business models we can find objectives such a increasing the standardizability of background procedures, aggregation of certain functions and making service delivery as fast, flexible and secure as possible [Romānova – Kudinska, 2016].

This new trend contradicts the economic dogma, because according to the microeconomic classification intangible assets are not considered as factors of production in the classical sense of the word [Lentjušenkova – Lapina 2016]. Although the scientific branch of accounting acknowledges the existence and role of these factors, they are not considered at the same level as traditional, tangible resources. We can see when configuring the business model, the type of strategic deficiencies that this kind of attitude can cause. Mainly, because one of principal building blocks of business models are the totality of resources and capabilities. These are those intangible assets, which ensure the dynamism and the executability of the value creation processes taking place in the company. When constructing a business model, one of the key tasks is defining the inputs and capabilities on which value creation is based [Bini - Dainelli - Giunta, 2016]. By now the need has become clear, that human assets, organizational assets, as well as network assets have to considered in the reflection. Consequently, intellectual capital has to become the central element of business models.

FinTech, whether it is a trend, a procedure innovation, or a renewal of financial service delivery structure, is constructed from building blocks, of which a majority are of intangible nature. Moreover, it relies on intangible factors of production not only on the input, but on the output side as well, since these resources are needed to operate and manage the created solutions. Therefore it can be concluded, that the reconfiguration of the banking value creation business model is slowly coming to life, and this process is mainly built on technological and knowledge capital inputs.

3. RELEVANT TERMINOLOGY AND OTHER BANKING SECTOR FEATURES

3.1. Conceptual framework and the clarification of definitions

I have previously discussed, that companies are sensing the continuously increasing gap between the book value and the market value and are searching for the values, which are missing from the accounting statements [Maditinos et al, 2011]. In order to successfully find these values, the question must be approached with system of terms and definitions, which clarifies the train of thought that will follow.

The purpose of this chapter is to present the definitions found in scientific literature, which will be later used in the dissertation. I would like to clarify these definitions, and to bring the concepts with different names, but similar content to a common denominator, in order to unequivocally define the conceptual framework of the dissertation.

I believe it is necessary to clarify the following concepts:

Concept 1: Invisible wealth

Definition: Wealth that has no physical substance. The totality of intangible factors of production, which constitute a part of assets within the total corporate set of assets, appearing outside of the items represented in the accounting information system.

Concepts with identical meaning: Knowledge capital, Immaterial capital, Intellectual capital, Below the balance sheet wealth, Under the surface wealth

Concept 2: Factor of production

Definition: Productive factor available to the company, which functions as the input of value creation.

Concepts with identical meaning: Resource, asset, elemental factor[12]

[12] The expression of elemental factor is sometimes used in German scientific literature as a synonym for resource, referring to the totality of human work performance, technical apparatus and raw material. Source: Gutenberg, E. [1983]: Grundlagen der Betriebswirtschaftslehre, 1. Produktion, 24. Aufl. Springer, Berlin Heidelberg

Concept 3: Intangible asset

Definition: Factor of production with no physical substance.

Concepts with identical meaning: Intellectual factors of production, invisible resources, intellectual asset, under the balance sheet assets, factors of production below

Concept 4: Human asset

Definition: An intangible asset, which is owned by the employee and cannot be alienated from the employee.

Concepts with identical meaning: no data

Concept 5: Human capital

Definition: The equivalent of human assets on the liabilities side, which indicates the right of ownership of the asset.

Concepts with identical meaning: no data

Concept 6: Intangible corporate asset

Definition: An intangible factor of production, which is managed by the company.

Concepts with identical meaning: no data

Concept 7: Intangible corporate capital

Definition: An intangible factor of production, which is owned by the company.

Concepts with identical meaning: no data

By clarifying this conceptual framework it becomes possible to design a realistic and complete balance sheet structure for the company. However as a first step, the relationships between these concepts must be established. Therefore, from the above conceptual framework the below axioms follow:

Intangible asset = human asset + intangible corporate asset

Intangible capital = intangible external capital + intangible equity

Real corporate asset = tangible asset + intangible asset

Real corporate capital = tangible capital + intangible capital

The interdependencies are represented in the below figure:

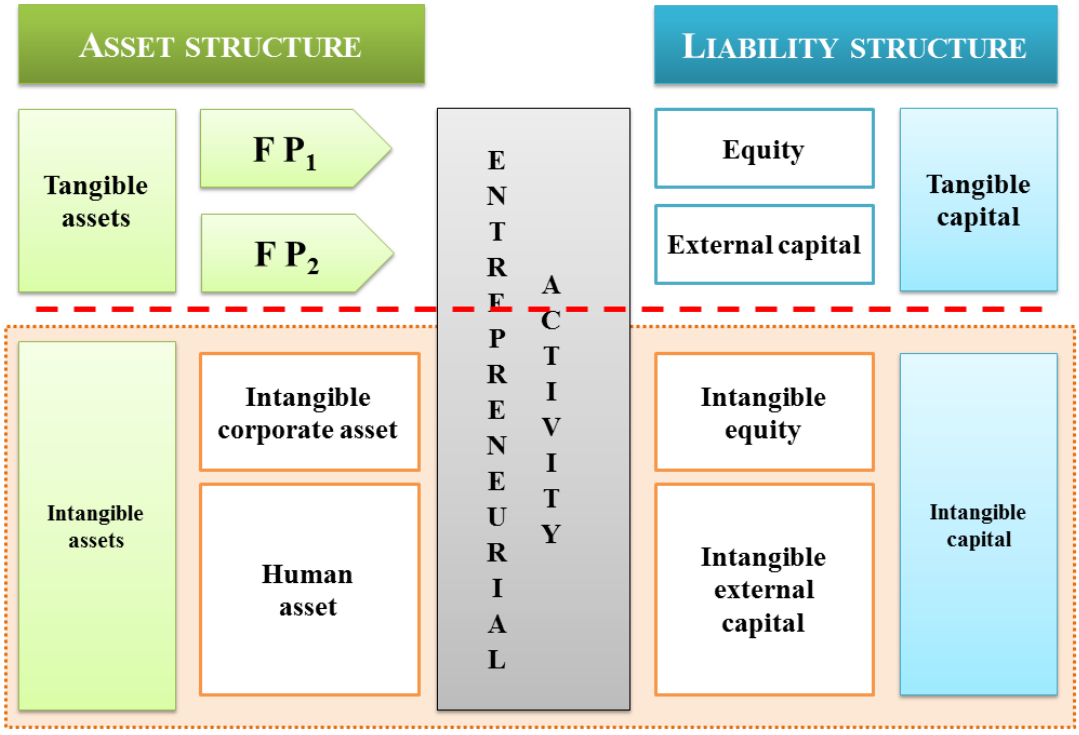


FIGURE 21: THE COMPLETE BALANCE SHEET STRUCTURE OF THE COMPANY

According to the above figure, in order to perform the company's business activity, whether it is production, trade or service, the organization uses various resources. These resources appear on the input side as productive assets, factors of production in economic terms. These factors of production (FP) can be tangible or intangible according to accounting logic. The figure clearly shows that the part above the red, dashed line represents the visible wealth, the so called book value. The items below the line demonstrate the invisible wealth, with the difference that these are not recognized in accounting statements. More precisely, a small part of them are accounted for on the

intangible assets line, but in the majority of cases these are negligible compared to the corporate value, and such marginal representation does not provide satisfactory support for resource optimization from a management perspective. The factors of production needed for the corporate activity are shown by the asset structure, which is composed of tangible and intangible assets. Continuing the train of thought with the logic of accounting, the asset structure has a representation on the capital side, which is called the liability structure. The liability structure can be divided in two, the part above the line represents the tangible capital items listed in the balance sheet, which can be further split into equity and external capital. Likewise, the intangible capital part under the line can be divided in two parts, on the one hand intangible equity, on the other hand intangible external capital, the sum of which is the company's intangible wealth. This division is necessary, because the intangible capital part is not always entirely owned by the company. It is true, that this would be the goal of the company, but in every moment, when a non-alienated knowledge asset is created, it increases the company's real total wealth, however from an accounting perspective the asset functions as intangible external capital. It must be noted, that the ratios represented on the figure are only illustrative, since for the majority of companies the different asset and capital categories do not correspond so precisely.

3.2. The banking value chain

According to the logic of value creation the outputs of value creation activities always represent a higher value than the sum of inputs [Stocker, 2013]. Porter introduced the concept of the value chain in 1985, which showed the value creating connection between the different functional areas from the process perspective. At first it may seem that primary and support processes are separated from one another. The basis for differentation could even be relevance, but upon thorough reflection, the value chain can also be interpreted in such a way, that the business has a general main process, into which the support processes are integrated. In this case we can no longer speak of an order of importance, because the main processes are not viable without the support functions, therefore they can rather be regarded as a unit. Chikán [2008: p. 331] expresses this as *"the value-creating processes execute the conversion of corporate resources into consumer value"*.

Stabell and Fjeldstad [1988] further developed Porter's value chain approach and created the value shop and value network models. This was needed, because as Stocker [2013] also

highlights, Porter's value chain supposes that activities are in an input-output relation with one another and are connected as a chain. This principle does not apply in many cases, as such precise sequence of activities is mostly characteristic of manufacturing industrial companies.

The value-creating logic of the banking sector is also different from that of industrial companies. Stabell and Fjeldstad [1988] associated the value web, or by its other name value network configuration to this logic. Banks, insurance companies, postal service providers or telephone companies are typical examples of companies operating in this value-creating logic. The concept of the value network emphasizes, that for a given buyer a critical factor defining value is the connected stakeholder network [Stabell – Fjeldstad, 1998]. The primary value-creating activities of value networks are network promotion and contract management, service delivery, as well as the operation of the network infrastructure. In my opinion, the presentation of banking operations through the value network is slightly vague with regard to the real, underlying content of value creation. Nonetheless, I agree with the previously presented value network logic, especially with the statement, that special industries may have value-creating particularities, with which the purpose of the core activity can be better understood. Regardless, I would like to present the core activity of banking through my own value chain, which also admits generalizations and compromises, since it is not possible to develop a value creation model which universally applies to all banks and credit institutions, however the process approach of the business activity and the relationship between the functions can be expressed in a general diagram. I named this diagram the banking value chain. This value chain contains the following elements:

- **Business procedures:** in this main process, activities such as the marketing activity assessing market demand, then fostering customer acquisition, the development of active and passive side products, lending, raising capital and the management of free liquidity can be found.
- **Risk procedures**: in this main process, the evaluation of customer's risk profile and the qualification of banking transactions takes place, as well as tracking customers with respect to risk, and if ultimately needed, the collection of debt from problematic (non paying) clients.
- **Background procedures**: this main process mainly regroups the bank-specific IT and bank security activities, as well as operations and regulation.

- **Other support procedures**: this main process is not bank-specific, since these function can be found in the case of any business enterprise, such as finance-accounting, controlling, and the areas of communications, legal and human resource management.

If we want to follow the logic of Porter's value chain, then we can also distinguish primary activities in the case of the banking value chain, namely the business and risk procedures, and the secondary activities, namely the background procedures and other support procedures. I do not believe this differentiation is useful, as it does not express relevance or sequence, since these activities constitute one single unit and ensure service quality jointly. The primary activities rather refer to the core activity, as everyone knows banks as instutions that collect deposits and issue loans. For this reason, the public does not associate internal controls and regulations with banks, even though without these activities these institutions would not be able to fulfill their lending and deposit-taking functions. Public consciousness identifies the organization with its visible activity, but science and the profession is familiar with the other conditions needed to perform the core activity, which are evidently not on display. Therefore I would like to separate the four main processes into two categories, those directly connected to the core activity and those that are indirectly connected to the core activity.

I will use this banking value chain model over the course of my research, these banking procedures constitute the basis of the investigation.

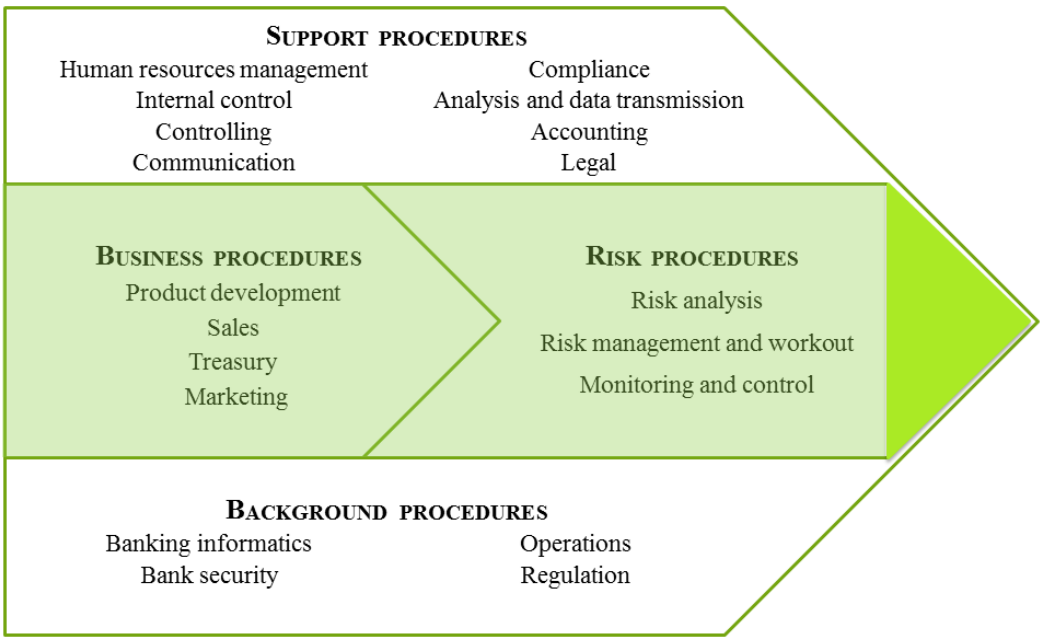


FIGURE 22: THE BANKING VALUE CHAIN

The connection between knowledge investments and value creation is particularly strong, if the knowledge requirements are high. This most likely occurs, when the organization functions in an uncertain and unpredictable business environment, because then it needs information and know-how [Reus et al, 2009]. At the times of a bank crisis this is increasingly true, considering that in Hungary as a consequence of the crisis which hit in 2008 the volume of SME lending dropped, compared to the peak year of 2008 by more than 35% until the end of 2011, decreasing by nearly HUF 1300 billion [Csubák – Fejes, 2014, p. 179]. In such an economic environment it is of particular importance, that banks dedicate attention to their value creation process. The purpose of the dissertation is to uncover the invisible, in other words intangible part of this value creation and present its operating mechanisms.

Generally, intangible assets generate revenue indirectly through other material assets, as well as together with other intangible assets [Basu, – Waymire, 2008]. In the case of value creation this appears in such a way, that at the company level the extent of intangible capital accumulation and its main components are strongly influenced by the role they play in value creation and the intangible capital accumulation strategies of the particular industry [Szalavetz, 2012].

3.3. Presentation of bank accounting features

Compared to the balance sheet of normal enterprises, financial institutions register their assets and the associated liabilities in a differently structured balance sheet. One of the important indicators of the bank's financial situation is the bank balance sheet, which has a particular breakdown, in order to be able to determine directly and indirectly from the balance sheet the sum, and ratio of equity and external capital, the security of client deposits, the asset's degree of convertability to cash, the risk of issuing loans, the relationship of liquidity between assets and liabilities, as well as the costs and revenues connected to one another [Fridrich, 2005, p. 70]. Accordingly it can be observed, that on the asset side the actives are listed by liquidity and risk, while on the liabiliy side passives are shown in order of their due date. Both on the asset and liability side there are a few key balance sheet accounts, which do not figure in the balance sheet, but are indicated informatively under the balance sheet total.

In addition, there is an accounting category specific to credit institutions, which are called off balance sheet items. These items have different characteristics than the items defined as intangible wealth in the case of a normal business enterprise, which do not appear in the book value and are not recognized on the balance sheet. The off balance sheet items in banks' balance sheets are demonstrated precisely in the supplement, according to standard evaluation rules, therefore objectively they a part of the balance sheet interpretation. With regard to their content, off balance sheet items may be contingent or future liabilities, and contingent or future assets [Veres – Gulyás, 2008]. According to Veres and Gulyás [2008] listing these items serves the primary purpose of registry, however there are risks and valuation activities associated to most of such items. The valuation and registry of off balance sheet items is also particular, because these items are in fact credit institution promissory notes, which embody a future commitment of availability, which means from an accounting perspective, that these off balance sheet items could be moved onto the balance sheet anytime and turned into assets.

The bank balance sheet also has a specific feature on the liability side, namely that if earnings after taxes is positive, then it is compulsory for the bank to set aside 10 % of the earnings after taxes in the general reserve [Veres – Gulyás, 2008]. The main reason for this measure is prudency, in order to mitigate risks and ensure immediate solvency.

Assets	Liabilities
1. Financial assets 2. Government securities 3. Claims on credit institutions 4. Accounts receivable 5. Debt securities 6. Stocks and other variable income securities 7. Stocks, shares for investment purposes 8. Stocks, shares in affiliated companies 9. Intangible assets 10. Tangible assets 11. Own shares 12. Other assets 13. Prepaid expenses and accrued income	1. Liabilities to credit institutions 2. Accounts payable 3. Shares outstanding 4. Other liabilities 5. Accrued expenses and deferred income 6. Provisions 7. Subordinated liabilities 8. Issued capital 9. Issued, unpaid capital 10. Capital reserve 11. General reserves 12. Accumulated profit reserve 13. Secured reserves 14. Valuation reserves 15. Profit or loss
Total assets	**Total liabilities**
Of which: Current asset Long-term asset	Of which: Current liabilities Long-term liabilities Equity

FIGURE 23: THE STRUCTURE OF THE BANK'S BALANCE SHEET

Considering the topic of the dissertation it was important to present the bank balance, because it contains several features specific to credit institutions, since the research examines intangible assets in the banking industry. I would however hereby like to

emphasize, that there are similarities between the the balance sheet of enterprises not persuing credit and financial institution activities and the balance sheet of credit and financial institutions, namely that neither register the invisible wealth found between the book value and the market value. Therefore the conclusions drawn from the research will be just as valid for both the bank balance sheet, and the familiar normal corporate balance sheet, since neither of the statements fully manages intangible asset and capital items.

4. RESEARCH METHODOLOGY

According to Yin [1994] the purpose of all research strategy / methodology is to perform an empirical collection of facts and analysis in the framework of one's own system of logic. In this chapter I wish to present in what context and with which methods I examined the selected topic of the dissertation, the operating mechanisms of intangible assets.

4.1. The research context

The researchers of the knowledge management realm explain with the rise in prominence of knowledge that an increasing number of such informations need to be taken into consideration in corporate management, which do not have a material form. This phenomenon indicates the expansion and the intensification of the knowledge-based type of firm. The knowledge firm characteristic is however not only a particularity of service companies, but that of every type of firm [Boda, 2005]. The value-creating potential of knowledge can be identified in every business organization, even in those where machines are instructed by machines, the output of machines is controlled by machines, and moreover the quality is ensured by machines as well. However, at the end of the process there is the person, and the knowledge that cannot be separated from him/her. This is because only human resources can activate material assets in a firm, and channel them into production and service in a value-creating way.

