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ORIGINAL SCIENTIFIC ARTICLE
doi:10.5937/ekonomika2001001P
Received: December, 17. 2019.
Accepted: January, 21. 2020.

ACCOUNTING-BASED VALUATION METHODS OF INTANGIBLE ASSETS: THEORETICAL OVERVIEW

Abstract

Intangible assets are fundamental generators of companies' competitive advantage. While the tangible assets were the most important company's resources in the past, nowadays, the intellectual resources determine the success of a company. Intangible resources represent the non-physical substances, which are difficult to define, measure and value. Thus, the purpose of the paper is to analyze the valuation methods of intangible assets in the area of the traditional accounting framework. The paper addresses the importance of the intangible assets in management literature, and links various valuation methods of intangible assets to the context of economics, business and strategic management.

Key words: *Methods, Intangible assets, Valuation, Value*

JEL classification: *M41, L25, O34*

РАЧУНОВОДСТВЕНО-БАЗИРАНЕ МЕТОДЕ ЗА ВРЕДНОВАЊЕ НЕМАТЕРИЈАЛНИХ УЛАГАЊА: ТЕОРИЈСКИ ОСВРТ

Апстракт

Нематеријална улагања представљају фундаментални генератор компанијске конкурентске предности. Док су материјална улагања била најважнији компанијски ресурс у прошлом периоду, данас, интелектуални ресурси детерминишу успех једне компаније. Нематеријални ресурси представљају не-физичку субстанцу, која се тешко дефинише, мери и вреднује. Према томе, сврха овог рада је да анализира методе за вредновање нематеријалних улагања у делу традиционалног рачуноводственог оквира. Овај рад адресира значај нематеријалних улагања у менаџмент литератури, и повезује различите методе за вредновање нематеријалних улагања у контексту економије, бизниса и стратегијског менаџмента.

Кључне речи: *Методе, Нематеријална имовина, Вредновање, Вредности*

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Introduction

Adam Smith's book of 1776 "The Wealth of Nations" (see newer edition of Smith, 2009) was seen as a classical school of economic theory. Author stated that the wealth of a nation comes from tangible and physical assets only, or to be more precise, from production factors such as labor, land and capital. Nowadays, in the modern knowledge-based economy, this "theory" is no longer meaningful (Wang, 2008). Global economy has dramatically changed during the last thirty years. The transition from industrial capitalism to knowledge-based capitalism represents a revolution in the corporate world. Tangible assets no longer represent the core of knowledge-based economy. Key resources for knowledge economy era are knowledge resources or intellectual resources. These resources are intangible assets, which are visible in the assets side of the balance sheet and, mainly, invisible at the assets side of the balanced sheet.

Three main structural changes appeared in the knowledge-based economy (MERITUM project, 2002, p. 6):

- 1) Knowledge is seen as an object of a potential trade;
- 2) Interrelation between different knowledge resources has been improved;
- 3) Information and communication technologies (ICT) enable higher diffusion of knowledge by allowing development of new and sophisticated networks between subjects of knowledge.

These three changes completely altered the global business model of companies that was available in the previous industrial revolution. Based on the huge development of the Internet and advanced technology, data, information and knowledge are widely spread and available. In the process of sharing and collecting necessary knowledge, companies improve their businesses much more easily.

Technology, which is based on knowledge, lies at the core of the development of each company. In such company, information management represents the input, and knowledge management represents the production process of the final output. Companies face many difficulties in the process of identification and measurement of intangible assets (Rađenović & Krstić, 2017). To prevent these problems from arising in the following years, research efforts should be focused on understanding how knowledge is produced and used to generate a future value. In addition, the development of new accounting practices that identify indicators of intangible assets more precisely is necessary in order to improve financial reports regarding a company's intangible assets. In the field of management sciences, the lack of identification of outcomes stemming from intangible assets results in the loss of business opportunities. In that way, managers and decision makers in companies stop investing in intangible assets, because of the lack of visibility of final outcomes (MERITUM project, 2002).

Intangible resources can also be analyzed in very dynamic terms. Companies more often take initiatives to develop internally, or acquire existing, intangible assets in order to improve their efficiency (Rađenović & Krstić, 2017b). These kinds of activities are very often followed by high costs. The high costs come from the difficulty to align these dynamic activities with concrete economic benefits. The main goal is to establish the system for the adequate performance monitoring of each intangibles (Sánchez et al., 1998). Hence, the aim of this paper is to investigate the most relevant accounting-based valuation methods of intangible assets from the available literature.

