Intellectual Capital Measurement and Evaluation Models Based on Assets Return as Non-Accounting Value

Cati-Loredana Dumitru (Soare)
"Valahia" University of Târgoviște, Romania
soarecatiloredana@gmail.com

Abstract

In recent decades, the emphasis on the knowledge resources and organizational skills of companies has contributed to the creation of a broad understanding of the strategic role of intangible resources for the success of a company, resources consisting of intangible assets and, in particular, intellectual capital. The purpose of this study is to analyse different definitions of intellectual capital, in order to identify the defining features of the concept and the different elements and categories that compose it, as well as to provide an overview of the methods and models that have become the most used for its identification and measurement.

Key words: non-accounting value, intellectual capital, added economic value, added market value, total intangible value
J.E.L. classification: M40, M41, M42

1. Introduction

Global business has developed rapidly, as indicated by the development of information, information and communication technology, science and intense global competition, the success of a business depending on the ability to use knowledge as a form of intangible assets that have become the new source of financial performance and competitive advantage. The transition from an economy based on physical resources to a knowledge-based economy has caused many researchers to find a new way to measure intangible assets, including intellectual capital (Soewarno & Tjahjadi , 2020). Intellectual capital, as an intangible asset, is a resource of an entity that is controlled as a result of past events and from which future economic benefits are expected to result as a result of past events and from which future economic benefits are expected to result. It is identifiable, has no physical appearance and is non-monetary, meaning it does not represent cash or other assets for which future economic benefits are expected.

2. Theoretical background

The concept of intellectual capital has emerged as a key element in the interpretation of a company's intangible resources. Its understanding meets the needs of managers to have an interpretive and operational notion of intangible resources to determine the value of the enterprise. A company's intellectual capital can be defined as the existing knowledge within the organization that brings value to the company or that could bring value to the company in the future. Intellectual capital consists of people and systems and integrates and combines all forms of human, social and structural stakeholder capital. Intellectual capital can be divided into three areas:

- Human capital. Human capital is defined as the set of capabilities, skills, knowledge, abilities, capabilities, capacities and experiences possessed by employees, managers and every person in the company and which are relevant to the tasks of the organization, as well as the ability to create a reservoir of knowledge, experience and skills through individual learning. In short, a company's human capital is represented by the knowledge and skills of its professionals destined to produce services.

- Organizational capital. When we talk about organizational capital, or also known as structural capital, we mean all the mechanisms and structures that can help employees improve their cognitive resources to improve company performance. In other words, these are all the systems, processes and/or procedures that the organization has and are specific to the company.
- Relational Capital - Relational capital is a combination of local institutions and trusting relationships between economic actors that evolve from local cultures. This network of civic engagement (which grows over time) contributes to improving the company's economic performance.

All these assets, all this capital (human, organizational and social) bring value to the company and can create even more value, so it is necessary to be managed effectively to achieve positive results.

3. Research methodology

This paper is a literature review as a research methodology and provides an overview of different different definitions of intellectual capital, in order to identify the defining features of the concept and the different elements and categories that compose it, as well as to provide an overview of the methods and models that have become the most used for its identification and measurement.

4. Findings

Intellectual capital is both an asset with added value and a resource capable of generating value in the business. According to Van der Meer-Kooistra and Zijlstra (Van der Meer, 2001, p. 472) the measurement system should provide a broad perspective in the value creation capacity of intellectual capital. Therefore, it is important to quantify information about intellectual capital (Van der Meer, 2001, p. 473). Both financial and non-financial measurements recommended by different researchers should be used to help companies capture their value creation capacity. Measuring and reporting intellectual capital closes the gap between a company's book value and market value. The market value of a company refers to the sum of recognized conventional assets, recognized intangible assets, as well as unrecognized skills that are represented by intellectual capital (Mouritsen, 2002, p.20). Part of the difference between a company's book value and its perceived market value is intellectual capital, which is not recognized in the company's individual financial statements.