In times of crisis, in business practice one always tries to take new, nonconventional actions in order to stop and reverse unfavourable processes. In the face of the global crisis, the bank crisis, the crisis of confidence, and many more, this is true for financial institutions as well, where managers are encouraged by recent events to introduce such business practices, which would solve a part of their problems. This phenomenon directs attention towards the intangible assets of banks, as their conscious management and the exploitation of their hidden potential is still at a relatively early phase.

While reviewing the Hungarian and international scientific literature related to the research topic, I became reassured in my prior assumption, that examining the set of instruments available to intellectual capital management, and its applicability, is in fact a relevant research orientation. I have identified several focal points of research which have not yet been or were not sufficiently explored, and therefore would be worthy of being considered

as the object of further investigation. Based on the previously presented literature review, these are the following:

- It can be stated, that in the present state of scientific knowledge, no universally accepted methodology for the valuation of intangible assets is known, which would systematically generate the same results when evaluating a given asset. There are countless measurement and valuation methods, but right now they are only able to demonstrate the intangible asset demand of corporate processes to a limited extent. There is a research opportunity focusing on measurement and valuation.
- In case the intangible asset demand of a process is identified with some kind of valuation or measurement technique, then there is also limited possibilities to continue to the next step of investigation, defining what types of assets constitute the total intangible asset demand and within that the corporate added value. A research opportunity to explore the composite effect presents itself.
- In the scientific literature I reviewed, I found no empirical explanation of the question, according to what business objective function companies utilize the indicated intangible assets. It must be considered, that these assets can be used for both research and operational purposes, or other purposes as well. Herein lies a research opportunity focusing on the means of application.
- When reviewing the theoretical background of my research topic, I observed that for the most part researcher examine intangible assets and invisible wealth from the asset side, virtually not taking into account the liability side. Up until now, researchers have practically not examined the right of ownership of intangible assets, which presents and excellent opportunity for me, because the business questions raised by the liability structure of intangible wealth items is considered a particularly fascinating research area. Hereby there is a research opportunity to explore the liability side with an accounting type of approach.

All in all it can be determined, that I am demonstrating the value in use of banks' intangible assets, where the presence or lack of these asset elements exponentially impacts the daily operations of banks. It is my goal that my research be able to contribute to integrating the management of intangible assets into business practice, with which the practice of intangible asset management could be further developed, even until the conscious user level.

4.2. The theoretical framework of the research

The purpose of the research conducted in my PhD dissertation is the interpretation of intangible assets in the business context and the deeper understanding of their value creation mechanisms. To reach these objectives, the research can be characterized by four features : (1) qualitative, (2) deductive, (3) primary, (4) exploratory. In this chapter I would like to present how these features can be interpreted in my research.

After choosing the topic and reviewing the scientific literature it became clear, that research carried out on the topic of intangible assets requires a special and unique methodology approach. A comprehensive research question was defined by means of qualitative research, followed by research questions, which I investigated arranged by topics, based on propositions. The selected qualitative methodology allowed me to thoroughly explore certain business phenomena, and based on them possibly determine theories, regularities. However there is no possibility to prove, to verify the theses in a statistically significant manner at this phase of the research of the topic, which can partly be explained by time constraints, and partly by the primary and exploratory nature of the research.

There are normally two possibilities of examining the validity of propositions. This may be done with inductive or deductive logic [Babbie, 2000]. In the inductive scenario, based on prior experiences and observations, such events, regularities are identified which are in some way worthy of further scientific reflection. Afterwards, we aim to prove these relationships with scientific research methods, and then formulate the regularities found. In the case of deductive logic, we start out from assumptions, the truth and relevance of which is difficult to determine beforehand, and we try to test the previously formulated propositions with research and observations. In the deductive logic, the aim is to explore and prove previously not proven presumptions with scientific methods [Lengyelné, 2013]. I have prepared my PhD dissertation in accordance with the deductive logic. Firstly, I have narrowed down the focus of the dissertation with a comprehensive research question. Later on after reviewing the scientific litreature, I formulated the research questions, which I have broken down into propositions, then I conducted the qualitative research and finally I have examined the validity of the propositions.

The exploration of the dissertation topic took place within the framework of a primary research. This implies, that I have used primarily collected data in the research, which was

gathered with a specific purpose, in relation to the specific research topic. This was needed, as no secondary data was available to conduct the examination of the research questions, furthermore the complexity and novelty of the research justify, that these data be explored primarily. My research is mainly of exploratory nature. The goal of exploratory research is to gain a deeper understanding of a specific problem, to model phenomena more precisely, as well as to identify global interdependencies [Babbie, 2000]. I expect this exploratory research to provide more profound insight into the impact exercised by intangibles assets on value creation. Due to the qualitative methodology, the number of people surveyed does not reach such a sample size, which would be sufficient for statistically underpinned justification, however it does highlight a phenomenon and at the same time a new corporate management situation, which has been unknown or has appeared in a non-proven manner in public consciousness. The purpose of the empirical section of my research is to identify and further reflect upon these phenomena which can be observed in reality.

According to Yin [1994] one of the main attributes of qualitative research is that it examines real life situations, it provides the opportunity to thoroughly examine a phenomenon, and it may sometimes be necessary to interpret the results with the triangulation technique. Triangulation means using different research methods jointly. Triangulation contributes to increasing the validity of the examined phenomenon, ensuring a type of internal validity [Miles – Huberman, 1994]. In this research we can speak of methodological triangulation, meaning that a mixed set of research methods were selected to examine the topic. Researchers must be conscious of the fact that every method is selective to some extent, therefore it could be useful to apply certain procedures, techniques in a mixed or even parallel manner, which allows to correct the results in a scientifically sound manner [Flick, 2002]. In my research this is shown by the fact that I simultaneously used the methodology of semi-structured interviews for research preparation and model design, as well as structured interviews for data collection. Mason [2005] claims that triangulation is an approach which is difficult to execute, however it does provide the benefit of enhancing the scientific validity of the examined phenomenon.

Taking into consideration the features of the research it can be concluded, that due to the novelty, the complexity and other specificities of the examined population, in the first phase there is no possibility of conducting a hypothesis-driven quantitative research. I have accordingly designed the research plan based on exploratory, qualitative methods, which

allow for deeper understanding of the theoretical framework through empirical examinations.

4.3. The research objectives

The objective of the research is to provide deeper insight into the management challenges surrounding intangible assets, and their possible solutions in the Hungarian banking industry. Another goal is to explore the operating mechanisms of those intangible assets, which really take part in banking value creation. Intangible, albeit valuable assets can be found at the focus of the research, as well as their generation, measurement, evaluation, and also the possibilities of their ownership, applicability and management. In the research I am concentrating on the parts of wealth which encompass all those assets which do not have a physical substance, but do carry real value from the business perspective. I would like to reexamine this aggregated, at first necessarily vague approach, and by means of my research bring it closer to practice with the exploration of the characteristics of the intangible assets.

> *Objective 1*: Identify to what **extent** main banking processes rely on intangible assets.
>
> *Objective 2:* Identify what **composition** of intangible assets main banking processes rely on.
>
> *Objective 3:* Determine whether the organization uses intangible assets for **research** or **operational** purposes.
>
> *Objective 4:* Determine the **liability structure** of the invisible wealth, namely the right of ownership of intangible assets.

In order to achieve these research objectives I am examining the relationship of the different banking processes with the intangible assets from the process perspective, with the help of the banking value chain.

4.4. The research questions and propositions examined in the research

From a methodology perspective, I am using qualitative research tecniques to respond to the research questions. Therefore, over the course of the research I have defined a

comprehensive research question, which was further broken down into research questions. In order to map the research problem in the most structured way possible, I have associated propositions / hypotheses to the research questions. I am examining the validity of the propositions through structured interviews. The below figure presents the logical relationships between the questions and presumptions used during the research.

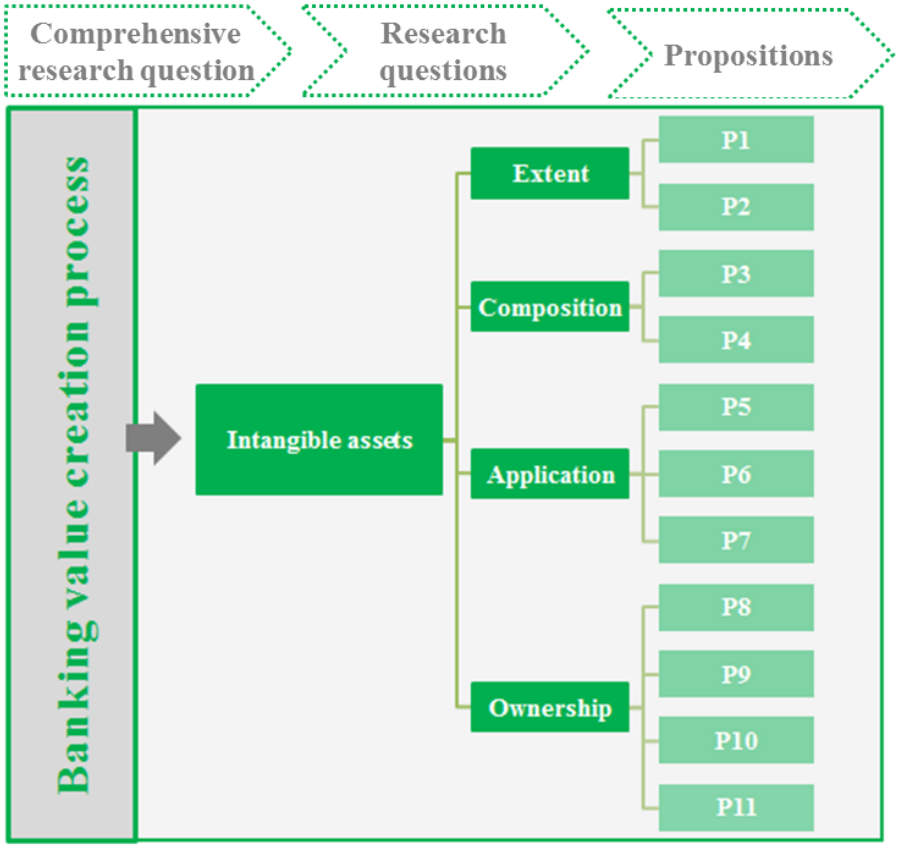


FIGURE 24: THE LOGICAL SYSTEM OF THE PROPOSITIONS EXAMINED IN THE RESEARCH

Comprehensive research question: How can the role of intangible assets in value creation be captured in the Hungarian banking practice?

Research question #1: To what extent do main banking processes rely on intangible assets?

P1: Among the main banking processes, the business processes rely on intangible assets to the greatest extent.

P2: Among the main banking processes, the support activities rely on intangible assets to the smallest extent.

Research question #2: How is the intangible asset demand of different main banking processes composed?

P3: The factors of production related to organizational assets represent the largest segment of the intangible asset demand of main banking processes.

P4: The factors of production related to relationship assets represent the smallest segment of the intangible asset demand of main banking processes.

Research question #3: What characterizes the means of application of intangible assets in the main banking processes?

P5: Hungarian banks rather use intangible relationship assets for operational purposes.

P6: Hungarian banks rather use intangible organizational assets for operational purposes.

P7: Hungarian banks rather use intangible assets related to competence for development purposes.

Research question #4: With regard to the right of ownership of intangible assets, what ownership structure is characteristic in the Hungarian banking practice?

P8: The intangible assets related to relationships are rather in the ownership of the company, thus from the perspective of the company they qualify as intangible equity.

P9: The intangible assets related to organizational capital are rather in the ownership of the company, thus from the perspective of the company they qualify as intangible equity.

P10: The intangible assets related to competence are rather in the ownership of the employee, thus from the perspective of the company they qualify as external capital.

P11: The balance sheet structure created through the banking value creation process contains serious intangible risks, which can mainly be traced back to the fact that a part of the intangible assets, which are indispensable for performing the core activity, are in fact not in the ownership of the company.

Over the course of the research, I am searching for the answers to these questions, by examining the validity of the above propositions.

4.5. The research model

I would hereby like to describe the research model and the logic with which the research content examining scientific questions was constructed. See Figure 25.

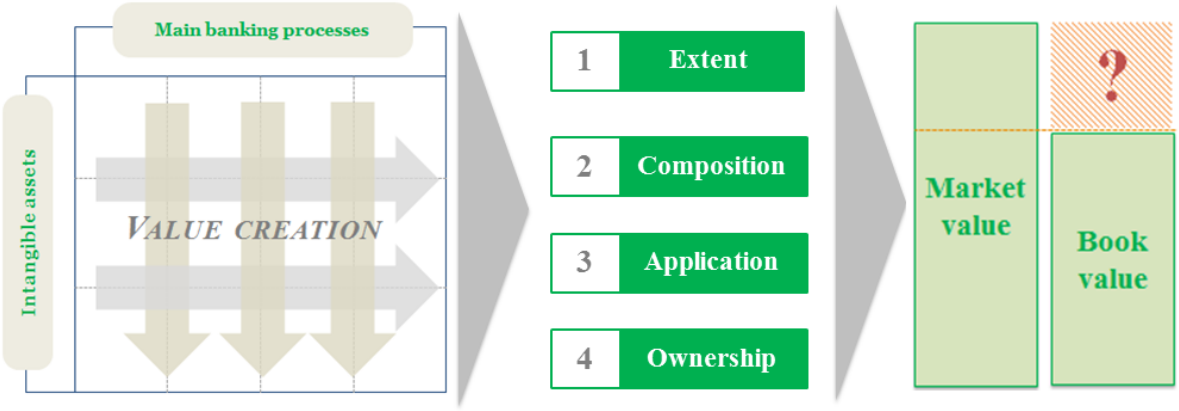


FIGURE 25: THE RESEARCH MODEL

Based on the logic of the research model, I am deducing the banking value creation from the relationship of main banking processes with intangible assets. From this relation, conclusions can be drawn about the extent of the intangible asset demand, the composition of assets, the means of application, and the right of ownership of these assets, as capital goods. This results in such a breakdown, that if it is complemented with a few pieces of financial, accounting information, then based on it conclusions can be drawn with regard to the characteristics of the corporate added value and its management specificities.

4.6. The research method

Due to the complexity of the topic and its exploratory nature, my research qualifies as an exploratory research conducted with a qualitative methodology, which examines primary data. This research can be divided into two successive phases. The first phase serves the purpose of preparing the research and designing the model, whereby, by means of semi-structured interviews, I formulated the structure and content of the questionnaire used for the following structured interviews. When designing the research model, I consulted will several senior bank managers, financial market consultants and financial professionals about the content of the research model, as well as about the objective function used in the course of the research. After finalizing the research questionnaire, I conducted 5 trial interviews with the purpose of testing the understandability of the questionnaire and the duration of the interview. Afterwards the sample classification criteria were defined, which also determined the profile of the professionals and that of their companies, whom I wanted to involve in the research. This was followed by the interview phase, where I collected the information primarily by means of structured interviews. Since the target audience also comprised bank leaders who are hard to reach, therefore in some cases opinions were collected by means of a telephone interview instead of the face-to-face modality.

Once this phase was completed, the comprehensive processing and analysis of the results was begun, in order to be able to draw the adequate conclusions with regard to the research questions and the associated propositions.

The entire research process is presented by the below figure:

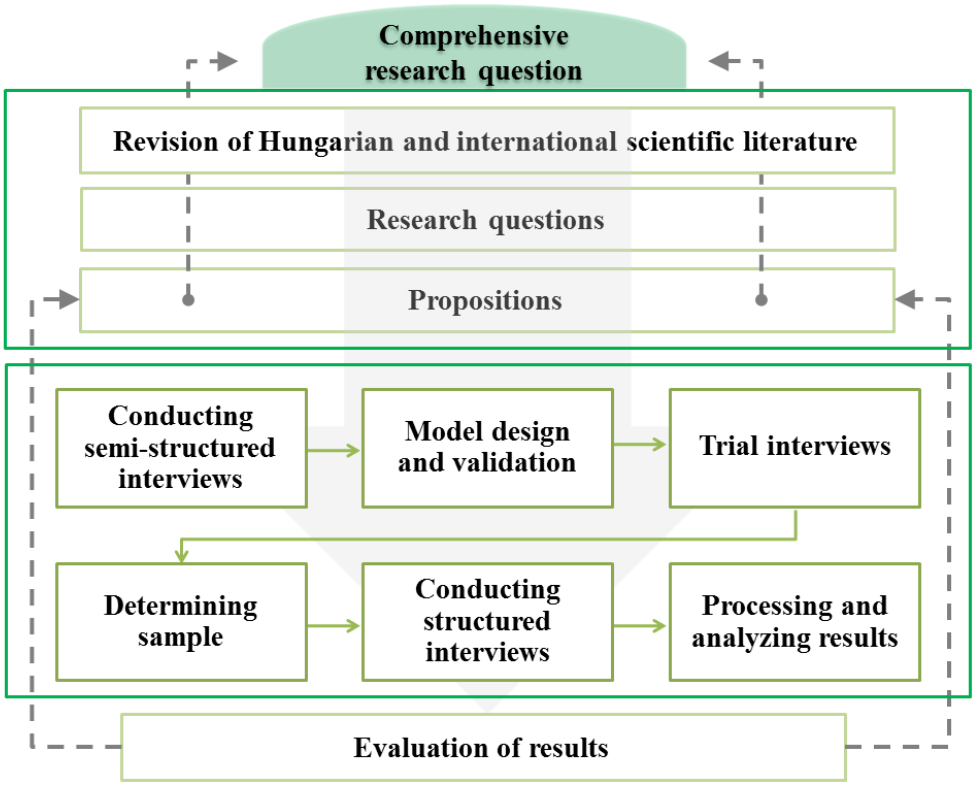


FIGURE 26: THE RESEARCH PROCESS

4.6.1. Methods used in the course of the research preparation

In order to ensure the professional relevance of my research, as well as to test the usability of the questionnaires which guided the structured interviews, I conducted 12 semi-structured interviews, according to the following breakdown:

Number of interviewees: **12**

Position of interviewees:

- **6 banking experts** (more than 7 years of banking or financial market experience)
- **6 leading experts:**
  - **4 middle managers** (more than 12 years of banking or financial market experience and minimum 5 subordinates)
  - **2 senior managers** (more than 20 years of banking or financial market experience and minimum 30 subordinates)

Average interview duration: **70 minutes**

Workplace of interviewees: **banking groups of Hungarian and foreign ownership operating in Hungary**

Anonymity: **the interviewees did not consent to indicating their names**

The basic document of the semi-structured interviews was the draft of the future research questionnaire. The main purpose of these interviews was the professional validation of the content of the questionnaire to be used for the structured interviews. The nature of the semi-structured interview is between that of the in-depth interview and the structured interview, meaning that the interviewer has pre-defined, fixed questions, but it is possible to deviate from them and even introduce entirely new questions [Lengyelné, 2013].