The paper is organized as follows. Section 2 provides conceptualization of intangible assets among accounting-standards setters and numerous well-known authors from academia. Section 3 describes the most important characteristics of intangible assets. Section 4 presents valuation methods of intangible assets, whereas Section 5 concludes the paper.

Concept of Intangible Assets

The knowledge-based economy has changed the way companies are valued (Hall 1992; Nakamura 2003). The changes are coming from the global influence of information and technological trends through favoring globalization of economy and innovation as key factors of global competition. It is interesting that, nowadays, the total market value of a company is almost 90% composed of intangible assets value, mainly because current accounting frameworks do not provide an adequate system for a company to make long-term decisions. From the agricultural age to the industrial age, there were a lot of changes. The best proof for that is the proportion evolution, starting from 1978 when intangible assets constituted only 5% of total assets, then in 1998 when it was 72%, and finally recently when this proportion improved even more and the interval is between 75% and 85% (Ciprian et al., 2012). As the knowledge economy gained dominance, the value of tangible assets was decreased and replaced by the value of intangible assets, reflecting around 80% of market values by the year 2000 (Lev 2001; Sullivan & Sullivan 2000). The significant gap between the total market value and total book value has invited a wide research on explanation of hidden reserve or hidden value together by the accounting reporting standards-setters and different authors from academia (Lev & Daum 2004; Edvinsson & Malone 1997; Lev 2001; Nakamura 2003; Harrison & Sullivan 2000).

International Accounting Standard (IAS) 38 defines intangible assets as an “identifiable non-monetary asset without physical substance” (IFRS Foundation, 2010). An asset is a potential resource if it can be adequately controlled based on the past events and based on which future economic benefits are expected to flow into the company (IFRS Foundation, 2010). According to FASB (2001), an intangible asset is defined as a “non-current, non-financial claims to future benefits that lacks a physical and financial term”. Based on both previous accounting standards, the control of intangible assets is similarly explained. A company has control over an intangible only if there is a power to obtain future economic benefits stemming from the usage of that asset, and if it can also restrict future benefits at the same time (Zéghal & Maaloul, 2011). In certain occasions, a company may not include intangible assets in the balance sheet, even though they meet all the demanded requirements. Based of IAS 38 and FASB, one of the very important requirements is the possibility to “measure asset cost”. This requirement raises another accounting problem because this requirement would be easily met if that asset was acquired or obtained from a business combination. In that way, it would be easier to separate it and identify the value. The main problem lies in all intangible assets that are internally developed, such as computer software, brands, patents and results of research and development activities (Upton, 2001). Entities can very often expand their activities onto new acquisitions, research and development, maintenance, scientific or technical work, implementation of new processes, licenses, intellectual property, market

knowledge, trademarks, computer software, customer lists, market shares and rights, etc. If an item based on the definition above does not meet the requirements of definition, expenditures to acquire or all expenses for internal development are seen as an expense. If an item is acquired through a business combination, then it will be recorded partly as the goodwill on the day of the acquisition (IFRS Foundation, 2010).

At the same time, many different authors from academia tried to define intangible assets as well. According to Hall (1992) intangible assets represent a generator of advantage that transforms productive resources into property with added value. Smith (1994) defined intangible assets as all relevant components of business entity that exist with current and non-current assets. Those are components that, together with current assets and non-current assets, allow functioning of a company, and often contribute to the profit of a company. Their existence depends on the presence or expectations of future incomes. The definition by Gu and Lev (2001) says that the intangibility can be defined as a generator of value (research and development, promotions, information technology and capital expenditures and practice in human resources). Lev (2001) defines intangible assets as the rights of future benefits that do not have physical or financial substance. Also, Kristandl and Bontis (2007) state that intangible assets represent a company's strategic portfolio of resources that will enable a company to create a sustainable value.

There are dilemmas both in professional and theoretical sphere which relate to the meaning and the main notion of the term “intangible”. The term “intangible” is very often wrongly interpreted as some other non-tangible form, such as intangible investments, intangible capital and intellectual capital. Moreover, the literature review throughout different disciplines emphasizes several other concepts that can be seen as synonymous with the terms “intangible capital”, “intellectual capital”, “immaterial capital”, “knowledge capital” or “goodwill” (Zéghal & Maaloul, 2011).

According to the book “Unseen Wealth – Report of the Brookings Task Force on Intangibles” published by Blair and Wallman (2001) that was based on the study by Bontis (1998), there is a much more comprehensive distinction between three major categories of intangibles (p. 63):

1. There are two main sub-categories of intangibles for all intangible assets for which the market already exists and property rights are clear, and those are: first of all, patents, brands, copyrights, and second of all, contracts, databases, licenses and business agreements;
2. When there are no legal and well-defined rights, a group of intangibles for all intangibles that are controlled by a particular company is composed of: R&D in process, reputational capital, business processes and business secrets;
3. When both market and legal and property rights do not exist or are very difficult to identify for all the other intangibles, a group of intangibles consists of human, structural and relational assets. All of these assets belong to intellectual capital as its main components.