Intellectual capital can be evaluated by different methods, the most simplistic method being given by the difference between the market value of a company and the total value of its assets. Of course, there are enough evaluation methods, but the one presented previously is one of the few methods that actually assigns a certain value to intellectual capital. Even though contemporary society has become aware of the importance of hidden intangible assets in creating wealth for the enterprise, the main problem that arises is related to the way of valuing them. At the moment, there are numerous methods of intellectual capital assessment that can be divided into financial (monetary) methods and non-financial (non-monetary) methods as follows (Ficco et al, 2021, p.105-122):

- Market capitalization methods that calculate the monetary value of the intellectual capital as the difference between the market value and its book value: the Q Coefficient or the Market Net - Book Value Indicator.
- Methods based on the return on assets that estimate the value of intellectual capital based on the profitability of the assets, the average return of the industry to which it belongs and the value of tangible assets: Economic Added Value, Market Added- Value, Capitalization of Knowledge Generated Profit ,Total Intangible Value.
- Direct methods that estimate the monetary value of intellectual capital by identifying and measuring some of its components: Nevado & Lopez, Meritum, Technology Broker, Inclusive Valuation Methodology.
- Methods based on scores that identify the components of intellectual capital, but without making measurements in monetary terms, but in certain non-monetary indicators: Skandia Navigator, Balanced ScoreCard, Intangible Asset Monitor, IC Index.

4.1. Economic value added (EVA)

This indicator is based on the theory of net residual profit, also called economic profit, which exists only if the rate of return on invested capital is higher than the weighted average cost of capital of an enterprise. This method was introduced and trademarked (TM) by Stern Stewart & Company to more accurately reflect a company's financial performance. The concept of residual net profit, also called economic profit, was introduced by Alfred Marshall in 1890. By economic profit, A. Marshall understood the difference between the total net profit and the net profit attributable to the invested capital, calculated according to its current cost . EVA is defined as "the difference between net sales and operating expenses, taxes and the net income required to reward capital, calculated by multiplying the cost of each category of invested capital and the value of that category of capital. In practice, EVA increases if the weighted average cost of capital is lower than the rate of return on net assets and vice versa". In other words, EVA is the difference between the net operating profit and the value cost of invested capital (the sum of equity capital and long-term borrowed capital).

The equation for calculating EVA is: *EVA = (ROIC - wacc) x initial value of invested capital*

in which: - ROIC = return rate on invested capital

- wacc = weighted average cost of capital

This means that EVA does not quantify the value of a company's intellectual capital, but only its existence, because it is usually calculated separately for each future year, indicating the annual increase in value of a firm, instead, EVA is the best indicator for quantifying value created for shareholders. This model was introduced by Stern Stewart in 1997 as a global measure of performance based on variables that include the capital budget, financial plan, proposed goals, and incentive compensation for any way the company's value can be increased or decreased The added economic value is given by the difference between the value of net sales and the sum of operating expenses, taxes and invested capital. The added economic value is considered a surrogate indicator of the intellectual capital, because it does not show what is the specific contribution of the intellectual capital to the achievement of the company's performance indicators. It can only be said that the change in economic value added reflects a productive capital or not.

4.2. Market value added

This indicator also derives from the concept of economic profit. MVA is calculated as the difference between the market value of a company and the capital that shareholders and creditors have put into the company over the years, in the form of paid-in capital, loans and retained earnings. That is why MVA reflects the difference between the market value of the company, at a given moment, and the net capital put in by investors, starting with the initial invested capital. Therefore:
MVA = market value of equity capital + market value of outstanding loan -total invested capital

4.3. Capitalization of profit generated by knowledge

The author of this method is the American professor from New-York University, Lev Baruch. The knowledge capital evaluation approach is made by capitalizing a normalized net profit (calculated following some corrections of past annual net profits and the forecast of future net profits), with an appropriate capitalization rate (Ahmad at al, 2019, p. 225) the calculation formula is: *Knowledge capital = (normalized annual net profit - net profit related to tangible and current assets)/ capitalization rate related to knowledge capital*