Over the course of the semi-structure interviews, I aimed to ask for the respondents' opinion about the following topics:

- the understandability and precision of the terminologies, classifications, categories, units of measurement, levels of aggregation used in the research questionnaire,
- the identification of other sets of data relevant to the research,
- judgement of the reason for existence and the professional relevance of the research questions,
- collecting future adequate interviewees corresponding to the classification criteria, registering their contact details.

I have summarized the thus collected information and attempted to resolve any possible contradictions. Taking these informations into considerations, I have formulated the research questionnaire used for the structure interview in such a way, so that it would generally be clear and understandable for any banking expert in Hungary.

4.6.2. Methods used in the course of the research

The second pillar of the qualitative research consisted of conducting the structured interviews. The structures interview is in fact a verbal questionnaire, one of the key advantages of which is that the interviewer is able to instantly code the responses received during the structured conversation [Lengyelné, 2013]. Its disadvantage is that it requires considerable effort to be able to guarantee the same conditions for every interviewee.

Interviewing was conducted in one of two ways. Depending on the availability and attitude of the interviewess they met with me personally, whereby I asked my questions, or they could be contacted and interviewed by telephone. In both cases, the interviewees received the questionnaire beforehand, as well as a short presentation, which established the theoretical framework of the research, as well as the terminology used over the course of the research.

Over the course of the research, I aimed to ensure a personal meeting, however with time I had to acknowledge, that the target group has such an unpredictable and hectic schedule, especially above a certain leadership level, which was not compatible with meeting them in person. Therefore I aimed to select a solution, which makes the collection of necessary information flexible. For this reason, I supplemented my research with a telephone interview option. Research by means of telephone is usually applied in the case of difficult to reach target groups. Its principal advantages are speed and cost efficiency, because there is no need to meet with the interviewees personally, even on several occasions, and the interview can be conducted at a time suitable for the interviewee, thus promoting higher willingness to respond. A further advantage of the method is that the interview can be stopped if needed, and can even be continued at a later point in time, which significantly reduces the ratio of incomplete interviews. One of the main disadvantages of the method is that it is difficult to continuously keep the interviewee's attention.

The basic condition of efficient questioning is that the questions listed in the questionnaire need to be easy to understand. In this research I have dedicated particular attention to establishing a common understanding and a common information base, in such a way that when the interview was scheduled, a non-editable version of the questionnaire was sent out, along with a short, concise theoretical summary about the research and the explanation of the applied terminology. This served the purpose of ensuring that interviewees began the interview with an identical knowledge base, and it also facilitated responding to the questions, as during the interview they had the possibility to follow the research questionnaire on their own computer. With this technique I hopefully managed to moderate the complexity of the research questionnaire, as well as counteract information assymetry.

Before the live launch of the research I conducted 5 trial interviews, which allowed me to calibrate the duration of the interviews, as well as to identify and manage initial difficulties.

The research sample can be described by the following factors:

- The geographical delineation of the sample: **Hungary**
- The industry delineation of the sample: **Banking and credit institution sector**

The research exclusively examines credit institutions operating in Hungary, in the form of company limited by shares. In order to ensure a higher representativity, the target institutions were selection with the objective that they cover ¾ of the Hungarian banking sector according to the balance sheet total (BST).

The interviewees for the research were selected from the following credit instutions:

#	**Credit institutions operating in the form of company limited by shares**	**BST** (billion HUF)	**BST proportion** (Compared to banking sector total) (%)*	**Number of interviews** (pcs)
1	OTP Bank Nyrt.	7 109	24%	9
2	Kereskedelmi és Hitelbank Zrt.	2 863	10%	8
3	UniCredit Bank Hungary Zrt.	2 833	10%	3
4	MKB Bank Zrt.	2 099	7%	1
5	ERSTE BANK HUNGARY Zrt.	2 038	7%	2
6	Raiffeisen Bank Zrt.	2 001	7%	7
7	CIB Bank Zrt.	1 665	6%	6
8	MFB Magyar Fejlesztési Bank Zrt.	1 294	4%	11
9	BUDAPEST Hitel- és Fejlesztési Bank Zrt.	989	3%	3
	Összesen	22 894	77%	50 db

TABLE 2: THE LIST OF CREDIT INSTITUTIONS INVOLVED IN THE RESEARCH

SOURCE: ARANYKÖNYV, 2016, MAGYAR NEMZETI BANK, 4. HIT. RT. (1A) ESZKÖZÖK MUNKALAP

- The delineation of the sample by corporate form: **Form of company limited by shares**
- Target group (classification criteria):
  - **minimum 10 years of banking/financial market experience**

OR

- **minimum middle manager position and higher education qualifications (diploma)**

- The division of the sample by professional areas:
  - **business area, (28 people = 56 %)**
  - **risk management area, (12 people = 24 %)**
  - **operational area. (10 people = 20 %)**
- Number of interviews and division by interview type:
  - **14 pcs. face-to-face interviews**
  - **36 pcs. telephone interviews**
- Duration of interviews:
  - For face-to-face interviews: **35-40 minutes**
  - For telephone interviews: **18-20 minutes**
- The content of the questionnaire:

  According to its structure, the questionnaire used for the research can be divided into three sections. I used these to assess the relationship of banking processes with intangible factors of production. The first section explores the use of intangible assets, the second one focuses on the composition of applied intangible assets, while the third section raises questions about the right of ownerships and the means of application of intangible assets.

Summarizing the above discussed information, it can be concluded that on the basis of the balance sheet total, the research explored the opinion of 77% of the Hungarian banking sector by means of the 50 structured interviews. This survey was preceded by a preparatory and model validation phase consisting of 12 semi-structured interviews, and a trial interview phase consisting of 5 interviews. The sample size of 50 reached during the research in fact indicates a theoretical level of saturation. This means, that I found 50 interviews to be sufficient, because after about the 40^{th} interview it became clear, that the new interviewees will not differ considerably from the responses that were previously received and were being continuously processed. When I recognized this trend towards an average, then I decided to conduct 10 more interviews is possible, and if the new results reinforce the results gained up until that point, or do not differ considerably, then I would stop. As this was a qualitative research, 10 additional interviews also required considerable efforts, but I wanted to make sure that the 40 interviews show a real saturation, which has not come about by chance. It can also be explained, that the research contains the methods

of an exploratory type of research, rather than that of a research providing proof, since the sample size is not sufficient for quantitative, statistically verifiable results.

4.7. The research limitations

I aimed to design and carry out my research in such a way, so that both the selected methodologies and the process, and thus the results satisfy the criteria of validity, trustworthiness and objectivity. Nonetheless, the nature of the research and the complexity of the topic immanently present certain limitations of interpretation and applicability. To ensure transparency and reinforce the credibility of the research, the research limitations will be hereby presented.

Over the course of the research, several limitations caused by the chosen research methodology had to be faced, which influenced the research results. One of these is the *measurability limitation*. The measurability, quantifiability of intangible assets is a serious scientific challenge. This research aimed to manage this situation by leaving behind the methodologies used until now and attempting to measure these factors from a new perspective. This approach is on the one hand innovative, however on the other hand it implies the same measurement uncertainties, as new methodologies generally do. This was an important decision to be made in the research, whether to examine the Hungarian banking sector based on an already existing measurement method, or to design my own methodology, which entirely corresponds with the particularities of the research. I went with the latter option, because there are items among the research questions for the measurement of which I found now scientifically acknowledged procedure. Such methodological alignment of the research model and the research objectives is on the one hand innovative, however as this is not a tested method it does immanently have a mesurability limitation.

An *objectivity limitation* is also present, meaning that because the personal opinion of banking experts and leaders was asked within the research, there is a possible danger of certain interviews containing too much subjectivity. This is however inevitable in the case of such a research, since each interviewee is able to answer the questions raised based on personal experiences and knowledge. I aimed to counter the effects of this individual distortion by increasing the sample size and ensuring an extensive as possible coverage of the industry based on the balance sheet total.

Furthermore, a *method specific limitation* must also be taken into account. The disadvantage of the telephone interview technique is that due to the lack of personal contact and interaction, it is more difficult to keep the interviewee's attention, therefore this method is only suitable for conducting shorter interviews of simpler structure (maximum 15-20 minutes). Another disadvantage is that this methodology can only be implemented, if an adequate database is available to reach the target audience. As the duration of the interviews was generally under the indicated threshold value, and in order to facilitate understanding I previously sent out theoretical summaries to the interviewees, I trust that I managed to efficiently moderate this method specific effect.

In addition, the *risk of excessive generalisation* must be considered. This may occur when research is conducted under time pressure. In this case, there is a danger that the researcher draws conclusions of questionable validity from an inadequate sample size. In order to overcome this research limitation I attempted to focus the research on the part of the population, who have the power to shape the market, since the Hungarian banking market is a small financial market segment, where the dominant players are well identifiable. For this reason, I aimed to include those typical elements of the population in the sample, which represent the sector itself well.

Furthermore, I would like to mention that I aimed to filter out the negative effects of *selective observation*, by attempting to make sure that for each intitution, not only the opinion of one area be included in the sample, but a mix of them if possible (business, risk management and opreational areas). By this means, I reduced the distortive effect of function-specific opinions.

Moreover, *context dependency* must be considered as a criterion of trustworthiness. This research limitation refers to the fact that this research was conducted in a given economic cycle, covering a specific circle of experts and managers, moreover with geographical and other delineations. Therefore, it cannot be guaranteed with 100% probability, that repeating this investigation in a similar framework would produce the exact same results, since the context in which the research was conducted cannot be reproduced again entirely.

The *person of the researcher* can also be a risk, because while a quantitative researcher measures, calculates, experiments and verifies, the qualitative researcher observes, asks, explores and interprets [Kvale, 2005]. Kvale illustrates the quantitative researcher with the metaphor of "data gathering miner", while the qualitative researcher corresponds to the

"data generating traveler" metaphor. In the later case, the person of the researcher is exceptionally important, since s/he needs to regard the informations generated over the course of the research as value neutral. The constant self-control and the triangulation method hopefully guarantee that the research remains objective and satisfies the scientific criteria.

In conclusion it can be stated, that two types of approaches can be considered when creating research strategy. Firstly, a simpler approach is when the researcher constructs the research model with a few parameters, based on assumptions far removed from reality. Secondly, there is a more complex approach, when the researcher attempts to take into consideration every parameter in order to make sure, that the final conclusions reflect the reality as much as possible. There is the possibility for error in both cases, as well as the distortive effect. In this research I aimed to select such a research methodology approach, which is best aligned with the specific set of conditions of the financial market, the basic element of which is that the target audience is quite occupied and difficult to access, that the topic requires profound professional knowledge, and that thinking about intangible assets at this level is in many cases not part of the daily business activity, or at least less consciously so.

5. THE CLARIFICATION OF THE CONCEPTS USED IN THE RESEARCH

Prior to processing and presenting the results, it is by all means necessary to discuss the concepts used in the research, as well as the system they constitute. In the theoretical summary I have already introduced the banking value chain designed in a process approach, as well as the fundamental logic of intangible value creation. In addition, one more component must be presented, which has not yet been introduced from the perspective of the research. This in fact is the possibility of classifying the thoroughly discussed intangible assets, and the implication of this on the research.

The classification of the factors of production

Author(s)	Year	Applied categories of resources			
Brooking	*1996*	Market assets	Human capital	Infrastructural assets	Intellectual property assets
Edvinsson – Melone	*1997*	Human capital	Structural capital		Customer capital
Sveiby	*2001*	Visible wealth	External structure	Internal structure	Individual competence
Boda-Virág	*2010*	Tangible assets	External intangible assets	Internal intangible assets	Personal knowledge, skill and dedication of employees
Stocker	*2012*	Material resources	Human capital resources	Relationship capital resources	Organizational capital resources

The above table clearly shows, that several researchers have proposed various approaches of regarding the factors of production used by companies. It can be seen, that numerous grouping options can be found in the scientific literature to categorize corporate resources and intellectual / intangible assets. I have reviewed these approaches and decided to design a structure, which is the most closely aligned with my own professional mindset and the particularities of the examined industry. I will hereby present the interpretational and conceptual framework which served as the basis for conducting the research.

Material capital goods are not in the focus of my research, therefore I concentrate on the intangible segment in the breakdown of capital goods. Beyond the assets that can be expressed and identified by accounting, I have divided intangible assets into three asset groups, these are the Relationship, Organization and Competence groups. I have further broken down these groups into individual assets. Each intangible asset group naturally encompasses such intangible assets, which belong together according to a certain set of criteria. At the level of the intangible asset groups, this set of criteria is aligned with the classifications presented in the literature review section, which have already been used, however at the level of the individual assets the set of criteria differs, in some cases it is narrower, in other cases broader.

1. RELATIONSHIP intangible asset group

Definition: The value of the company's portfolio of clients and its network of connections.

Assets belonging to the asset group:

- Customer relationships (B2C)
- Partner network (B2B)
- Government relations (B2A)
- Civil relations (B2NGO)
- Stockholder connections

2. ORGANIZATION intangible asset group

Definition: The value of a company's business processes, their degree of organization and operational efficiency.

Assets belonging to the asset group:

- The degree of organization of work
  - *Internal, organizational coordination mechanisms*
- The degree of regulation of work
  - *Patents*

- *Regulations*
- *Process documentation*

- Organizational behaviour
  - *Ethical organizational behaviour*
  - *Organizational culture*
- Organizational particularities
  - *Brand*
  - *Operating conditions*
  - *Collective knowledge base*

3. COMPETENCE intangible asset group

Definition: The value of the knowledge, capabilities and experiences associated with the company's human resource base.

Assets belonging to the asset group:

- Expertise
- Work experience
- Emotional intelligence
- Motivation

Overall these are the invisible resources, which consitute a company's intangible income producing capacity, along with the material resources. The classification and categorization of the factors of production is summarized by the table below.

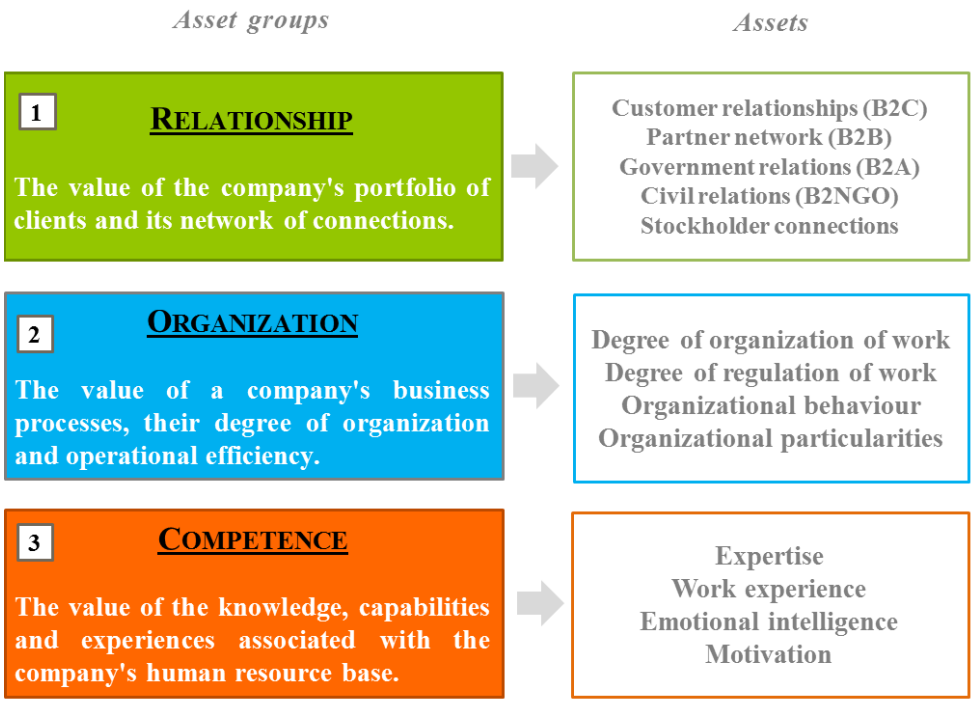


FIGURE 27: THE INTANGIBLE CATEGORIES USED IN THE RESEARCH

6. THE RESEARCH RESULTS

Over the course of the research, I have formulated a comprehensive research question, which was further broken down into research questions. In order to outline the research problem in the most structured manner possible, I have associated propositions / hypotheses to the research questions. The propositions are related to four research questions, which actually facilitate putting the research questions into operation. The research results will be presented according to this same logical structure in this chapter.

The sample size of 50 elements in certain cases allowed me to also analyze my research results with statistical programs. I performed this task using SPSS. During the presentation of the research results, I will indicate these findings if they are relevant and help the interpretation, as well as the understanding of the core results, in order to equally reinforce the research results with quantitative data processing methods.

6.1. The extent of the usage of intangible assets (P1, P2)

6.1.1. Methodology

In this research section I aimed to assess to what extent the different main banking processes use intangible assets. The methodology consisted of listing the main and sub-processes of banking, to which intangible demand intensity could be attributed on a scale of 1 to 3. "1" indicated that in order for the main process to operate adequately intangible assets are need to a small extent, thus that the main process mostly requires material assets. The other extremity of "3" meant that in order for the main process to operate adequately, intangible assets are needed to a great extent, indicating that the majority of assets required are intangible.

In the structured interviews I asked the respondents to weigh the intangible asset demand of each business process accordingly.

The objective	This worksheet explores the intangible asset demand of the different main business processes. According to your opinion, please evaluate to what extent do the following main business processes rely on intangible assets?	
Response scale	For the main process to operate adequately intangible assets are need to a **great extent** (majority of assets required are intangible assets).	**3**
	For the main process to operate adequately intangible assets are need to a **medium extent** (requires material and intangible assets in similar proportion).	**2**
	For the main process to operate adequately intangible assets are need to a **small extent** (majority of assets required are material assets).	**1**
The task	Accordingly, please assess the intangible asset demand of the different business processes!	

FIGURE 28: EXCERPT # 1 FROM THE STRUCTURED QUESTIONNAIRE

6.1.2. The examination of propositions

The questions approached with the above described methodology gave the following results in the sample of 50 elements.

Background procedures	
Banking informatics	**2.20**
Bank security	
Operations	
Regulation	
Business procedure	
Product development	**2.73**
Sales	
Treasury	
Marketing	
Risk procedures	
Risk analysis	**2.20**
Risk management and workout	
Monitoring and control	
Regulation	
Other support procedures	
Human resources management	**2.15**
Internal control	
Compliance, legal	
Analysis and data transmission	
Communication	
Controlling	
Accounting	
Legal	

FIGURE 29: RESULT TABLE # 1

From the results it can be clearly seen, that the experts involved in the research consider business procedures as being the most intangible asset intensive area. This is logical, as this is the function, which unites such intellectual processes whereby new ideas, new products, new sales concepts, new pricing models, etc. have a key role. These processes require innovative activity from the employees, where they aim to create something new, different, better, possessing a high degree of creative freedom. Such activities surely have a higher intangible asset requisite, compared to other areas which are limited by internal regulations, organized according to protocols or focus on abiding by and controlling external legal provisions.