Ashton (2005) gives further explanation of the guiding principles for Blair and Wallman's (2001) classification of intangibles. His classification shows the level of difficulty to record them in official financial reports and to treat them properly not only for accounting standard-setters, but also for managements of companies. The last third category causes the biggest problems mainly because there are no accounting standards for them yet, whereas the first and second group of intangibles are already well-determined.

Characteristics of Intangible Assets

Intangible assets have two main characteristics, which, at the same time, differentiate them from tangible (physical) and financial assets, and those are (Warfield et al., 2008, p. 556):

1. The lack of physical existence. – Intangible assets possess only legal rights and privileges granted to a company to use them. Based on these rights and privileges, a company generates benefits;
2. They are not financial instruments. – Financial assets also do not represent physical substance, but when compared to intangibles, financial instruments have the value because they can claim or have the right to receive cash or cash equivalents in the future.

Intangible assets can be purchased or developed internally. Intangibles bought from another organization are recorded in financial statements as cost. Cost includes all costs of acquisition and expenses necessary to make intangible assets ready for usage. Typical costs are legal fees, purchase price and other expenses.

Internally created intangible can be both expensed and capitalized. From the financial accounting perspective, the crucial aspect is to elucidate whether to expense or capitalize. If it is expensed, all the expenses will be recorded in the profit and loss account. If it is capitalized, an item must fulfill several restrictive requirements; notably, it must be separable and reliably measurable. Intangible assets can have limited life or indefinite life. Limited-life intangibles have a precise period when they can be used. These assets must be amortized or systematically allocated to the costs of intangible assets. After that period, intangible assets must not be used anymore, and should be excluded from the property and annual report of a company. On the other side, indefinite-life intangible assets are all intangible assets without legal, regulatory, contractual or any other factor that limit the useful life cycle. There is no foreseeable limitation period for these intangible assets over which the asset will provide cash (Warfield et al., 2008).

Items seen as intangible assets are included in the balance sheet together with long-term assets or non-current assets and further explanations are given in the notes of financial statements. However, there are no further explanations even in the notes of financial statements as to how these assets have been produced, made or acquired. There is no evidence of expenses in profit and loss account that is related to some of the intangible asset internal development. There is nothing else inside the balance sheet apart from the intangible assets that already meet all the necessary criteria. So, here is one very problematic part for all those individuals who want to follow the investments in intangible assets and their outcomes (Caddy, 2000; Harvey & Lusch, 1999).

Based on the study published by the Center for Excellence in Accounting and Security Analysis in 2009, there are two main preliminary points regarding intangible assets (Penman & May, 2009, p. 11).

- 1) *Intangible assets have a speculative characteristic.* Intangible assets are not only without physical substance, but they are also not identifiable, such as contracts or customer lists which can help a company generate benefits. Legal rights, patents and copyrights or brands are exceptional because of that. However, the difficulty is seen in “customer relationships”, “organizational

capital”, “human capital”, “knowledge assets”, and similar because they are not specific and conceptualized enough, which makes it hard for their market to be defined. The market price of these assets is highly speculative, subjective, and non-realistic. The market price is usually formed based on the personal perspective of an owner. When a speculative value enters the financial statement, problems happen because a non-realistic value can create imbalance in the reports.

- 2) *Intangible assets are used jointly.* Most of the intangible assets generate inflow of cash or cash equivalents, and they do so jointly with some other tangible or intangible assets. Different intangible assets, such as brands, marketing campaigns, distribution networks work together with other assets, and it is impossible to imagine their work independently. For instance, “knowledge capital” works together with productive machines and processes, marketing and management, but the cash flow streams only one cash inflow. Also, “organizational capital” makes it possible for many different company’s assets to be used jointly. An organization can be seen as one big asset composed of these several smaller tangible, intangible and financial assets that coordinate together and that are a source of future value.

According to Lev (2005), intangible assets differ from other types of assets, tangible and financial, in two major aspects: partial excludability and non-marketability.

When an individual owns a building or share, he/she can completely collect all related benefits from it without any difficulties. On the other side, owners of some intangible assets are in a completely different situation. Even though an individual owns an intangible asset and it expires in 20 years, competitors may explore and develop similar patents or an intangible asset before that. That is problematic from the cash and income perspectives because it is necessary to have stable cash inflows in the company in order to value intangibles. The consequence of unstable cash flows is not tightly regulated property rights over intangibles as they should be.