4.4. Total intangible value

This method is also based on the theory of excess profit, compared to the profit obtained by an enterprise with an average efficiency management. As a result, the market value of a better performing company is higher than the market value of a similar company with average financial performance (Gu, & Lev, 2011). The stages of applying this method are:

- calculation of the annual average gross profit, from the last three years;
- calculation of the average annual value of tangible assets, from the last three years;

- calculation of the average annual return on assets (ROA of the enterprise), by the ratio between the two indicators above and calculation on the average annual return on assets in the company's field of activity (average ROA of the branch);
- calculation of excess gross profit, by the formula: *Average annual gross profit - (Average ROA of the branch x tangible assets of the company)*
- calculation of the average annual rate of profit tax, from the last three years;
- multiplying the annual average rate of profit tax, from the last three years, with the surplus gross profit and determining the surplus net profit, attributable to intangible assets;
- the capitalization of surplus annual average net profit, attributable to intangible assets, with an appropriate capitalization rate and thus calculating the total value of intangible assets.

5. Conclusions

Intellectual capital is extremely relevant in the current context, although it is a complex and multifaceted subject, whose approach is still unfinished and in continuous evolution, which opens an important field for the development of research in this regard. Consequently, CI is considered an intangible activity that includes people, the art of doing and learning (human capital), organizational and technological culture (structural capital) and relationships with the external environment (relational capital). From a theoretical point of view, this study confirms the important role of intellectual capital on financial performance and provides empirical evidence regarding the theory and literature on intellectual capital, especially the use of intellectual capital measurement and evaluation models based on profitability. The most common reasons cited in the literature to justify the assessment of intellectual capital are (Marr et al, 2003, p. 461): to help organizations formulate strategy, assess and implement strategy by businesses, support expansion and diversification decisions, communicating this information to shareholders.

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7. References

- Ahmad, I., Alam, M. S., & Yameen, M., 2019. A study of economic value added (EVA) & market value added (MVA) of Hindustan Petroleum Corporation Limited. *Global Journal of Economics and Business*, 6(1), 225-237, https://doi.org/10.31559/GJEB2019.6.1.14
- Ficco, C., García, G., Sader, G., y Luna Valenzuela, J., 2021. El capital intelectual en el reporte integrado: un estudio exploratorio en el mercado de capitales argentino a partir del análisis de datos textuales, *Revista Academia & Negocios*, 7(2), 105-122, https://doi.org/10.29393/RAN7-1CICF40001
- Gu, F., & Lev, B., 2011. Intangible assets: Measurement, drivers, and usefulness. In Managing knowledge assets and business value creation in organizations: Measures and dynamics. *IGI Global,* (pp. 110-124), https://doi.org/10.4018/978-1-60960-071-6.ch007
- Van den Berg, 2009. Models of Intellectual Capital Valuation: A Comparative Evaluation – cited by Brătianu, Constantin (coordonator): Capitalul intelectual organizațional, ASE, Bucharest.
- Marr, B., Gray, D. & Neely, A., 2003. Why do firms measure their Intellectual Capital. *Journal of Intellectual Capital*, vol. 4, nº, pp. 441-464, https://doi.org/10.1108/14691930310504509
- Mouritsen J., 2002. Intellectual capital and capital market: the calculability of intellectual capital, Accounting, *Auditing Accountability Journal* 16(1), pp. 18-30, p. 20, https://doi.org/10.1108/09513570310464246
- Van der Meer-Kooistra, J., & Zijlstra, S. M., 2001. Reporting on intellectual capital. *Accounting, Auditing & Accountability Journa*l, https://doi.org/10.1108/09513570110403461
- Soewarno, N., & Tjahjadi, B., 2020. Measures that matter: an empirical investigation of intellectual capital and financial performance of banking firms in Indonesia. *Journal of Intellectual Capital,* https://doi.org/10.1108/JIC-09-2019-0225

- Stan, Sorin; Anghel, Ion; Gruzsniczki (2006) „Capitalul intelectual al întreprinderii. Evaluarea proprietăţii intelectuale şi a altor active necorporale", IROVAL - Bucharest.