From the statical analysis of the interviews, business procedures cannot be distinguished from the examined procedures significantly based on the average, nonetheless the median indicates a stronger intangible asset demand, since the median of business procedures is 3, while that of every other procedure is 2, which in the case of such as small size sample clearly reinforces the prominent intangible asset use of business procedures compared to the other categories (see Appendix 1). According to the below figure, 78% of respondents claimed that business procedures rely to a great extent on intangible factors of production.

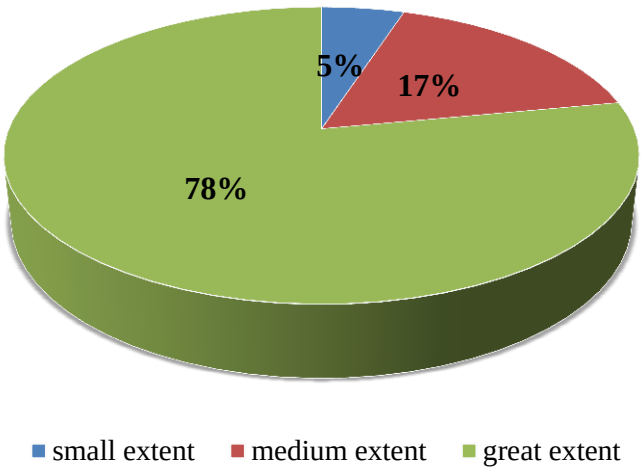


FIGURE 30: THE INTANGIBLE ASSET DEMAND OF BUSINESS PROCEDURES

In addition, it can be deduced from the results, that when examining the average the other support activities have the smallest intangible asset demand, but this does not differ significantly from the other categories. Based on the median it can be stated, that this category has a median value of 2 just like risk and background procedures (see Appendix 1). Thus it cannot be concluded, that support activities would have a smaller intangible

asset demand compared to the two mentioned areas. However this is not true when comparing to business prodedures, whereby based on the average and the median, other support function have a lesser intangible demand.

The below diagram shows, the distribution of the results of expert evaluation with regard to the intangible asset requisite of other support functions.

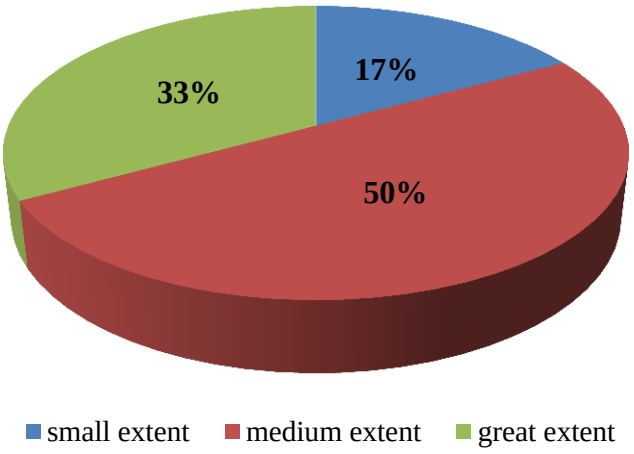


FIGURE 31: THE INTANGIBLE ASSET DEMAND OF OTHER SUPPORT PROCEDURES

6.1.3. The evaluation of propositions

Proposition number	Description of the proposition	Evaluation
P1	Among the main banking processes, the business processes rely on intangible assets to the greatest extent.	**PROVED**
Justification	It has been proven both by qualitative and quantitative means, that this is the only main process, which can be somewhat differentiated compared to the other procedure types with regard to intangible asset demand. In turn, this difference is expressed by an above average intangible asset demand.	
P2	Among the main banking processes, the other support activities rely on intangible assets to the smallest extent.	**PARTLY REJECTED**

Justification	The proposition cannot be proven quantitatively, since there are no significant differences compared to the rest of the procedures, however qualitatively there are signs suggesting the fact, that it seems logical to indicate those activities as having lower intangible asset demand, whereby work is performed in a strongly regulated framework. The proposition must be partially rejected, which can probably be traced back to incorrect group design, considering that besides regulated activities (internal audit, compliance, accounting, data transmission), activities such as communication, controlling and human resources management also belong in this group of procedures, which can be considered as less regulated and descriptive work activities. At the same time with formal logic it can be accepted, that support areas are in fact not listed among the main procedures exactly because their function is to complement and assist the adequate execution of the main procedures, therefore it can be presumed, that their intangible asset demand is smaller than that of main procedures.

6.2. The composite effect of intangible asset demand (P3, P4)

6.2.1. Methodology

Following the train of thought of the research, the purpose of this section is to explore how the previously determined intangible asset demand is composed in each of the main business processes. The methodology consisted of approaching the question with a two-dimensional logic, whereby one of the dimensions indicates the main banking processes, while the other refers to the intangible asset groups, namely Relationship, Organization, Competence. Over the course of the interviews I asked the respondents to divide 100% in the case of each main banking processes, in order to find out which intangible assets are needed for the management of the processes.

The objective	This worksheet explores, how the previously determined intangible asset is composed in the case of each main business process.
Response scale	Percentage scale
The task	Please divide 100% for each main business process, based on how the intangible asset demand is composed in your opinion.

FIGURE 32: EXCERPT # 2 FROM THE STRUCTURED QUESTIONNAIRE

6.2.2. The examination of propositions

Main processes	Intangible asset demand of the process	The intangible asset composition of the process: Relationship	Organization	Competence	Check
Background procedures					
Banking informatics	**2.20**	**24%**	**36%**	**40%**	0%
Bank security					
Operations					
Regulation					
Business procedures					
Product development	**2.73**	**34%**	**31%**	**35%**	0%
Sales					
Treasury					
Marketing					
Risk procedures					
Risk analysis	**2.20**	**22%**	**39%**	**39%**	0%
Risk management and workout					
Monitoring and control					
Regulation					
Other support procedures					
Human resources management	**2.15**	**28%**	**39%**	**34%**	0%
Internal control					
Compliance, legal					
Analysis and data transmission					
Communication					
Controlling					
Accounting					
Legal					

FIGURE 33: RESULT TABLE # 2

From the results it can be seen that there is no significant difference between the intangible asset composition of the processes, however shifts in emphasis can be observed in some

cases. This phenomenon can be traced back to several factors. I presume that with a healthy spirit of competition and self-esteem every repondent considered their own area as the most important. For this reason they evaluated the processes on a wide scale, masking other areas and accentuating their own. This resulted in statistically high standard deviation, which decreased the degree of significance (see Appendix 2). Nonetheless the table represents an added value, as this is a research based on 50 structured interviews, during which several valuable interdependencies were identified.

Firstly, the table demonstrates that the value of the Relationship asset group is under 30% everywhere save for one case. This exception could be observed for business procedures, which very probably refers to the fact that the sales, product development and marketing activities of banks involve the kind of business processes, which require a higher than average amount of relationship capital in order to manage customer relationships, the partner network or even governmental and shareholder connections.

It can also be observed, that the Organization asset group represented a higher than 30% proportion of the intangible asset need of processes in all four sets of procedures, which is a practical confirmation of the fact that the banking and credit institution activity is a regulated industry, where companies are obliged to abide by countless protocols, decrees, recommendations and legal requirements when performing regulated work procedures.

Finally, for the Competence asset group it can be stated that its average value for every procedure is higher than 30%. At the level of the organization, considering the weighted average, Competence represents a proportion of 37% in corporate intangible value creation, considering all processes. In comparison, Organization covers 36%, while Relationship represents 27%. These three numbers show the distribution of the bank's entire intangible capital. This is demonstrated by the following diagram.

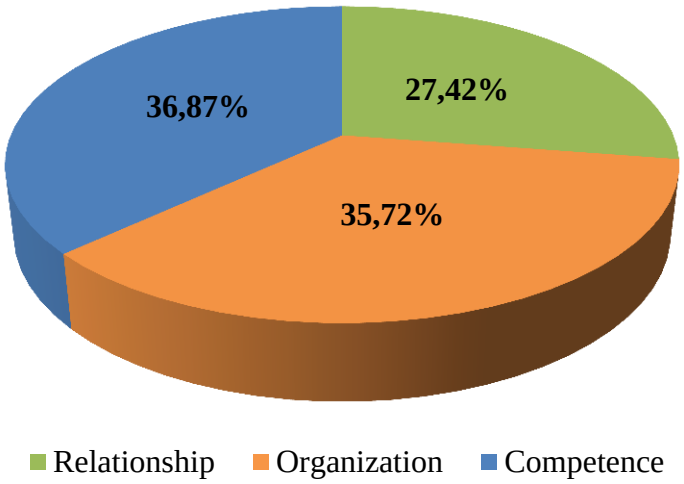


FIGURE 34: THE DISTRIBUTION OF BUSINESS ADDED VALUE OF INTANGIBLE ASSETS

Over the course of the interviews it became clear, that this near proportional distribution does not indicate that the respondents wanted to play safe and equally distributed the intangible factors of production, instead it reflects a reclassification effect. This effect is manifested in such a way, that the resources belonging in the organizational asset group have a more dominant role in value creation that relationship assets. Upon reflection, this effect would not be present in the case of a consulting firm, an IT development company or a law firm, where the organization itself has a less prominent role in the form of a system of regulated processes, instead the individual gains focus through relationships and competences.

For this reason, the interviewees accentuated the existence of this effect, which is in fact caused by yet another industry feature, one of the relevant characteristics of today's Hungarian banks from the knowledge management perspective.

6.2.3. The evaluation of propositions

Proposition number	Description of the proposition	Evaluation
P3	The factors of production related to organizational assets represent the largest segment of the	**REJECTED**

	intangible asset demand of main banking processes.	
Justification	This proposition has to be rejected based on quantitative evaluation, because although not with a significant difference, but respondents stated that the Competence asset group represents the largest segment of intangible banking value creation. Independently of this finding, it was also concluded that banking processes rely to a considerable extent on intangible organization assets.	
P4	The factors of production related to relationship assets represent the smallest segment of the intangible asset demand of main banking processes.	**PROVED**
Justification	From the results it can be seen clearly, that although Relationship assets constitute an important and indispensable part of intangible value creation, in the case of financial institutions, due to the particular regulatory characteristics of the industry, these assets are less dominant compared to the Organizational and Competence asset groups. It might we worthwhile to reflect on whether this situation is optimal, or if it would be possible to increase value compared to the current situation by altering the use of intangible factors of production, by in fact changing the production function. Answering this question is however beyond the scope of this research, for this reason I accept the composition which was proven by the research results.	

6.3. The application of intangible assets (P5, P6, P7)

6.3.1. Methodology

This section further examines the means of application of each intangible factor of production, aiming to respond to the question of whether the different intangible assets are used for development or operational purposes. For each intangible asset it had to determined, whether it participates in value creation with a development or an operational purpose. Application with a development purpose indicates that the given resource is used

to serve innovation, while application with an operational purpose refers to the daily execution of routine, repetitive, programmed tasks, and the resource is applied to this end.

The objective	This worksheet examines the means of application of each intangible asset, seeking to answer the question of whether the company uses the different intangible assets for either development or operational purposes.
Response scale	Nominal scale
The task	Please mark an "X" in the column, which you find is appropriate for the given factor of productin.

FIGURE 35: EXCERPT # 3 FROM THE STRUCTURED QUESTIONNAIRE

6.3.2. The examination of propositions

	The means of application of the factor of production	
	Rather development purposes	**Rather operational purposes**
Relationship	**39.0%**	**61.0%**
Customer relationships (B2C)	43%	58%
Partner network (B2B)	38%	63%
Government relations (B2A)	30%	70%
Civil relations (B2NGO)	53%	48%
Stockholder connections	33%	68%
Organization	**35.6%**	**64.4%**
Degree of organization of work	40%	60%
Degree of regulation of work	28%	73%
Organizational behaviour	43%	58%
Organizational particularities	33%	68%
Competence	**63.1%**	**36.9%**
Expertise	**68%**	**33%**
Work experience	**53%**	**48%**
Emotional intelligence	**65%**	**35%**
Motivation	**68%**	**33%**

FIGURE 36: RESULT TABLE # 3

This section of the research explores what is the purpose of applying different intangible assets in banking value creation, according to opinion of industry experts. As it can be seen

from the results, respondents associated both relationship and organizational elements rather to activities with an operational purpose, while comptence was associated with activities with a development purpose. Based solely on this information no far-reaching conclusions can be drawn, since it is evident, that there are no intangible assets which serve only operational or only development purposes, which is reinforced by my results as well. Therefore it also seems trivial, that every intangible asset is used for one purpose in one case, and for another purpose in another case. It can be stated that every intangible asset qualifies as a factor of production of mixed application. However providing this was not the objective.

My objective was to gain an overall picture of where one should search for the source of innovation in today's Hungarian banking industry. Which are the resources, which leaders apply in value creation in order to create something new, better, different, and not to operate an exisiting system. From this approach however the result is telling, since it highlights the situation, whereby banks maintain operations from intangible equity (organization, relationships), while development is based on intangible external capital (competence). If the right of ownership of intangible assets is structured as previously discussed (see next sub-chapter), then it is proven, that the innovation activity of banks is a high risk process, since it is carried out by intangible assets over which banks to not have ownership, therefore their value, future and manageability is considerably more uncertain than that of own assets.

6.3.3. The evaluation of propositions

Proposition number	**Description of the proposition**	**Evaluation**
P5	Hungarian banks rather use intangible relationship assets for operational purposes.	**PROVED**
Justification	Based on the opinion of the interviewees, this proposition is true. It must be added, that the application for development and operational purposes is not exclusive, either/or type, however the current state of the industry shows that banks use the majority of relationship resources to maintain operations.	

P6	Hungarian banks rather use intangible organizational assets for operational purposes.	**PROVED**
Justification	With regard to the organizational asset group the opinion is even more dominant, that these resources are less applied in innovative processes, instead their application rather serves functional and operational purposes in today's Hungarian banking sector.	
P7	Hungarian banks rather use intangible assets related to competence for development purposes.	**PROVED**
Justification	The research clearly proved this proposition, and based on the concurrent opinion of interviewees it can be stated, that the primary sources of banking innovation are the resources belonging to the intangible asset group of competence. This fact however results in such a paradox situation, whereby the innovative renewal of banks' value creation depends on a group of assets, over which the company does not possess the right of ownership, therefore it qualifies as a particularly high-risk activity.	

6.4. The right of ownership of intangible assets (P8, P9, P10, P11)

6.4.1. Methodology

This section of the research focuses on the right of ownership of intangible assets according to the following. Each group of assets and the related factors of production were listed, and I asked the respondents to assess who the owner of the given asset is, based on their professional opinion. The employee, whose asset is considered external capital from the accounting perspective, or the company, whose assets represent equity according to the same interpretation? Only an either/or decision was permitted, because it became clear during the trial interviews that intermediate categories, such as "mixed ownership" offered a comfortable solution to respondents, whereby they were not forced to thoroughly reflect and chose the middle way. This would however not carry much relevant information, since

we know that the ownership structures of a company are mixed, both for material and intangible assets. In this case I aimed to conduct a more in-depth investigation.

The objective	This worksheet examines the right of ownership of intangible assets, seeking to answer the question, in whose ownership the intangible fact or production belongs, that of the company (own) or that of the employee (external)?
Response scale	Nominal scale
The task	Please mark an "X" in the column, which you find is appropriate for the given factor of productin.

FIGURE 37: EXCERPT # 4 FROM THE STRUCTURED QUESTIONNAIRE

6.4.2. The examination of propositions

		Right of ownership of the factor of production	
		Rather the company's (equity)	**Rather the employee's** (external capital)
27%	**Relationship**	**70.5%**	**29.5%**
	Customer relationships (B2C)	55%	45%
	Partner network (B2B)	67.50%	33%
	Government relations (B2A)	87.50%	13%
	Civil relations (B2NGO)	55.00%	45%
	Stockholder connections	87.50%	13%
36%	**Organization**	**80.63%**	**19.38%**
	Degree of organization of work	75.00%	25%
	Degree of regulation of work	92.50%	8%
	Organizational behaviour	65.00%	35%
	Organizational particularities	90.00%	10%
37%	**Competence**	**11.88%**	**88.13%**
	Expertise	20.00%	80%
	Work experience	2.50%	98%
	Emotional intelligence	0.00%	100%
	Motivation	25%	75%

FIGURE 38: RESULT TABLE # 4

Examining the right of ownership of factors of production, the respondents clearly indicated that in absolute terms all the factors of production in the *relationship* asset group are rather in the ownership of the company, than of the employee. The values are close to

one another in two cases: civil relations and customer relationships, whereby the interviewees mentioned that while they consider these as company resources, there is an important employee exposure. More than 70% of the respondents think that relationship assets are owned by the company, thus from the accounting perspective, they qualify as equity. The reasons for this opinion are probably the advanced banking CRM systems, data directories, expert lists, client databases and knowledge management systems. As a consequence, the majority of relationship assets are independent of the given employee's relationships. What does this imply from the points of view of economics, knowledge management and corporate valuation? In practice this means that banks in Hungary regulate, register and manage their relationship assets with such advanced techniques and IT solutions, which ensure that these are rather linked to the bank's systems, than to a given employee's network of connections. This fact clearly implies that those banks, where the right of ownership of the network of relationship belongs to the company, possesss a higher corporate value than those firms, which are exposed to employee turnover, or exposure due to non-efficient client registry or non-retraceable databases. This exposure carries the risk that an increasing proportion of relationship assets could be owned by the employees, which qualifies as external capital from the perspective of the company. In turn, from a valuation perspective external capital decreases the company value.

The interviewees consider in absolute terms that all the factors of production belonging to the *organization* asset group are clearly rather in the ownership of the company. More than 80% of respondents listed organizational assets as the company's equity, while less than 20% considered them external capital owned by the employees. This ratio clearly refers to the legal and regulatory environment which are particularities of the industry, as well as the maximum transparency, high level of organization and banking prudency demanded by organizations persuing payment activities. If we wer to compare with less regulated sectors, we would probably find that the higher the degree of freedom of the work is and the less regulated the business and thus the work is, a higher the proportion of organizational capital is concentrated in the hands of the employees, functioning as external capital. From the point of view of valuation the fact that the company owns the organizational types of intangible assets is a very reassuring and also value increasing parameter, because risks are reduced which may be caused by people's routine work, insufficient process documentation, inefficient delegation and progress check of tasks, as

well as unpredictable organizational behaviour. This risk reducing item clearly has a positive impact on corporate value.