Most of the tangible and financial assets can be easily traded on a market, which is not the case with intangibles. There are transactions in some of the intangibles, precisely licensing and sales of patents, but generally, these transactions are not transparent and disclosed publicly. The reason for not being publicly presented is seen in not resolved and precisely defined property rights. The non-tradability of intangible assets represents a serious issue for investors and decision-makers because there are no particular valuation methods. The valuation process is only possible when comparing values between highly similar intangible assets, and, even then, it is not correct enough. This characteristic of intangibles created problems to accountants mainly because they cannot be seen as assets in the balance sheet.

Taking into consideration that intangible assets are highly risky, with uncertainty in cash incomes, why are they so important today? The answer can be found in two main explanations, and those are: intensity of business competition and commoditization of physical assets. The global market created competition all around the world. Companies from different sectors operate and compete with similar companies throughout the world. In such a global environment, it is of high importance to be continuously innovative. Innovations are allowed and necessary not only in product and service matters, but also

in cost-efficiency mechanisms. The necessary level of innovation can be achieved through investments in intangible assets, such as research and development focused on creating a new product, training employees, developing new brands or marketing campaigns, etc. As the competition pressure gets stronger, innovations should get better.

The second answer is the commoditization of physical assets. Commoditization of physical assets means that all competitors can allow themselves to have equipment, production machines, tools or advanced technology. Technology and equipment are widely available to all competitors who have the possibility to pay. This is one of the most important differences between intangible and tangible assets. Tangible assets are not so unique today as they used to be in the industrial era when only the biggest companies could afford themselves the most sophisticated tools and equipment. Now, the situation has changed, and they are available more or less to all. The biggest advantage can be achieved through intangibles (Lev, 2005).

The attention to intangible assets and their importance is paid mainly by the following constituencies (Lev, 2001, p. 1):

- 1) Managers and their shareholders. – Investments in intangible assets are associated with high cost of capital. Managers are interested in alleviating the excess cost of capital.
- 2) Investors and capital market regulators. – Investors are interested in information obtained from insiders and outsiders of a company.
- 3) Accounting standard setters. – The lack of accounting standard regarding intangible assets results in financial statements that do not follow changes in the current business environment.
- 4) Policymakers. – The lack of standards and financial statements demand public policy makers to assess fiscal policy, support innovations, or protect intellectual property.

Lev and Daum (2004) addressed two main issues about intangible assets. First, intangible assets by themselves cannot create value or generate profit. They need to be combined with other production factors. They need efficient support and system in order to create future value. Corporate performance reports must provide much more efficient view that will allow investors and managers to follow the value creation process. Second, the value of intangible assets is related to future, not to present. Intangible assets represent a possibility for future potential growth and profitability. It is achievable only with a more dynamic system of reporting that will replace the current, traditional performance management system.

Methods of Intangible Assets Valuation

The use of intangible assets is increasing, the methods of valuation of intangible assets are a matter of considerable interest to investors, decisions-makers, managers, and accounting-standard setters. Unfortunately, important decisions are not easy to make because of a missing adequate valuation system. Due to the lack of these valuation tools and increasing importance of intangibles, company's performance cannot be evaluated realistically based only on financial performance measurement systems. Calculating the

value of intangible resource value as a difference between the total market value and total book value is not sufficient because of two reasons: there is no necessary mispricing in capital and markets and the balance sheet value is historically oriented and limited (Gu & Lev, 2003).

Based on the paper published by Russell (2016) intangible assets are valued quantitatively by three main groups (p. 484):

- 1) Cost group of methods;
- 2) Market group of methods;
- 3) Income-based group of methods.

In the cost group of methods are all methods focused on all relevant expenditures coming before the final performance appears that will develop further particular intangible asset. The cost group of methods consists of all relevant expenditures linked to the company's intangible assets. These expenditures are capitalized and reported at the company's accounts. Some studies estimate the value of intangible assets by capitalizing R&D expenditures (Chan, Lakonishok, & Sougiannis, 2001; Lev, Baruch & Sougiannis, T., 1996). But, (Holthausen & Watts, 2001) proved that the valuation models using input expenditures on intangible assets lack theory for asset valuation. Lagrost et al. (2010) proposed cost method for intangible asset valuation that is applied when the cost-based analyses are based on the economic principles to ignore the amount, timing, duration of future economic benefits, and also to avoid performance risk in the competitive environment. Historical cost should be used in order to estimate the real value of a developed asset. (Damodaran, 2006) explored the topic of valuation of company's intangible assets by capitalizing expenditures. At first, expenditures in company's income statements must be re-categorized into operating and capital expenses. All expensed that can be capitalized, expecting to bring benefits on a longer-period of time are seen as capital expenses. On the other side, all expenses without benefit expectations that last for maximum one year are seen as operational expenses. By him, not only R&D expenses can be capitalized, but also and other expenses, such as advertising, selling, general and administrative expenses. The capitalization process will further develop recognizable intangible asset that will generate benefits in the upcoming years for a company.

