

VALUATION OF INTANGIBLE ASSETS**Jaroslav Pakosta ^a, Simona Činčalová ^b, Josef Pátek ^c****^{a b c} University of Pardubice, Faculty of Economics and Administration****jaroslav.pakosta@upce.cz, simona.cincalova@student.upce.cz, FesoJP@seznam.cz****Keywords:**

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JEL classification: K110**Abstract:**

The work is focused on the valuation of intangible assets, selecting appropriate methods, including recommendations. First presented are theoretical concepts related to the field of intangible assets, followed by description of some of the problems that may occur during the valuation process. Brief description of valuation methods is also included. Then we focused on characterization of selected yield methods. Before the actual measurement we briefly introduce the intangible asset, which is being valued. Before individual valuation methods of intangible assets are used, it is necessary to perform corporate data analysis. Then selected yield methods were used. Their results are presented listed according to different methods. Based on these results, a comparison of the methods used was performed. Specifically, they are evaluated according to their information value, and also according to their complexity. Conclusion contains a summary of the procedure used to achieve the desired result and certain recommendations on which method is best to use in practice were made based on the results.

Preface

Unlike the valuation of tangible assets, valuation of intangible assets presents in practice more complex problem. Assets of material nature can be described, measured, weighted and better evaluated. Intangible assets are usually unique by nature and it is more complicated to attribute particular benefits from its use to its owner.

In this paper we focus at first on the issue of intangible assets itself and then we draw attention to some particular problems related to valuation of intangible assets. Second part introduces valuation methods including those most used in practice – i.e. yield methods. Later we focus on interpretation of the particular intangible asset and the procedure of obtaining all data necessary for asset's valuation. This data is later used in selected yield methods whose results are compared according to their predictive value and labour intensity. The last part contains the overall summary and recommendations which method is the best for valuation of this intangible asset.

Research results (126 respondents in total) were used to analyze issues of intangible assets valuation in a particular company. This paper to verify the concept of intangible assets valuation and make comparisons for a particular company.

1. Concept formulation

In this section, we will take a closer look at the definition of intangible assets, as well as issues that are associated with the valuation of intangible assets and basic valuation methods.

1.1. Intangible Asset Definition

Under the new Civil Code we can understand the term “intangible” in relation to a certain thing as a certain right(s) whose nature permits so, and other things without any material nature. (Kurzycz, 2012)

The term “asset” is, specifically in the economic area, designed for any thing that increases benefits. (Wikipedie: Asset, 2014)

Therefore “intangible asset” can refer to a product of intellectual thinking, which lacks a tangible essence, is not monetary in nature, and aims to improve something, to define, to protect. It is also important for this type of asset to be understood.

Intangible asset also has some special features. These include the fact that the provider of intangible assets cannot lose it. Intangible asset can be used in multiple locations at the same time. When in use, they are not consumed - on the contrary, they are rather improved. They can be more easily transmitted over great distances. (Malý, 2002)

1.2. Problems related to intangible asset valuation

As the main problems associated with the valuation of intangible assets we can consider (1) the relationship between the value of intangible assets and time, (2) valuation risks, (3) determination of the share presented by intangible assets in the manufacturing production and (4) costs of industrial property protection.

1.2.1. Relation between intangible asset value and time

This problem is dependent primarily on the nature of intangible assets. If it is, for example, some know-how, we can assume a decline in its value over the time. The opposite situation may arise in case of a trademark - this type of intangible asset can get higher value over the time. But it is true just in that case, when the trademark belongs to the company which is stable and prosperous. (Malý, 2007)

1.2.2. Risks of valuation

The basic valuation risk concerns mainly yield methods that work with the future development of an intangible asset. The risk is presented by a different development from the expected course of events, as well as by certain financial risks or industrial and legal risks, i.e. a loss of rights to a given intangible property. (Malý, 2007)

Specific risk level is provided in Decree no. 345/2015 Coll., Annex No. 22. The risk level is given under the term “capitalization rates” and amounts to 12% (Notice, 2016). This decree is directly related to Act no. 151/1997 Coll., On property valuation. Statutory determination of the risk level is convenient - unfortunately, it does not take into account the nature of the intangible assets, so it can be misleading.