Finally, let us consider *competence*, which encompasses the totality of experiences, expertise and capabilities linked to the company's human resource base in the intangible value creation processes. According to more than 88% of respondents these intangible factors of production are owned by the employees, which qualifies as external capital from the perspective of the company. The question itself is also interesting, how can an organization expropriate competence items? However, if we think about it, people's motivation, ability to perform, retraceable empathy, expertise in many cases depend on the system and the context. The company can influence employees' level of motivation by changing the working conditions, sending them to trainings, operating a performance evaluation system which automatically motivates employees and so on. Nonetheless from the perspective of corporate valuation the situation is unmistakable, since an employee only represents value for the company, if the extent of his/her contribution to corporate value creation exceeds his/her part in corporate expenditure (wage, company car, travel, training, language courses, etc.). In the operational scenario the employees, who do not satisfy this criterion will probably drop out of the company's staff, thus ensuring the company's capitalist mindset and ambition to optimize in the economic sense of the word. However, the factors of production linked to *competence* are considered a serious risk factor, since an expert, a manager, an employee only represents value, if they stay with the company on the medium or long term. If there is a danger of them leaving, this has a negative impact on corporate value, as the employee will take away their expertise, capabilities, thus in practice eliminating all of his/her performance output from corporate value creation, which represents a serious operational risk for the company. This explains the intention of today's knowledge-based companies aiming to regroup individual knowledge, individual competences, which are more risky for the company, to a capital form which is less risky, in practice attempting to make it part of the organizational capital. There are countless options for this in practice, such as knowledge codification, project documentation, compulsory rotation, the *up or out* policiy, detailed recording of recipes and formulae, and so on. This is a favourable aspiration for the company, since organization capital encompasses the totality of factors, which support employees in performing their work. As a consequence, the company's risks are reduced and simultaneously its performance improves.

This ownership dilemma drives all knowledge management systems, since the primary purpose of these systems is to codify those elements of knowledge which the employees have, in order to make sure that they are not the only ones who can have access to them. The hereby presented intangible assets are precisely the ones which trouble the owners and the senior management of the company, since in reality they do not have full control over them. The knowledge management system in fact satisfies the need of owners, whereby they aim to convert as much intangible external capital as possible into intangible equity.

When examining the right of ownership of assets from the perspective of accounting, a risk can be observed which may not have been in the forefront in the eyes of corporate leaders. This risk is caused by the fact that a company's balance sheet is composed of a tangible and an intangible unit. This is all in order, however while the right of ownership of tangible assets is formalized, clarified and traceable, thus manageable, the right of ownership of intangible assets is ambiguous, difficult to identify, difficult to measure and as a result they are much more incidentally manageable. The problem is in fact caused by two factors:

1. **Cost implication** - Even though certain factors of production are not formally recognized in the balance sheet, maintaining them costs money. The resource sacrifice is incurred, however this is never matched with the benefits generated by the given factor of production. The lack of matching these two factors causes the fact that cost management becomes highly incidental. Let us consider the example, if an employee is sent to an important professional conference, then the cost of the conference, of travel, perhaps of accomodation is incurred, and moreover the cost of replacement due to the absence of this person from the workforce. When accounting for this event, it is important to consider whether these cost items are matched with the fact that the employee had a good time, and enjoyed a buffet lunch and quality coffee, or in turn with having developed his/her own and the company's network, representing the company and having held a presentation, where s/he attracted the attention of potential clients or professional partners. In this case the costs incurred are certain, however the value generated as a result is uncertain. Resolving this issue would help in raising the company's optimalization efforts to a higher level, economically speaking.
2. **Right of ownership** - The source of risk is the rights of use (expropriability) of assets, since the proportion of own and external intangible assets cannot be

demonstrated. Unless this economic breakdown occurs, there isn't adequate information about the items below the balance sheet, which is needed to manage them confidently. Referring back to the previous example of the conference, it is important to answer, that when the employee closes a deal, forms relationships, collects phone numbers, makes informal agreements, then these valuable connections are the merit of whom and who is the owner? The employee who managed these activities, or the company, which the employee was representing, securing deals and connections with a company business card, at the cost of the firm? Who does the intangible asset belong to? Can the generated intangible value be separated from from the one who created it? Failing to answer this question also leads to difficulties in optimalization and possibly the mismanagement of processes.

Consider that if a company applied for a loan, it is possible to calculate exactly how much external liability will be recognized in the material part of the balance sheet, as well as the amount and the timing of the debt service thus generated in the cash flows. In this case, explicit operational, liquidity or insolvency risks can be quantified. However, what happens if external capital is introduced into the intangible balance sheet of a company? At what cost is it recognized, how much is spent for its maintenance, when will it be de-recognized, how is it amortized, by how much would it increase operational and financial risk, and so on? There is no precise answer to these questions. For this reason it is important to expand our scope of thinking to the right of ownership of intangible assets, examining which resource belongs to whom. This approach offers the possibility to nuance and specify the entire external capital stock of a company (tangible external capital + intangible external capital), as well as better manage the generated risks.

In addition, it must be mentioned that the intentions of the company to possess and alienate factors of production does raise ethical questions. From a capitalistic perspective, it is a source of danger for the company to have such assets in its balance sheet, over which it only has nominal or periodical control, but not ownership. In order to reduce this risk it is a rational intention of the company to aim to gain full control over as many assets as possible, beyond the rights of use, acquiring ownership control as well. Therefore the laws of the capitalist economy demand that all those factors of production, which play a key role

in value creation, must be expropriated. The rights of use are not sufficient, the right of ownership is necessary as well!

Approaching this same question from an ethical perspective, the story looks somewhat different. The question is raised, whether the company has the right to take steps in the case of assets carried by the employees, aiming to incorporate them as much as possible. There are two scenarios for this process of alienation. In one case, the employee clearly knows that the firm is aiming to transfer his/her own knowledge into the ownership of the company with certain measures, in the other case, this happens without the knowledge and consent of the employee. In the formal case less so, but in the latter case some sensitive questions must be seriously considered, such as until what moral threshold the employer can go in expropriating the resources of the employees.

From among the modern capital management techniques the institute of partnership is the one that is able to manage the subject of resource ownerships, keeping in mind the capitalist reality, but still being highly responsive to ethical considerations. What in fact is a partnership? Partnership is a technique of dividing shares in the business, drawing such capital items into corporate capital, which cannot at all be, or can only be partially expropriated by the company. This is a win-win type of division, since the partners mutually benefit from the factors of productions owned by them and their business partners, moreover they have the possibility to apply them jointly for a common purpose. In those cases, where the alienation efforts forced by the company could damage the employee, this means of bringing assets into corporate ownership based on a partnership is a very reasonable and mutually beneficial construction for cooperation.

In my dissertation I principally aim to answer the research questions, and the related sub-questions within the interpretative framework of economics. In this situation however, the clarification of the question must reach beyond the economic mindset and in my opinion, taking into account sociological, personal rights, psychological considerations is necessary as well. For this reason, besides raising the question and establishing the capitalist, thus economically rational point of view, it is not the objective of this reasearch to examine the topic from other aspects.

6.4.3. The evaluation of propositions

Proposition number	Description of the proposition	Evaluation
P8	The intangible assets related to relationships are rather in the ownership of the company, thus from the perspective of the company they qualify as intangible equity.	**PROVED**
Justification	The proposition was proven over the course of the research, however it must be noted that the particularities of the banking industry and the degree of development of the information technology play a key role in the alienability of relationships by the company.	
P9	The intangible assets related to organizational capital are rather in the ownership of the company, thus from the perspective of the company they qualify as intangible equity.	**PROVED**
Justification	The research clearly indicated, that in the case of an organization providing regulated payment services, the company has to abide by certain protocols, operational rules, which are ultimately beneficial for the company, since it results in well-organized, transparent processes, and the resources needed to execute these processes are owned by the company.	
P10	The intangible assets related to competence are rather in the ownership of the employee, thus from the perspective of the company they qualify as external capital.	**PROVED**
Justification	My prior claims were proven with this proposition. On the one hand, this finding reinforces the HR approach, according to which certain intangible activities are inseparable from the person, as an active actor of value creation. On the other hand, it confirms the corporate risk to which the organization is exposed, since there are certain intangible external capital	

	items in its balance sheet, the identification, measurement and management of which have been approached less consciously by the profession up until now.	
P11	The balance sheet structure created through the banking value creation process contains serious intangible risks, which can mainly be traced back to the fact that a part of the intangible assets, which are indispensable for performing the core activity, are in fact not in the ownership of the company.	**PROVED**
Justification	As the research results also show, there truly are intangible assets, which are involved in value creation, but do not constitute the property of the company. The management of these assets is complicated from several aspects, because the exact number of these factors of production, their value, the costs implied and their future role in value creation are not known. The above leads to the conclusion, that the balance sheet of banks contains serious intangible risks.	

7. THE SCIENTIFIC CONTRIBUTION OF THE RESEARCH

In this section I am going to indicate the utility of the research focusing on those considerationes that can deepen the management literature in a therotic and a pracitcal way as well.

7.1. Theoretical research findings

7.1.1. New chapter in capital management

Capital management is one of the key leadership activities. Capital cannot be confused with physical pieces of property, it instead represents such a right of use, which produces earnings (Fetter, 1927, p. 156). In the next era Schumpeter's [1989] approach of the definition of capital was that capital is a factor of increasing relevance, which is controlled by dominant economic players.

Today the reflection about capital, the definition of the concept of capital has reached the point, where capital encompasses intangible capital, just like tangible forms. In the focus of mainstream management approaches we still find the management of material resources which are easy to quantify, measure and historically analyze, save for a few cautious outlooks. The complete, real value creation of companies takes place through mainly intangible processes, relying on intangible assets, thus creating considerable intangible company value. The management of intangible capital is in fact the conscious extension of management activities to intangible capital. To be more precise, on those intangible factors of production, which participate in corporate value creation in a manner that is not formalized by accounting. Moreover as Penrose [1959] stated, a company does not achieve economic earnings, because it has better resources, but because it has such capabilities, through which it can use resources more efficiently (Penrose [1959]). These intangible forms of capital are principally constituted of human inputs (Eisfeldt – Papanikolaou, [2014]), for this reason a considerable part of intangible capital items cannot be separated from its carrier (Boda, [2010]). The fundamental goal of intangible capital management is to apply these intangible assets, which have particular characteristics and are difficult to formalize, in the most efficient and effective manner possible.

One of the clear objectives of my research is to highlight the importance of managing intangible assets, and emphasize the risk, ownership and innovation roles of these resources within the complete value creation process.

Accordingly, this research has proved that the intangible factors of production have an inevitable role in banking operations. The study furthermore highlighted that the top managers of banks are aware of this factors and acknowledge its contribution to the value creation but do not handle these factors as conscious as the material ones. The reason for that is the separation of material and intangible factors has not happened yet as regard of asset management. It was managed as an aggregation of production factors what not allowed to achieve economic optimum.

7.1.2. New conceptual framework

In the present state of science, countless overworked or misinterpreted terms are in use in the realm of knowledge management. In this research it was also my goal to rectify this terminology, in order for the terms to be used more clearly in the future.

Clarifying this conceptual framework makes it possible to draw up the real and comprehensive balance sheet structure of a company. However as a first step, the relationship between these terms has to be established. The followings axioms can be stated:

Intangible asset = human asset + intangible corporate asset

Intangible capital = intangible external capital + intangible equity

Real corporate asset = tangible asset + intangible asset

Real corporate capital = tangible capital + intangible capital

The interdependencies are represented in the below figure:

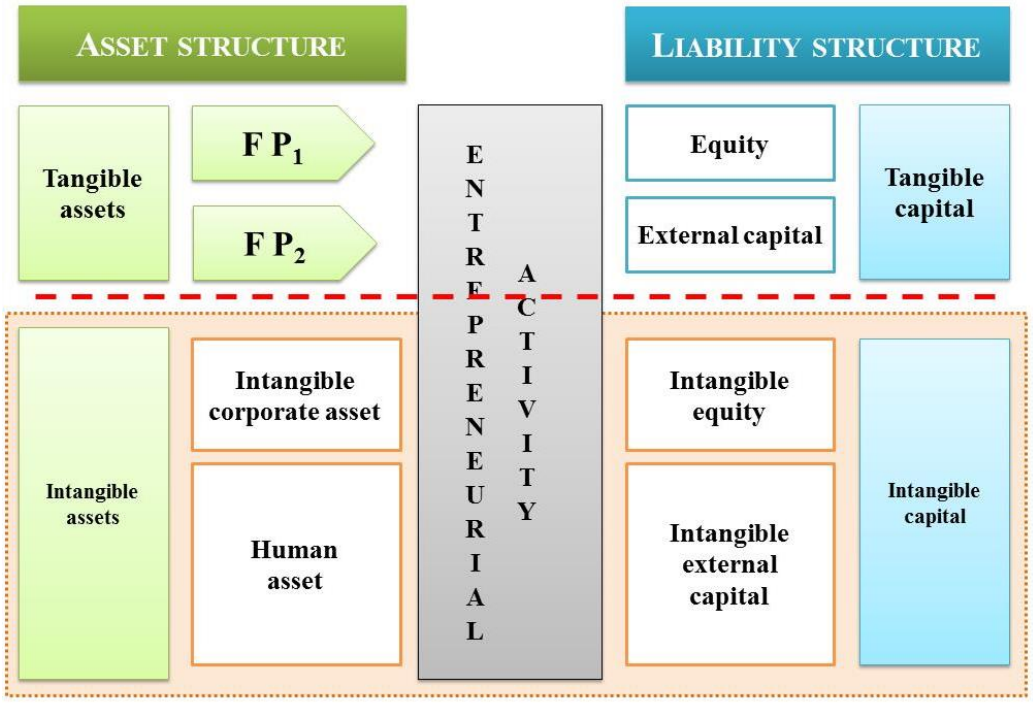


FIGURE 39: THE REAL BALANCE SHEET STRUCTURE OF THE COMPANY

Several concepts can be found in scientific literature and in everyday language for presenting items below the balance sheet, designing new balance sheet concepts, however this approach deduces the real balance sheet structure from a different perspective. This extended balance sheet aims to demonstrate the real assets and liabilities of companies, phrasing it differently, the entire range of factors of production. This theoretical framework allows me to situate the research findings in a unified logical context, while it can also serve as guidance for company leaders and researchers who are interested in this topic and would like to approach this area with the aim of gaining deeper understanding of it.

7.1.3. The holistic approach of the knowledge management system

Scientific literature extensively discusses the topics of the objectives of the knowledge organization, knowledge management strategy, the process of knowledge conversion, the elements and the process models of the knowledge management system, but the context of interdependencies between these concepts, and joining them with the purpose of value

creation is less explored. In my dissertation, by synthesizing the conclusions of the reviewed Hungarian and international scientific literature and researches, I have designed a knowledge management system, which organizes the system of knowledge management by also taking into account the existence of intangible assets.

The model strongly focuses on profit generation, because ultimately the principle benefit of the entire knowledge management realm is profit. The primary objective of any business management system, in this case the knowledge management system, is to enhance financial performance and increase financial returns. When examining knowledge management systems or preparing strategy, many have a tendency to forget to consider knowledge as a resource, and the money invested in knowledge as a capital investment, therefore expectations need to be expressed in terms of financial returns. Regardless of the fact that the value created by the use of certain resources cannot be always quantified, these still contribute to increasing the overall corporate value, thus they must be considered as real value-creating factors.

From the systematic cyclical process I have presented, it can be concluded that operating a knowledge management system has three fundamental goals:

1. Optimize the extent of usage of knowledge-based factors of production (not too much, not too little).
2. Increase the possible return on the company's knowledge capital.
3. Reduce the risk of knowledge capital management, by consciously converting individual knowledge assets into corporate equity.

My research therefore emphasizes, that increasing the corporate value, and within that the value of the intangible wealth, depends not only on increasing each intangible asset, but also on consciously connecting and operating factors of production.

7.1.4. More is not always better

Speaking of knowledge management, management literature mostly provides the example of the state, when the available level of knowledge at the company is lower than the expected level of knowledge. Actually a void is formed between knowledge levels, which results in a state of deficiency. In this case, all knowledge management actions aim to determine how to fill this void, and to raise the knowledge level to the adequate level.The reverse of this situation is much less discussed, namely knowledge spillover. In this case,

more knowledge is available than the knowledge level needed to perform the firms' activities. Economically, this is clearly not at all an optimal equilibrium, as knowledge is in fact wasted in corporate processes, they occupy unnecessary resources which do not generate added value. Depending on the degree of knowledge excess, we can speak of a possible safety margin or temporary sub-optimal operation, when the real knowledge level slightly over the expected knowledge level. In the case, when the excess generates a considerable additional financial burden for the company without being able to compensate for it with added value creation, then the situation can truly be considered as value destruction.

The principle of the efficient management of knowledge refers back to matching the asset combinations to the given task. In addition, it highlights that knowledge management action is required from the leadership not only to close the knowledge gap, but in many cases to eliminate knowledge excess.

To summarize, it can be stated, that the tools used of efficient knowledge management can be calibrated by responding to three fundamental questions:

1. Do we know exactly what kind of factors impact the performance/the output?
2. Along which processes are the factors used in production/the service linked to value creation?
3. What is the optimal degree of factor allocation in the case of each process?

The present research provides exact answers to the first two questions, therefore I hope I have contributed to designing more efficient knowledge management systems for banks. In addition, I trust that the general methodology can serve as a professional guideline for other industries, in how it is worthwhile to consciously execute the management of intellectual assets.

By responding to these questions a company comes closer to real problem-solving, since it can manage those assets which have an impact on performance, and is able to influence them in order to shift factor allocation towards the optimum. Considering that a company cannot be efficient without intangible assets, and intangible assets cannot belong exclusively to the company, the firm is dependent of the environment, from where the intangible capital partially originates.

Therefore my research highlights, that increasing the value of the company and within in it the value of intangible wealth is not only a function of increasing the amount each intangible asset. Consciously connecting factors of production, as well as applying them in the company's processes is just as essential.

7.2. Practical research findings

7.2.1. Banking value chain model

Every factor of production has its own efficiency, by which it increases output, as well as a contribution to increasing the joint efficiency of factors [Boda, 2010]. Until we identify exactly which factors of production participate in corporate value creation, we cannot manage the efficiency of these resources. One of the most important contributions of my research is designing the banking value chain, which characterizes the fundamental value creation logic of the Hungarian banking industry. This model presents the value creating connections between the different banking functions in the process perspective. It is important to determine what processes take place in an organization, since unless these are identified, there is no chance of attributing the assets to value creation processes. This is a critical step, because intangible assets generate revenue through other material assets, or jointly with other intangible assets [Basu – Waymire, 2008]. The basis of the revenue generation is however the value creation process, in which both tangible and intangible factors of production are involved. In order to be able to manage resources at the highest level possible, their operating mechanisms must be understood as thoroughly as possible. The contribution of the banking value creation model is that it highlights how special industries may have value creation particularities, and by considering these the purpose of the core activity can be better understood, and the management of the resources can be optimized.

7.2.2. Management of intangible risks

Standfield [2002] goes all the way to claiming, that besides the returns of financial investment all profit must be associated with with human resources. On the contrary, Barker [2001], Péne [1979] and Juhász [2004] suggest that employees cannot be considered as company assets, since the firm does not fully control them, as they have the right to leave at any time. This clearly demonstrates, that the topic has been at the center of reflection and scientific discussion for several decades. My research proved that employees

can in fact be managed as human assets, with the condition, that they be considered as intangible external capital from the perspective of the company.