In the market group of methods by Lagrost et al. (2010) are all market-based transactions of similar intangible assets recently exchanged on the market. Publicly traded information is usually a market capitalization of a company, not particular intangible asset. (Barth & Clinch, 1998) explored the topic of valuation of intangible assets based on their value relevance on the market. They defined the model of market value of a firm by using the valuations of intangibles for company with the added controls for book value and revenues coming from the stock prices and the number of outstanding shares. In order to control the scale effect and heteroscedasticity, the study deflates the regression variables in the given model by the number of outstanding shares and by the market value of equity (Barth & Clinch, 1998; Easton & Sommers, 2003).

In the income-based group of methods are revenues, benefits and discounted cash flows that will be allocated to the particular intangible asset. By Lagrost et al. (2010) the income method is applied when an intangible asset produces income or when an asset generates future benefits. This approach converts future benefits to a single, discounted amount as a result of increased turnover or cost savings.

The most well-known valuation methods based on the benefit allocation are given by Lev (2005). According to Lev (2005), there are three methods that are used to value intangible assets, and those are: *benefit allocation*, *stand-alone valuation* and *comprehensive valuation of enterprise intangibles* (p. 303).

Benefit allocation method can be used only when it is easy to allocate benefits to individual intangibles under certain circumstances. It is necessary to evaluate the benefits and costs by taking into consideration return on investment. Research and development costs and expenditures on brands are all recorded in financial statements. The question is how the collective cash inflow can be separated and divided into particular and precise intangibles. A brand charges its customers with premium prices. That price will be higher than the competitors' price. Based on that price, a company's revenue can be attributed to that brand, and the rest remains as research and development revenues. In order to facilitate the benefit allocation, there are some recommendations given by Vaughan (2009, p. 127):

- First, it is important to estimate operating incomes before depreciation, amortization, income taxes or interest charges. In that way, the pure and total value of the operating income of a company will be seen;
- Second, the allocation of the depreciation amount must be done only for fixed assets;
- Third, ascertainable intangible assets must be isolated, and the amortization required to compare it with investment over the remaining value of each asset must be computed. Then it will be necessary to subtract all the annual depreciation and amortization from operating income in order to calculate a return on investment;
- Fourth, result from available income should be subtracted in order to calculate the income assigned only to goodwill;
- Finally, it is required to capitalize the remaining income at an appropriate rate to come to the value of goodwill.

Stand-alone valuation method is for all those intangible assets with legally protected ownership and pre-specified stream of benefits. These assets can be valued on a stand-alone basis by easily computing the present value of the expected benefit stream.

Comprehensive valuation of enterprise intangibles method is the most sophisticated approach because it will place a combined value on all different company intangibles. There is a methodology for such a comprehensive valuation of intangibles (Gu & Lev, 2003). The basis of this study is an economic production function, or to be more precise, total earnings related to the assets of a company. All assets are divided into three groups of assets: physical, financial and intangible. The valuation starts with the calculation of “normalized earning” or total earnings of one company. Then it is mandatory to calculate earnings that come from physical and financial assets based on industry-wide data. The rest of the total earnings belongs to intangible-driven earnings that can be discounted in order to produce the final expected stream of intangible-driven earnings.

Conclusion

Intangible assets represent a substantial part of one company. They are invisible and non-physical substances that are difficult to measure, understand and define. It is without a doubt that intangible assets are a source of a competitive advantage and future value. However, they do not influence value creation directly, but rather indirectly. Two major forces have led them to that position over the past few decades: globalization and advanced information technology. Understanding the valuation of intangible assets is the basis of management decision processes.

The purpose of the paper is to present traditional valuation methods of intangible assets given by Russell (2016). All three groups are quantitative and accounting-based.

The problematic part with the valuation of intangible assets lays in the fact that financial information linked to intangible assets are very often not visible in the company's accounts. Information about the development of intangibles, their investments or benefits that they generate are hard to follow. In this context, when it is about choosing the valuation methods of intangible assets, which are related to the company's knowledge, it is believed that these financial information could bring profits to the organization, as well as facilitating their management.

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