Research on the intellectual balance sheet items belonging to the asset side is at a much more advanced stage, than the identification, measurement and management of intellectual liabilities. Intellectual liabilities are not identified in the financial statements, but do in fact decrease corporate value [De Santis – Giuliani, 2013]. The reason, why companies prefer to manage financial risks is, because they already have extensive experience in this and can approach the problems with quantitative methodologies. Research has shown that managers can only clearly distinguish a few risks associated to intellectual capital, such as workforce turnover or non-documented knowledge [Brunold – Durst, 2012].

This is an important topic, because the occurrence of intangible risks in fact leads to value destruction, unless they can be managed positively. Quantifying these risks is not a simple task, but this is not the first step. Instead, the first step is to identify those assets which participate in corporate value creation, while at the same time they represent an operational risk for the firm. This is the reason why it is of critical importance to examine the intangible liabilities side of the balance sheet, distinguishing alienable and inalienable factors of production, as well as determining their ratio and their relation. This ownership problem can be traced back to the fact, that companies do not know who owns the intangible resources. In turn, this represents a risk of strategic importance, because the knowledge, business sense and relationships of employees are only available to the company until this cooperation is mutually beneficial for both parties.

My research has highlighted, that companies ought to worry most about the right of ownership of intangible assets belonging to the *competence asset group,* since this contains resources which are rather owned by the employees. The company only has temporary and limited control over these resources. This exposure itself embodies the intangible risk. The present research also highlighted to what extent different main banking processes rely on for example Competence type assets. As a result it becomes possible for managers and owners to calibrate the risk level of different assets, and that of different processes. I believe that extending risk management to the intangible level is such a novelty, which also simultaneously has practical benefits.

In my opinion, there is an alternative approach to risk management from the point of view of knowledge management. It is essential, that the existence of the risks is not a value

destructive event in itself. Value destruction happens if the company, the individual, the organization cannot manage the given risk. In the case where the risk occurs and then is eliminated, intangible value is in fact generated. This is actually the value of the company's risk management and problem-solving capability.

To summarize, from a valuation perspective it is beneficial, if a company has crisis management potential and risk management capability, as responding to such operational disruptions increases the company's value, since it indicates the presence of an intangible asset, namely the crisis management capability. This factor does not exist in every company, competitor or partner, therefore it represents value, moreover added value to the given company.

7.2.3. Estimation of the organization's innovation activity

The research has demonstrated the intensity of the contribution each intangible asset makes to the innovation activity of banks. The results have highlighted that the assets which drive innovativeness the most are in fact not in the ownership of the company. This is an exposed, one-sided relationship, which further increases the risk level of the company. By interpreting the research results, a relation has been established, whereby for a high level of knowledge capital is needed for the development of processes and activities, while this is less required for operating the processes and activities. In the latter case, organizational assets dominate instead. This finding indicates that the company is less capable of innovating on its own, relying only on its own corporate assets, because innovative potential and capability are rooted in those intangible assets, which do not constitute part of the company's assets.

The study has shown an overall picture of where one should search for the source of innovation in today's Hungarian banking industry. Which are the resources, which leaders apply in value creation in order to create something new, better, different, and not to operate an existing system. From this approach however the result is telling, since it highlights the situation, whereby banks maintain operations from intangible equity (organization, relationships), while development is based on intangible external capital (competence). If the right of ownership of intangible assets is structured as previously discussed (see next sub-chapter), then it is proven, that the innovation activity of banks is a high risk process, since it is carried out by intangible assets over which banks to not have ownership.

7.2.4. Methodological findings

One of the main methodological findings of my research belongs in the area of financial management. More precisely, it aims to contribute to the realm of corporate valuation. It has become possible to gain deeper understanding of certain parts of intangible wealth items through the logic of the research model and its results. One of the objectives of my research was to better understand the partial contribution of intangible assets to company value. In this case, this meant a further breakdown of the below the balance sheet items of the corporate added value, in fact dividing it according to asset groups. As stated, the corporate added value can be deduced from the difference between the market value and the book value. This corporate added value encompasses several value parameters, as shown in the figure below. Among the components constituting the added value, this research is aimed at examining the intangible effects, the analysis of the other three factors is not in the research scope. As discussed in the previous chapter, the respondents determined for each main banking process the demand for each intangible asset type in the three different asset groups. Accordingly, the Competence asset group represents a proportion of 37% in corporate intangible value creation, considering all processes, while the Organization asset group takes 36% and the Relationship one has 27%. These three numbers add up to the entire intangible capital value which is not recognized on the balance sheet, and indicate its distribution by asset groups.

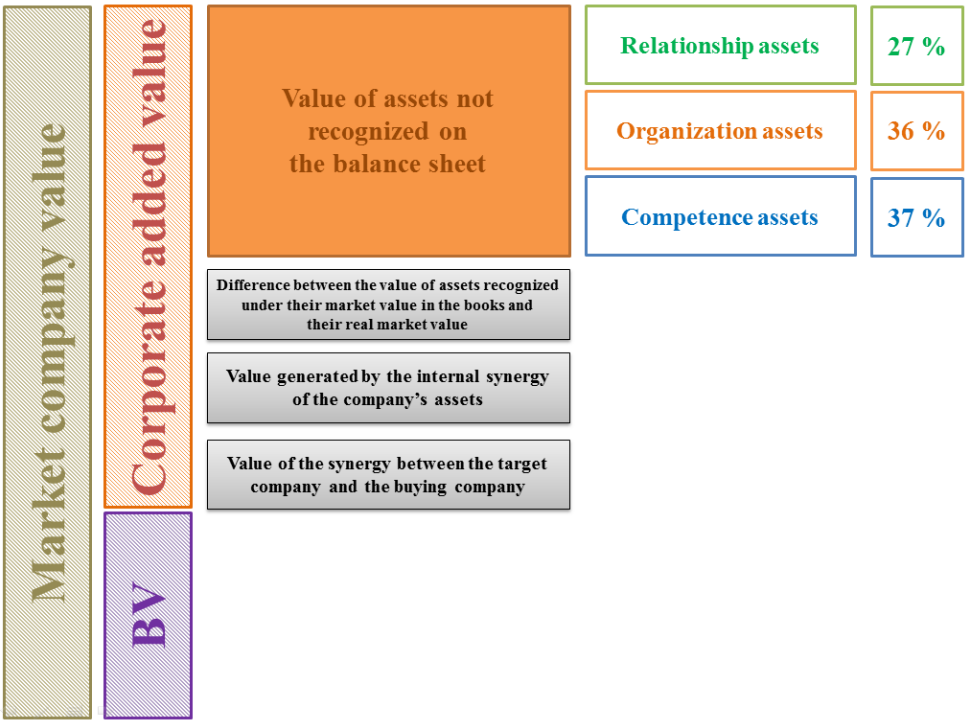


FIGURE 40: INTANGIBLE ADDED VALUE

From the point of view of methodology, this approach means that we are able to quantify the value of intangible assets applied in banking value creation. This is an important financial step, because:

1. An intangible resource composition is outlined, which has not been formalized, nor presented before, therefore it was not possible to explicitly express neither the different asset groups, nor their relations to other assets, which meant that they were more difficult to manage.
2. In the transactional scenario, when a merger or an aquisition is taking place, the value-generating parameters which constitute the company's total market value can be clearly visualized. Consequently, it becomes possible to determine, whether the buying company needs the target company's organization capital, or it has its own well-established business processes, and truly only wants to acquire the customer base and the human capital. In the latter case there is a possibility to precisely calculate the value of the organizational capital, and reduce the company value by it, in turn reducing the overall cost of the transaction.

3. It can be quantified, what proportion of corporate added value can be traced back to the flaws of asset valuation (registry effect), and what part is due to existing intangible resources, which are applied in production, but have in no way been recognized in the financial statements. This can be further refined to reflect the internal synergy of company resources, or in a transactional situation the synergy effects which can be found between the resources of the target company and the buying company, however this is a separate topic, which is outside of the research scope.
4. From the perspective of resource optimization, if processes are managed through this system of logic, then each considerable change, intervention or development in the processes or in the associated factors of production directly impacts the corporate value. With this approach this change in value can be continuously tracked, and by definition the effect of specific actions can be confirmed.

Moreover, the effect of speculation must be taken into account in the case of certain banks, in case the company's stocks are on the stock market. Tha management of the effect of speculation is an important step, because by way of the different impacts affecting the stock price, it would be possible to manipulate the given momentary value of the company. Reinhardt and his co-authors [2001] draw attention to the fact that on markets with high growth rates, intangible capital may easily suffer from inflation as a result of investors' speculation. They cite the example of Bill Gates, who lost 5 million dollars between August and September 1998 during the Russian crisis, despite the fact that the intellectual capital of Microsoft remained relatively unchanged.

The principle benefit of identifying and recognizing the intangible asset is that it increases the transparency of company operations, by reducing information assymetry between the presumed and the real value parameters.

7.2.5. Balance sheet structure extended with intangible risks

Before discussing the risk level of intangible assets, let us examine what risks must be considered in the case of material resources. The operational risks related to the assets represented in the accounting information system can be divided into two main groups of risk. These two categories, which define a company's basic level of risk, are the costs associated with the assets, and the liability represented by the source of financing of production assets. Firstly, let us consider the costs. Every asset has a cost at which it is

carried in the balance sheet, it may have an amortisation cost, maintenance cost, operational cost etc. The occurrence of the risk depends on whether a factor of production (asset) generates more benefit during its entire useful economic life, than the costs associated to it. The way the productivity and the costs of assets compare fundamentally impacts the efficiency and the effectiveness of a company. The incorrect estimation of these ratios leads to inefficient management of the assets, and therefore value destruction. This itself is the risk.

Moving on to the other fundamental factor of risk, the liability, it is worthwhile to consider, what is the source of financing of a given asset and how it is financed. A company's financing structure determines its capital structure, from which conclusions can be drawn regarding the given company's funding risks. For example, if there is a considerable amount of external liability in a company's balance sheet, say in the form of loans, this increases the company's risk level, since it has a serious exposure towards the funding party, due to the fact that a regular debt service needs to be paid. Consequently, the free cash flow decreases and the risk of insolvency may rise.

To summarize, it can be established, that a company's risk level principally depends on what assets it applies in the production / service, at what costs these are operated, and from what source of they are financed?

In our case however, we are focusing on intangible assets. In fact, the situation is very similar in the intangible case as well, since these invisible resources have a level of costs, these costs have a source of financing (which is a liability for the company) and so on. There is one dominant difference between examining tangible and intangible assets from a risk perspective. This in fact is the question of ownership, and the extent of risks caused by it. To elaborate, while in the case of recognized balance sheet items, it can be clearly and formally determined, in whose ownership a given asset is, in the intangible case this is less self-explanatory. Despite the fact, that the right of ownership of intangible resources is in many cases unclarified, they cannot at all be neglected from the point of view of risk management. The below figure presents the risk categories and levels associated to items below the balance sheet, from the perspective of right of ownership.

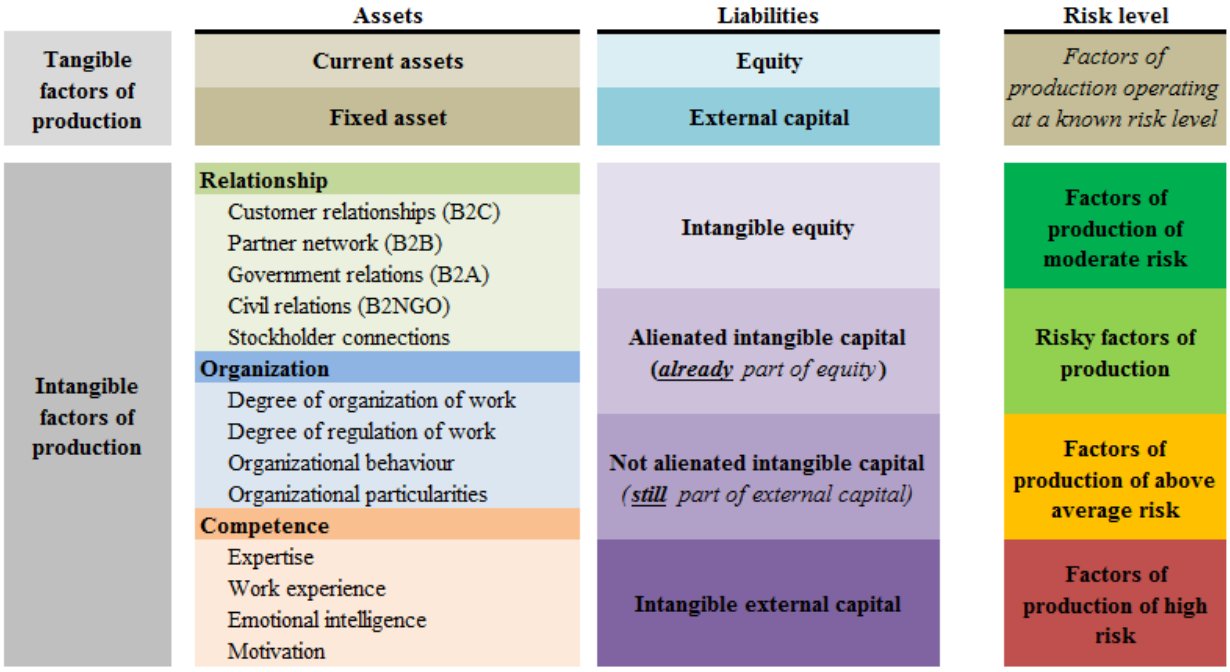


FIGURE 41: INTANGIBLE RISKS IN THE BALANCE SHEET

The interpretation of the figure is the following. Firstly, there are the assets and their liabilities, which are traditionally recognized by accounting, together I designated these with the term tangible factors of production. If we step beyond the interpretive context of asset items registered by accounting, then the balance sheet can be extended with the intangible factors of production. These are arranged in three main groups: relationship, organization and competence. While in the case of tangible factors of production it can be easily and unequivocally determined, who is the owner of a given asset, who possesses the resource, in the case of intangible factors the situation is much more nuanced, since there are not only the categories of equity and external capital, but others as well. My research has highlighted, that when discussing intangible capital management, two further capital categories must be taken into account. These two categories are:

- **Alienated intangible capital**: the totality of those factors of production, which were originally not owned by the company, but the firm has succeeded with a series of targeted actions, to bring the given resource under its ownership (incorporation).

- **Not alienated intangible capital**: the totality of those factors of production, which are not in the ownership of the company, but there is a theoretical possibility of reclassifying a part of them into equity, through the execution of certain actions.

Why is it important to distinguish intangible capital categories in this manner? Essentially because in the case of factors of production lacking physical substance, the much discussed question of ownership – alienability arises, whereby it is a serious risk for the company, if it does not clearly know who owns the resources involved in value creation. This realization brought to life the above mentioned two intangible capital categories, since it is the fundamental intention of the company, to minimize its tangible, as well as its intangible risks. This is possible by identifying those intangible assets, which are not in the ownership of the company, it merely controls their use. From a risk consideration there are two such possible cases: (1) the given intangible factor of production was originally not in the ownership of the company, but is already in it now, (2) the given intangible factor of production was neither originally nor now under the ownership of the firm. This distinction is important, because the research has confirmed, that from management perspective these two cases indicate two different risk levels. In the case of alienated intangible capital there is an asset group within the equity, which was not always owned by the company, therefore it carries the risk, that just as the firm managemend to gain full control of these assets, someone else may succeed in doing the same. Leaders implement a protective management technique in this case, as they attempt to maintain the situation which is comfortable and optimal for them. The objective in this scenario is to maintain the status quo.

In the case of not alienated intangible capital there is an asset group, which could perhaps be owned by the company as well, but is not under its ownership. From the point of view of the company, these assets are considered potentially alienable intangible factors of production. In this situation a proactive behaviour can be observed on the management side, since they are aiming to gain total control over these resources, with regard to both rights of use and right of ownership. In this scenario the objective is to change the status quo, reclassifying outside assets as the company's own assets.

My research has highlighted, that managers and owners in the Hungarian banking sector ought to dedicate particular attention to the intangible assets belonging to the *competence* asset group, because it contains resources owned rather by the employees. The company

only has temporary and quite limited control over these assets. Moreover, the final results of the dissertation made a contribution, in helping managers with respect to where to search for intangible risks and with which management techniques to handle them.

8. DESIGNATION OF FURTHER RESEARCH DIRECTIONS

I aimed to conduct my doctoral research within a well-focused and closed logical framework, for this reason there was no opportunity to examine all interesting and relevant questions related to this topic. As I have also indicated in the section establishing the theoretical foundations of the dissertation, that the topic is found in an interdisciplinary marginal research field, which immanently implies, that the topic is approached by different branches of science with varying emphasis and different focus. This diversity results in a broad interpretive framework for intangible asset management and is the source of numerous possible research topics for the future.

Without aiming to give an exhaustive list, I will indicate those research directions below, which may reinforce or complement the findings of the dissertation. I have essentially identified three directions, which present the possibility of substantially building on the results of the current research and complementing them.

Outlook on possible future research topics:

1. Placing the topic in a new context

   It would be worthwhile to examine this topic in the case of different sectors. Carrying out a research with a similar focus in other industries would make it possible to compare the sectoral differences and particularities of intangible capital management. Further developing this reflection, industry models and sector-specific capital management standards could be established, thus expanding the scope of thinking about intangible assets, and ultimately elevating not only the thinking, but the related management philosophy to a new level.

2. Deeper examination of the topic

   As every research, this one also has limitations with regard to content and extent. Not all informations can be collected at the elemental level due to various reasons,

such as lack of data, the distortion of data, or the incidental nature of data processing. Therefore the depth that the content encompasses should be determined in such a way, that it would not be impacted by the above listed factors. Nonetheless, I believe that there is possibility for further reflection in the case of my research as well. In the cases where I received aggregated results at the level of asset groups, with a more detailed, longer and well-prepared research, a deeper investigation could be conducted at the level of the elements that constitute the assets. This would cast a different light on the results, since the management of assets could be examined at the elemental level, including the definition of their role in value creation, the proportion they represent of corporate added value, as well as their right of ownership.

3. Mathematical construction of the topic

This same topic could be placed at a higher level, if the already identified factors of production could be introduced into a production function. This would make it possible to construct production functions extended with certain intangible assets. Based on these such industry models could be designed, which cast light on the complete, real value creation processes, both at the micro and the macro level.

4. Application of objective reference points

Extending measurability has naturally been an objective for several decades, as a series of attempts aimed to measure intangible assets, more or less successfully. The lack of a universal measurement system can be traced back to several reasons. One of these causes is that in the handling of intangible resources too many things depend on the management, which implies that it is not even possible to objectively compare two companies, which are ceteris paribus the same except for the top management. A further obstacle could be the handling of the question of efficiency, because the extent of the spendings associated with intangible assets, as well as the returns on the capital invested in these assets are found a vague system of financial interdependencies. If I were to illustrate the limitations to applying objective reference points, I would cite the following examples:

- For example, even though a parent spends a considerable amount of money on his/her child's education, if the child is not hard-working and does not seize the opportunity, then his/her level of education will remain low. Therefore in this case education expenses do not indicate that the expenditure generates benefit in a directly proportional manner and increases the level of education.
- Another example would be, if the turnover rate is high in an organization, then the work is not well organized, or the people are not satisfied, or the level of knowledge is low? The answer is not clear, since organizations have functioned with even 100% fluctuation for centuries. An example could be the home-grown, satisfied, well-paid, highly educated, productive associates of law firms, who leave the company to open private practices, because this is how the industry works. In this case, it is difficult to objectively determine the extent of human capital from a piece of data about fluctuation. A further example could be student organizations, which have always functioned with complete turnover.
- Consider, that if in a bad business model a product that is impossible to sell is marketed for a lot of money, then this fact in itself does not allow to draw any conclusion about the extent of customer capital.

Overall it can be concluded, that because so far it has not been possible to determine the source, composition and extent of intangible wealth with objective indicators, therefore according to our current knowledge the identified measurement tools to not satisfy the conditions required for the measurement of intangible assets. In fact, if objective measurement would work, alternative approaches, such as the one presented by this dissertation, would not be necessary. Regardless, it is a valid research direction to approach intangible asset at an ever lower level of abstraction, however this research area is characterized by system-level anomalies and complex interdependencies.

To conclude, I would hereby like to summarize my work. If companies were able to better structure their value creation processes, that would probably result in more effective and sustainable value creation [Edvinsson – Kivikas, 2017]. This statement is at the focus of the dissertation, since the review of the scientific literature and the entire research served

the purpose of succeeding in better understanding the role of intangible assets in banking value creation. This began with the identification of the resources, as well as the modeling of the main and sub-processes in banking, and subsequently joining them. This dissertation presents a new way of thinking, the framework of intangible asset management both in theory and in practice. A part of the research results are specific to banks, since the basis of the investigation is banking value creation, therefore the conclusions can be drawn from this sector as well. Beyond this, however, some not sector specific, thus general type of results can also be identified, which are not only relevant in the interpretive framework of the banking industry. The diversity of the topic and the strength of the research results, enabled me to voice critical statements, or observations that are meant to trigger debate, in other cases to reinforce already validated findings, as well as determine new interdependencies. I trust that this varied range of approaches made the dissertation enjoyable, and simultaneously scientifically sound.

9. BIBLIOGRAPHY

9.1. List of references cited in the dissertation

Aalbers, R- Dolfsma, W. - Koppius, O. [2014]: Rich Ties and Innovative Knowledge Transfer within a Firm, *British Journal of Management*, Vol. 25, 833–848 DOI: 10.1111/1467-8551.12040

Abeysekera, I. [2004]: The role of emotional assets and liabilities in a firm, Journal of *Human Resource Costing & Accounting*, Vol. 8 Iss: 1, pp.35 – 44, DOI: http://dx.doi.org/10.1108/eb060815

Alford, H. J. - Naughton, M. J. [2004]: Menedzsment, ha számít a hit, Kairosz Kiadó, Budapest

Allee, V. [1997]: The Knowledge Evolution – Expanding Organizational Intelligence, Butterworth-Heinemann, Boston,

Anklam, P. [2005]: The social network toolkit: Building Organisational Performance through Collaborative Communities, Ark Group

Aranykönyv [2016]: Magyar Nemzeti Bank, 4. HIT. RT. (1A)

Babbie, E. [2000]: A társadalomtudományi kutatás gyakorlata, Balassi Kiadó, Budapest

Bair, J. [2004]: Making Knowledge Work, Chapter 4. KM technologies that work, How to Maximise the Value of Portals, Collaboration and Information Systems, Ark Group, London

Bakacsi, Gy. [2004]: Szervezeti magatartás és vezetés, AULA, Budapest

Barker, R. [2001]: Determining value, Valuation models and financial statements, *Financial Times* – Prentice Hall, Pearson Education Limited, Harlow, England

Basu, S. - Waymire, G. [2008]: Has the importance of intangibles really grown? And if so, why? *Accounting and Business Research*, Vol, .18. No. 3 pp 171-190

Bini, L. - Dainelli, F. - Giunta, F. [2016]: Business model disclosure in t he Strategic Report: Entangling intellectual capital in value creation process, *Journal of Intellectual Capital*, Vol. 17 Issue: 1, pp.83-102, DOI: 10.1108/JIC-09-2015-0076

Boda, Gy. - Juhász, P. - Stocker, M. [2009]: A tudás mint termelési tényező, *Köz-Gazdaság*, vol 3, pp. 117-132

Boda, Gy. - Szlávik, P. [2007]: Alternative Accounting to Manage Intellectual Capital *Electronic Journal of Knowledge Management* Volume 5. Issue 1. 7-18 p.

Boda, Gy. - Szlávik, P. [2010]: Mi a "jó" költség? *Vezetői Számvitel - Módszertani füzetek*, 1. évf, 1. szám pp 5-14, Complex Kiadó, Budapest

Boda, Gy. – Virág, I. [2010]: Ütemvakság, *Közgazdasági Szemle*, LVII. évf., 2010. december [1087–1104. o.]

Boda, Gy. [2005]: A tudástőke kialakulása és hatása a vállalati menedzsmentre, PhD értekezés, Budapest

Boda, Gy. [2008]: A tudástőke kialakulása és hatása a vállalati menedzsmentre, Információs Társadalomért Alapítvány

Boda, Gy. [2010]: Hatékony vállalat, hatékony társadalom, *Vezetéstudomány*, XLI. ÉVF. 2010. 7–8. SZÁM / ISSN 0133-0179

Bodnár, V. [2010]: Menedzsment kontroll rendszerek – Teljesítménymérés előadás, Budapesti Corvinus Egyetem

Bond, S. R. – Cummis, J. G. [2003]: The Stock Market and Investment in the New Economy, In: Baruch, Lev – Hand, John R. M. (szerk.): Intangible Assets, *Oxford University Press*, Oxford, 2003

Borisova, G. - Brown R. J. [2013]: R&D sensitivity to asset sale proceeds: New evidence on financing constraints and intangible investment, *Journal of Banking & Finance* 37, 159-173 pp http://dx.doi.org/10.1016/j.jbankfin.2012.08.024

Bőgel, Gy. [1998]: A vagyon esténként hazamegy, *Vezetéstudomány*, XXIX évf. 1998. 1. szám p.22-27

Bőgel, Gy. [1999]: Tudásmenedzsment, Magyar Távközlés

Brooking, A. [1996]: Intellectual Capital: Core Asset for the Third Millennium Enterprise, International Thomson Business Press, New York

Brown, J. S. - Duguid, P. [2001]: Knowledge and organization:A social-practice perspective. *Organization Science*, 12: 198–213.

Brunold, J. – Durst, S. [2012]: Intellectual capital risks and job rotation, *Journal of Intellectual Capital*, Vol. 13 Iss: 2 pp. 178 – 195

Burnold, J. - Durst, S. [2011]: Intellectual capital risk management: an explorative study in a multinational company, paper presented at the IFKAD – International Forum on Knowledge Asset Dynamics, June, Tampere, available at: www.knowledgeasset.org/IFKAD/Proceedings (accessed 23 November 2012).

Castelles, M. [1996]: The Information Age: Economy, Society and Culture, Blackwell, Publishers, Oxford

Chen, M.C. - Cheng, S.J. - Hwang, Y. [2005]: An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance, *Journal of Intellectual Capital*, Vol. 6 No. 2, pp. 159-76.

Coff, R. [1997]: Human assets and management dilemmas: coping with hazards on the road to resource based theory, *Academy of Management Review*, 22: 374-402.

Coff, R. [1999]: When competitive advantage doesn't lead to performance: the resource-based view and stakeholder bargaining power, *Organization Science*, 10: 119-133.

Core J. - Wayne G. - Van Buskirk A. [2001]: Market Valuations in the New Economy: An Investigation of What Has Changed, Working Paper, The Wharton School, University of Pennsylvania, Philadelphia PA, USA.

Corrado, C.A. - Hulten, C.R. - Sichel, D.E. [2005]: Measuring Capital and Technology an Expanded Framework. Megjelent: Corrado, C.–Haltiwanger, J.–Sichel, D. E. [szerk.]: Measuring Capital in the New Economy. *University of Chicago Press*, Chicago, 11–46. o.

Csedő, Z. [2006]: Szervezeti változás és változásvezetés a folyamatos differenciálódás és integráció tükrében: az innovatív gyógyszeripar példája, PhD Értekezés, Budapest

Csubák, T.K. – Fejes, J. [2014]: A magyar kkv-k 21. századi banki finanszírozásának áttekintése és kiútkeresés a hitelválság csapdájából, *Hitelintézeti szemle*, 13. évfolyam, 2. szám, 174-194. old.

Hardin, G. [1968]: The Tragedy of the Commons, *Science*, 162 (3859), 1243-1248. o.

Olson, M. [1965]: The Logic of Collective Action, MA, Harvard University Press, Cambridge

Johnson, D. B. [1999]: A közösségi döntések elmélete, Budapest, Osiris Kiadó

Olson, M. [1997]: A kollektív cselekvés logikája, Budapest, Osiris Kiadó

Damodaran, A. [2006]: A befektetések értékelése, Módszerek és eljárások, Panem Kiadó, Budapest

Davenport, T. H. – Prusak, L. [1999]: Working Knowledge: how organizations manage what they know, *Harvard Business School Press*, Boston

Davenport, T. H. – Prusak, L. [2001]: Tudásmenedzsment, Kossuth Kiadó, Budapest.

Deloitte [2016]: FSI Review: Driving FinTech innovation in financial services, Financial Services Newsletter, Issue 13.

Deloitte [2017]: Connecting Global FinTech: Interim Hub Review 2017, Published by Deloitte, April 2017

De Santis F. - Giuliani M. [2013]: A look on the other side: investigating intellectual liabilities, *Journal of Intellectual Capital Vol*. 14 No. 2, 2013 pp. 212-226

Dobák, M. [2001]: Szervezeti formák és vezetés, Akadémia Kiadó, Budapest

Drucker, P. [1969]: The Age of Discontinuity: Guidelines to our Changing Society, Harper & Row, New York

Drucker, P. [2002]: Magaging in the Next Society, Truman Talley Books, USA

Dumay J. C. [2012]: Grand theories as barriers to using IC concepts, *Journal of Intellectual Capital*, Vol. 13 Iss: 1 pp. 4 – 15

Easterby-Smith, M - Prieto, M. I. [2008]: Dynamic Capabilities and Knowledge Management: an Integrative Role for L earning? *British Journal of Management*, Vol. 19, 235–249, DOI: 10.1111/j.1467-8551.2007.00543.x

Edvinsson, L. - Malone, S. M. [1997]: Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower, Harper Collins, New York

Edvinsson, L. and Kivikas, M. [2017]: Intellectual capital (IC) or wissensbilanz process: some German experiences", *Journal of Intellectual Capital*, Vol. 8 No. 3, pp. 376-385.

Eisfeldt, L. A. - Papanikolaou, D. [2014]: The Value and Ownership of Intangible Capital, *American Economic Review*: Papers & Proceedings 2014, 104[5]: 189–194, DOI: http://dx.doi.org/10.1257/aer.104.5.189

Eurostat [2011]: http://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_expenditure_statistics#Further_Eurostat_informatio n , Letöltve: 2015. szeptember 07.

Fehér, P. [2006]: Tudásmenedzsment: Epilógus, Budapesti Corvunius Egyetem, Információrendszerek Tanszék, Budapest http://sirius.uni-corvinus.hu/C12570440059BB35/3627F77973CEC21EC125728000439B2B/$FILE/Feh%C3%A9r%20P%C3%A9ter%20[2006]%20Tud%C3%A1smenedzsment%20-%20Epil%C3%B3gus.pdf

Fehér, P. [2007]: Tudásmenedzsmentet támogató szervezeti megoldások, *Vezetéstudomány*, 38 (7-8), 11-21.

Fehér, P. [2008]: Tudásmenedzsment stratégiák, Budapest, http://tudman.wordpress.com

Fekete, M. – Mészáros, Á. [2008]: Balanced Scorecard a gyakorlatban, IFUA Horváth and Partners Kft. Budapest

Fetter, F. A. [1927]: Clark's reformulation of the capital concept, pp. 136–56 in Hollander, J. H. (ed.), Economic Essays Contributed in Honor of John Bates Clark, New York, Macmillan in: Hodgson, M. G. (2014) What is capital? *Cambridge Journal of Economics* 38, 1063–1086

Finchman R. – Roslender R. [2003]: Intellectual capital as management fashion: a review and critique, *Eureopen Accountig Review*, 12:4, 781-795

Fiol, C. – Lyles, M. [1985]: Organizational learning, *Academy of Management Review*, 10 [4], 803-813 p

Fischer, B. [2015]: The end of expertise, Harvard Business Review, https://hbr.org/2015/10/the-end-of-expertise Letöltve 2015.10.19

Flick, U. [2002]: Qualitative Sozialforschung, Eine Einfürhrung, Rowohlt Verlga, Hamburg

Fridrich, P.– Mitró, M. [2005]: Hitelintézeti számvitel, Saldo, Budapest

Gaál, Z. – Szabó, L. – Obermayer - Kovács, N. – Kovács, Z. – Balogh, Á. [2009]: Knowledge Management and Competitiveness through Cultural Lens. in: Noszkay, E Capital – ALMA MATER, Foundation for Information. Society, Budapest, Hungary, 85–97. o.

Garcia-Parra, M. - Simo, P.- Sallan, J.M. - Mundet, J. [2009]: Intangible liabilities: beyond models of intellectual assets, *Management Decision*, Vol. 47 No. 5, pp. 819-830.

Giles, W. J. – Robinson, D. [1972]: Human Asset accounting, Institute of Personnel Management, London

Giuliani, M. - Marasca S. [2011]: Construction and valuation of intellectual capital: a case study, *Journal of Intellectual Capital*, Vol. 12 Iss: 3 pp. 377 – 391

Giuliani, M. [2013]: Not all sunshine and roses: discovering intellectual liabilities "in action" *Journal of Intellectual Capital* Vol. 14 No. 1, 2013 pp. 127-144

Grajkowska, A. [2011]: Valuing intellectual capital of innovative start-ups, *Journal of Intellectual Capital*, Vol. 12 Iss: 2 pp. 179 – 201

Grant, R. M. [1996]: Toward a knowledge-based theory of the firm, *Strategic Management Journal*, 17 (Special Issue), 109–122.

Grant, R. M. [2008]: Tudás és Stratégia: Siker dinamikus környezetben, Alinea Kiadó, Budapest

Gurteen, D. [2008]: http://zyxo.wordpress.com/2008/12/28/km-10-km-20-km-30/ [Letöltve: 02.02.2012]

Guthrie, J. - Petty, R. [2000]: Intellectual Capital: Australian Annual Reporting Practices, *Journal of Intellectual Capital*, 1 [3]: 241-251.

Hámori, B. – **Szabó**, K. [2012]: Innovációs verseny: Esélyek és korlátok, Aula, Budapest

Han, Y. - Li, D. [2015]: Effects of intellectual capital on innovative performance: the role of knowledge-based dynamic capability", Management Decision, Vol. 53 No. 1, pp. 40-56.

Hansen, M. - Nohria, N. - Tierney, T. [1999]: What's Your Strategy for Managing Knowledge? *Harvard Business Review*, Mar-Apr, pp. 106-116.

Hansen, M., M. L. Mors and B. Lovas [2005]: Knowledge sharing in organizations:multiple networks,multiple phases, *Academy of Management Journal*, 48, pp. 776−793.

Harangozó, T. [2012]: Az erőforrás-alapú megközelítés a gyakorlatban - Az intellektuális tőke mint az alapvető képességek forrása? *Vezetéstudomány*, XLIII. ÉVF. 2012. 7–8. SZÁM / ISSN 0133-0179

Hasznics, M. – Nuridsány, J. [2004]: Hálózati tudásmenedzsment rendszerek sajátosságai, bevezetési tapasztalatai. BME, Információ és Tudásmenedzsment Tanszék

Hirschleifer, J. [1980] Price theory and applications, Prentice-Hall, New York

Ilyés, T. –Takács, K. –Varga, L. [2014]: A pénzforgalmi szolgáltatások díjainak és a pénzforgalom szerkezetének alakulása a pénzügyi tranzakciós illeték bevezetését követően, *MNB-szemle*, 9. évfolyam, 1. szám, 40-48. old.

IMA [2010]: Institute of Management Accountants: Unrecognized Intangible Assets: Identification, Management and Reporting, http://www.imanet.org/docs/default-source/research/sma/unrecognized-intangible-assets.pdf?sfvrsn=2 Letöltve: 2015.02.11.

Ittner, D. C. [2008]: Does measuring intangibles for management purposes improve performance? A review of the evidence, *Accounting and Business Research*, Vol. 38. No. 3 pp. 261-272

Iványi, A. Sz. – Hoffer, I. [2010]: Innováció a vállalkozásfejlesztésben, Aula Kiadó, Budapest

Janssen, J. J. P. - F. A. J. van den Bosch - H. W. Volberda [2006]: Managing potential and realized absorptive capacity: how do organizational antecedents matter?, *Academy of Management Journal*, 48, pp. 999−1015.

Jensen, M. C, - Meckling, W. H. [1976]: Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics*, 3, 305-360.

Kaplan, R. S. - Norton, D. P. [1992]: The balanced scorecard: measures that drive performance, *Harvard Business Review*, Jan – Feb pp. 71-80.

Kavida, V. - Sivakoumar N. [2009]: Intellectual Capital: A Strategic Management Perspective, *The IUP Journal of Knowledge Management*, Vol. VII, Nos. 5 & 6, 2009

Kianto A. – Laukkanen, P. H – Ritala, P. [2010]: Intellectual capital in service- and product-oriented companies, *Journal of Intellectual Capital*, Vol. 11 Iss: 3 pp. 305 – 325

Kirkman, M. D. [2011]: Knowledge management strategies in an open innovation environment, Proceedings of the *Academy of Strategic Management*, Volume 10, Number 1, Orlando

Kok, A. [2007]: Intellectual Capital Management as Part of Knowledge Management Initiatives at Institutions of Higher Learning, *The Electronic Journal of Knowledge Management*, Volume 5 Issue 2, pp 181 - 192

Koltai, D. [2000]: Néhány gondolat a Tudásmenedzsment első száma elé. In Tudásmenedzsment I. évf. 1 szám, http://feek.pte.hu/tudasmenedzsment/index.php?ulink=560, Letöltés: 2008.05.11.

Kovács, Zs. I. [2015]: Immateriális vagyonelemek a magyar számviteli rendszerben és a beszámolóban, *Pénzügyi Szemle*, 2015/2 pp 231-242

KPMG [1998]: Knowledge Management Research Report, London

KSH [2013]: http://www.ksh.hu/thm/2/indi2_2_2.html Letöltve: 2015. szeptember 07.

Kupi, E. - Sillanpa V. - Iloma, K. [2008]: Risk management of intangible assets, paper presented at the International Forum on Knowledge Asset Dynamics (IFKAD), Matera, **26-27 June.**

Kvale, S. [2005]: Az interjú - Bevezetés a kvalitatív kutatás interjútechnikáiba, Jószöveg Műhely, Budapest

Laáb, Á. [1999]: Az emberi erőforrás, mint tőketényező, konferencia előadás [Jövőképek – vállalati stratégiák Konferencia, BME Vezetőképző Intézet, 1999. december 9] átdolgozott változata.

Laáb, Á. [2006]: Számviteli Alapok, Typotex, Budapest

Laáb, Á. [2007]: Ga(rá)zdálkodás a szellemi vagyonnal. TIPOTEX - BME, Budapest.

Lee, T. A. [1986]: Towards a theory and practice of cash flow accounting, Garland Publishing, Inc., New York

Lengyel, Cs. [2002]: A tudásalapú gazdaság stratégiai vezetési módszere. In: HR Portal: Balanced Scorecard (BSC) szakmai cikkek, 2002/1, pp. 8-10.

Lengyelné, M. T. [2013]: Kutatástervezés, Médiainformatikai Kiadványok, Eger

Lentjušenkova, O. - Lapina, I. [2016]: The transformation of the organization's intellectual capital: from resource to capital", *Journal of Intellectual Capital*, Vol. 17 Issue: 4, pp.610-631, DOI: 10.1108/JIC-03-2016-0031

Lerro A. - Iacobone A. F. - Giovanni S. G. [2012]: Knowledge assets assessment strategies: organizational value, processes, approaches and evaluation architectures, *Journal of Knowledge Management*, Vol. 16 Iss: 4 pp. 563 - 575

Lev. B. [2000]: New Accounting for the New Economy, www.stern.nyu.edu/~blev Letöltve: 2014. 12.03.

Li, J. - Pike, R. - Haniffa, R. [2008]: Intellectual capital disclosure and corporate governance structure in UK firms, *Accounting and Business Research*, Vol. 38. No. 2. pp. 137-159.

Linag, W-L. [2012]: Information content of repurchase signals: Tangible or intangible information? *Journal of Banking & Finance* 36. pp 261-274 doi:10.1016/j.jbankfin.2011.07.004

Ludo, P. [2005]: Measuring the unmeasurable, AEROPA http://www.tistr.or.th/tistr/source/techno/siminarkm/eng/e_ic_by_ludo_pyis.pdf [letöltve: 2012. 01.03]

Machlup, F. [1962]: The Production and Distribution of Knowledge in the United States, Princeton, New Jersey

Madden, B. J. [1999]: CFROI valuation, A total system approach to valuing the firm, Butterworth-Heinemann, Oxford

Maditinos, D. – Chatzoudes, D. – Tsairidis, C. – Theriou, G. [2011]: The impact of intellectual capital on firms' market value and financial performance", *Journal of Intellectual Capital*, Vol. 12 Iss: 1 pp. 132 -151

Mason, J. [2005]: Kvalitatív kutatás, Jószöveg Kiadó, Budapest

McGrattan, E. R. - Prescott C. E. [2014]: Theory and Measurement of Intengilbe Capital: A reassessment of Real Business Cycle Theory, *American Economic Review*: Papers & Proceedings 2014, 104[5]: 177–182, http://dx.doi.org/10.1257/aer.104.5.177

Mencző, B. [2010]: Pénzügyi szolgáltatások igénybevétele, túlzott eladósodottság. *Statisztikai Szemle*, 88. évfolyam, 1. szám, 29-46. old.

Miles, M. – Huberman, A. [1994]: Qualitative data analysis, An expanded soure-book, Thousand Oaks, Sage Publications

Nag, R. - Gioia, D. A. [2012]: From Commont to Uncommon Knowledge: Foundations of Firm-specific Use of Knowledge as a Resource, *Academy of Management Journal*, Vol. 55, No. 2, 421–457., http://dx.doi.org/10.5465/amj.2008.0352

Nahapiet, J. – **Ghoshal**, S. [1998] Social Capital, Intellectual Capital, And the Organizational Advantage, *Acedemy of Management Review*, Vol. 23. No. 2, pp. 242-266

Nonaka, I, - Konno, N. [1998]: The Concept of "BA": Building a Foundation for Knowledge Creation, *California Management Review*, Vol. 40. No.3.

Nonaka, I. [1991]: The Knowledge-Creating Company, *Harvard Business Review*, Nov-Dec

Noszkay, E. [2009]: A tudásmenedzsment hazai fejlődéstörténete, Megjelent [in]: Vezetési ismeretek III. – Tanulmányok a társtanszékek munkatársaitól, Szerk.: Veresné Dr. Somosi Mariann, Jubileumi Kiadvány, Miskolci Egyetem, 124-187 p.

Obermayer - Kovács, N. - Csepregi, A. [2013]: A tudásmenedzselés érettségének szervezeti és egyéni aspektusai Magyarországon, *Vezetéstudomány*, XLIV. ÉVF. 2013. 6. Különszám Veszprém / ISSN 0133-0179"

Obermayer-Kovács, N. [2007]: Tudatos tudásmenedzselés a tudásgazdaságban, Doktori Értekezés, Veszprém

OECD [2011] http://www.oecd-ilibrary.org/docserver/download/9614011ec016.pdf?expires=1444895764&id=id&accname=guest&checksum=9E5FD104A78AD535B624279A349326E1 , Letöltve: 2015. szeptember 07.

Palepu, K. G. - Healy, P. M. - Bernard, V. L. [2000]: Business analysis & valuation: using financial statements, 2nd ed., South-Western College Publishing, Cincinnati, OH

Pearl, J. [2001]: Intangible investments, tangible results, *MIT Sloan Management Review*, Fall 2001, pp. 13-14.

Penman, S. H. [2007]: Financial reportitig quality: is fair value a plus or a minus? *Accounting and Business Research* Special Issue: International Accounling Policy Forum: 33—44.

Penrose, E. [1959]: The theory of the Growth of the Firm. New York, Wiley

Personnel Today [2002]: Getting the measure of human capital, Personnel Today, 24th September 2002, pp. 26-30.

Polányi, M. [1966]: The Tacit Dimension, Routledge & Kegan Paul, London

Porter, M. E. [1985]: Competitive Advantage: Creating and Sustaining Superior Performance, Free Press, New York

Pratt, S. [2001]: Business valuation – Discounts and premiums, John Wiley & Sons, Inc., New York

Quinn, J. B. - Anderson, P. - Finkelstein, S. [1996]: Managing Professional Intellect: Making the Most of the Best, *Harvard Business Review*, 1996. 2. sz.

Ragini, G. [2012]: Corporate Disclosure of Intangibles: A Comparative Study of Practices among Indian, US, and Japanese Companies. Vikalpa: The Journal of Decinsion Makers. Vol. 37, no 3, pp 51-72

Réczei, G. [2011]: Dagadó bankadó, avagy lehet egy közteherrel több? *Hitelintézeti szemle*, 10. évfolyam, 2. szám, 175-177. old.

Reinhardt, R. - Bournemann, M. - Pawlowsky, P. - Schneider, U. [2001]: Intellectual Capital Kowledge Management: Perspectives on Measuring Knowledge, Oxford Universytiy Press, p. 794-820

Reus, H. T. - Ranft, L. A. - Lamont, T. B. - Adams, G. L. [2009]: An Interpretative systems view of knowledge investments, *Academy of Management Review*, Vol. 34, No. 3, 382–400.

Romānova, I. – Kudinska, M. [2016]: Banking and Fintech: A Challenge or Opportunity?, *Contemporary Issues in Finance: Current Challenges from Across Europe*, DOI: 10.1108/S1569-375920160000098002

Scarbrough, H. - Swan, J. [2001]: Explaining the Diffusion of Knowledge Management: The Role of Fashion, *British Journal of Management*, Vol.12, 3–12

Schaper, S. - Nielsen, C. - Roslender, R. [2017]: Moving from irrelevant intellectual capital (IC) reporting to value-relevant IC disclosures: Key learning points from the Danish experience, *Journal of Intellectual Capital*, Vol. 18 Issue: 1, pp.81-101, doi: 10.1108/ JIC-07-2016-0071

Schult, E. [1983]: Bilanzanalyse, Möglichkeiten und Grenzen externer Unternehmensbeurteilung, 5th ed., Rudolf Haufe Verlag, Freiburg im Breisgau

Schumpeter, J. A. [1934]: The Theory of Economic Development, Oxford University Press, London

Schumpeter, J. A. [1989]: (First published in 1954.) History of economic analysis. London: Allen and Unwin

Schwartz, P. [2004]: Inevitable Surprises: A Survival Guide For the 21st Century, The Free Press, London

Seemann P. - De Long D. – Stucky, S. - Guthrie, E. [1999]: Building Intangible Assets: A Strategic Framework for Investing in Intellectual Capital, Second International Conference on the Practical Applications of Knowledge Management [PAKeM99], 21-23 April.

Sharma, S. [2001]: Counting my knowledge, Knowledge Management, November 2001, pp. 18-20.

Shih K. H. - Chang C. J. - Lin B. [2010]: Assessing knowledge creation and intellectual capital in banking industry, *Journal of Intellectual Capital*, Vol. 11 Iss: 1 pp. 74 - 89

Skinner, J. D. [2008]: Accountig for intagibles - a critical review of policy recommendations, *Accounting and Business Research*, Vol 38. No 3. International Accounting Policy Forum, pp 191-204

Sorensen, J. B. [2002]: The strength of corporate culture and the reliability of firm performance. *Administrative Science Quarterly*, 47, 70[24]

Stabell, C. B. - Fjeldstad, Ø. D. [1998]: Configuring value for competitive advantage: on chains, shops, and networks, *Strategic Management Journal*, Vol. 19, 1998, p. 413-437

Ståhle P. - Hong J. [2002]: Dynamic intellectual capital in global rapidly changing industries, *Journal of Knowledge Management*, Vol. 6 Iss: 2 pp. 177 – 189

Standfield, K. [2002]: Intangible Management, Academic Press

Stiglitz, J. E. [1999]: Knowledge int he Modern Economy, The economics of the knowledge driven economy, Departmert of Trade and Industry and the Centre for Economic Policy Conference, London, 27 January 1999

Stocker, M. [2013]: Dematerializálódás az értékteremtésben, *Vezetéstudomány*, XLIV. ÉVF. 2013. 12. SZÁM / ISSN 0133-0179

Sveiby, K. E. [1997]: The New Organisational Wealth, Managing and Measuring Knowledge-Based Assets, Berrett-Koehler San Francisco

Sveiby, K. E. [2001]: Szervezetek új gazdagsága: A menedzselt tudás. Budapest, KJK Kerszöv Kiadó

Swann, H. V. [1978]: Human resource accountig: some aspects which require psychologists' attention, Jorunal of Occupational Psychology, December pp. 301-314.

Szabó K. [1988]: A tudás globális piaca és a lokális tanulás - az 1998. November 20-án megtartott "Knowledge Transfer in the Information Age Budapest Autumn Workshop" Konferencia összefoglalója – *Közgazdasági Szemle*, XLVI. évf., 1999. március, pp. 278–294. o.

Szalavetz, A. [2012]: Az immateriális beruházások és a nem közvetlenül a termelésben foglalkoztatottak szerepe a gazdasági felzárkózásban, *Közgazdasági Szemle*, LIX. Évf., November, 1187-1206 o

Szlavik, P. [2011]: Corporate valuation and intellectual capital, Bratislava, October 21-22, 2011; ISBN 978-80-89306-12-1

Szulanski, G. [1996]: Exploring internal stickiness: Impediments to the transfer of best practice within the firm, *Strategic Management Journal*, 17(1), 27–43.

Thurow, L. C. [1996]: The Future of Capitalism, How Today's Economic Forces Shape Tomorrow's World, Penguin Books

Tomka, J. [2009]: A megosztott tudás hatalom, Harmat, Budapest

Truch, E. - Bridger, D. [2002]: The Importance Of Strategic Fit In Knowledge Management organisation, in: Proceedings of the Xth European Conference on Information Systems: ECIS 2002. June 6-8, Gdansk, Poland (Ed: Stanislaw Wrycza), University of Gdansk, pp. 905-918.

Vera, D. - M. Crossan [2003]: Organizational learning and knowledge management: toward an integrative framewor,. In M. Easterby-Smith and M. A. Lyles (eds),

Blackwell Handbook of Organizational Learning and Knowledge Management, pp. 123–141. Oxford, Blackwell

Veres, J. – Gulyás, É. [2008]: Bankszámvitel, Alinea Kiadó, Budapest

Webster, E. - Jensen, P. H. [2006]: Investment in Intangible Capital: An Enterprise Perspective. *Economic Record*, Vol. 82. No. 256.

WEF [2014]: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf Letöltve: 2015. szeptember 07.

Weichert, M. [2017]: *Journal of Payments Strategy & Systems*, Vol. 11 Issue 1, p23-33.

Westland, C. [2002]: Valuing technology, John Wiley & Sons (Asia) Pte Ltd., New York

Wiig, K. M. [1993]: Knowledge Management Foundations: Thinking about Thinking – How People and Organizations Create, Represent and Use Knowledge, Schema Press, Arlingtaon, TX

Wiig, K. M. [1997]: Knowledge Management: Where did it come from and Where will it go? Expert Sytems With Applications, 13, 1-14.

Yin, R. [1994]: Case study research: Design and methods, Thousand Oaks, Sage

Zack, H. M. [1999]: Developing a Knowledge Strategy, *California Management Review*, vol 41, No. 3 spring, pp 125-145

Zack, M. [1999]: Developing a knowledge Strategy, *California Management Review*, Vol. 41. No. 3. pp. 125-145.

Zadrozny, W. [2006]: Leveraging the Power of Intangible Assets, *MIT Sloan Management Review*, Vol. 48. No. 1.

Zéghal D. - Maaloul A. [2010]: Analysing value added as an indicator of intellectual capital and its consequences on company performance, *Journal of Intellectual Capital*, Vol. 11 Iss: 1 pp. 39 – 60

9.2. List of own publications cited in the dissertation

	Year of publishing	Author(s)	Title of article	Journal	Additional information
1	2012 a	Gabor Porzse, Sandor Takacs, **Jozsef Fejes**, Zoltan Csedo, Zoltan Sara	Knowledge and innovation as value drivers in professional services firms: an empirical research in Central and Eastern Europe	European Journal of Business and Management	ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online), Vol 4, No.8, 2012
2	2012 b	Gabor Porzse, Sandor Takacs, Zoltan Csedo, Zoltan Berta, Zoltan Sara, **Jozsef Fejes**	The impact of creative organizational climate on the innovation activity of medical devices manufacturing firms in Hungary	European Journal of Business and Management	ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol 4, No.13, 2012
3	2013	Zoltán Sára, Zoltán Csedő, **József Fejes**, Tamás Tóth, Gábor Pörzse	Innovation Management in Central and Eastern Europe: Technology Perspectives and EU Policy Implications	Journal of Economics and Sustainable Development	ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.4, No.4, 2013
4	2013	György Boda, Nataliia Stukalo, Iaroslava Stoliarchuk, **József Fejes**	Intellectual Capital Paradox: The case of Hungary and Ukraine	Developing Country Studies	ISSN 2224-607X (Paper) ISSN 2225-0565 (Online) Vol.3, No.8, 2013
5	2014	Krisztián Tibor Csubák, **József Fejes**	Bank financing of Hungarian SMEs: Getting over to credit crisis by state interventions	Research Journal of Finance and Accounting	ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online) Vol.5, No.5, 2014
6	2014	Csubák Tibor Krisztián, **Fejes József**	A magyar kkv-k 21. századi banki finanszírozásának áttekintése és kiútkeresés a hitelválság csapdájából	Hitelintézeti Szemle	2014/13. évfolyan, pp. 174-194
7	2014	Sára Zoltán, Csedő Zoltán, **Fejes József**, Tóth Tamás, Pörzse Gábor	Innovációmenedzsment és innovációs stratégiák – a vállalati tudás szerepe az innovációs folyamatokban	Vezetéstudomány	XLV. ÉVF. 2014. 10. SZÁM / ISSN 0133-0179
8	2014	**Fejes József**	Gondolatok az innováció és a stratégia összefüggéseiről	Vezetéstudomány	XLV. ÉVF. 2014. 5. SZÁM / ISSN 0133-0179

9	2015 a	**Fejes József**	Innovációs kalandozások az elmélettől a stratégiáig	Vezetéstudomány	XLVI. ÉVF. 2015. 6. SZÁM / ISSN 0133-0179
10	2015 b	**Fejes József**	A tudásmenedzsment fejlődési szakaszainak tettenérése a magyar üzleti tanácsadás piacán	Vezetéstudomány	XLVI. ÉVF. 2015. 8. SZÁM / ISSN 0133-0179

10. APPENDICES

Appendix #1

```
FREQUENCIES VARIABLES=q01_1 q01_2 q01_3 q01_4
  /STATISTICS=STDDEV MEAN MEDIAN
  /ORDER=ANALYSIS.
```

Frequencies

Statistics

		Background procedures	Business procedures	Risk procedures	Other support procedures
N	Valid	50	50	50	50
	Missing	0	0	0	0
Mean		2,20	2,73	2,20	2,15
Median		2,00	3,00	2,00	2,00
Std. Deviation		,758	,554	,791	,700

Appendix #2

Descriptive Statistics

	N	Mean	Std. Deviation
Relationship – Background procedures	50	23,90	11,888
Organization - Background procedures	50	36,20	12,212
Competence - Background procedures	50	39,90	13,568
Relationship – Business procedures	50	34,33	10,374
Organization - Business procedures	50	30,70	10,062
Competence - Business procedures	50	34,97	11,306

Relationship – Risk procedures	50	22,10	11,933
Organization - Risk procedures	50	38,57	13,060
Competence - Risk procedures	50	39,33	16,459
Relationship – Other support procedures	50	27,68	12,499
Organization - Other support procedures	50	38,68	13,252
Competence - Other support procedures	50	33,65	12,879
Valid N (listwise)	50		

FREQUENCIES VARIABLES=q02_1_1 q02_1_2 q02_1_3 q02_2_1 q02_2_2 q02_2_3 q02_3_1 q02_3_2 q02_3_3 q02_4_1 q02_4_2 q02_4_3

/STATISTICS=STDDEV MEAN MEDIAN

/ORDER=ANALYSIS.

Frequencies

	Relationship Background procedures	Organization Background procedures	Competence Background procedures
N Valid	50	50	50
Missing	0	0	0
Mean	23,90	36,20	39,90
Median	20,00	33,00	40,00
Std. Deviation	11,888	12,212	13,568

	Relationship Business procedures	Organization Business procedures	Competence Business procedures
N Valid	50	50	50
Missing	0	0	0
Mean	34,33	30,70	34,98
Median	34,00	30,00	33,00
Std. Deviation	10,374	10,062	11,306

	Relationship Risk procedures	Organization Risk procedures	Competence Risk procedures
N Valid	50	50	50
Missing	0	0	0
Mean	22,10	38,58	39,33
Median	20,00	40,00	37,00
Std. Deviation	11,933	13,060	16,459

	Relationship Other support procedures	Organization Other support procedures	Competence Other support procedures
N Valid	50	50	50
Missing	0	0	0
Mean	27,68	38,68	33,65
Median	30,00	35,00	30,00
Std. Deviation	12,499	13,252	12,879