1.2.3. Share of intangible assets in the manufacturing production, industrial property protection costs

The share of intangible assets in the production relates mainly to technical solutions. To determine the share correctly, accurate economic data associated with intangible assets are of the utmost importance. If precisely defined data is not available, an educated guess can be used. However, the estimate already includes some distortion of reality. It is simpler to determine the share in production for a trademark, which mostly covers the total company production.

Costs of industrial property protection represent rather a minor problem in relation to the valuation of assets. Often the actual value of intangible assets is higher than spending on their legal protection. Specific costs will then relate to the registration fee at the patent office and further maintenance fees. (Malý, 2007)

1.3. Intangible assets valuation methods

Three different methodologies can be used for valuation in this area. These are: comparative methods, cost methods, and yield methods.

1.3.1. Comparative methods

This methodology has a good predictive value, as it uses the market in which valued assets are traded for valuation. To use this method, it is necessary to have a specific market, a sufficient number of traded assets in the chosen market, and all the necessary information available. The advantage of this method is in the use of market environment. Its disadvantage lies in the fact that in case of intangible asset of unique nature it is not possible to perform this type of valuation, because of the absence of market environment. (Malý, 2002)

1.3.2. Cost methods

This type of valuation methodology is used least in practice. This method is based on replacement cost and the revaluation of historical costs.

Replacement cost operates with costs that would be required to obtain once more the subject of valuation, which would bring the same benefits. To find out the value it is necessary to determine the price at which we would be able to obtain an exact copy of the intangible asset which is being valued. Subsequently we need to deduct the costs resulting from wear and tear.

Historical cost method consists of converting money spent on obtaining intangible asset in the past, to current prices. You can take advantage of inflation coefficients. (Malý, 2002)

1.3.3. Yield methods

It is a methodology that is most frequent in practice and considers a time factor. As an example we can use (1) method of intangible assets valuation in accordance with Act no. 151/1997 Coll., On property valuation, (2) licensing analogy method and (3) net present value method.

The first method based on the above mentioned Act refers to intangible assets as to a property right. This method is relatively simple and fast, but it can be seen as inaccurate, because it uses a fixed of capitalization rate. (Mařík, 2011)

Licensing analogy method is more complex and thus more accurate. Moreover, it uses specific data from the company itself. Its results say what amount would have been incurred, if the company had not owned the given asset. (Mařík, 2011)

Net present value method discounts future earnings to present value. It can be used for valuation of multiple intangible assets. Based on the obtained values we can further determine which asset is best to use. The higher the resulting value, the better. (Malý, 2002)

2. Methods

The process of intangible assets valuation requires analysis of corporate sales, which were achieved due this subject of valuation. Furthermore, the overall corporate revenues were also analyzed to get the necessary data. The obtained data was then used in three yield methods. The first method used was based on the Act no. 151/1997 Coll., On property valuation, the second one was licensing analogy method and the third one net present value method.

2.1. Method according to Act no. 151/1997 Coll., On property valuation

The first method used is represented by the following relationship: (Mařík, 2011)

$$C_V = \sum_{j=1}^n \frac{Z_j}{\left(1 + \frac{p}{100}\right)^j} \quad (1)$$

Where:

CV = the price of property rights determined by a yield method,

Z_j = annual net revenue from rights usage in those years, when the right was used

p = the capitalization rate as a percentage, for property rights set out in the Annex 22, Decree no. 345/2015 Coll.

j = serial number of the year in which the right will be used

n = number of years when the right will be used

2.2. Licensing analogy method

The second from the above mentioned methods is licensing analogy method, which can be formulated like this: (0 2011)

$$HV = RV * LP * KZ * KK * PM \quad (2)$$

Where:

HV = annual valuation of intangible assets,

RV = annual range of production in financial terms

LP = license fee

KZ = coefficient of obsolescence / coefficient of appreciation

KK = coefficient of capitalization rate

PM = the share of intangible assets in manufacturing production

2.3. Net present value method

The third chosen method is net present value method, expressed as the following relationship (4):

$$NPV = \sum \frac{CF_t}{(1+r)^t} \quad (3)$$

Where:

NPV = net present value

CF = cash flows in years

t = duration of use

r = discount interest rate

3. Case study - problem analysis

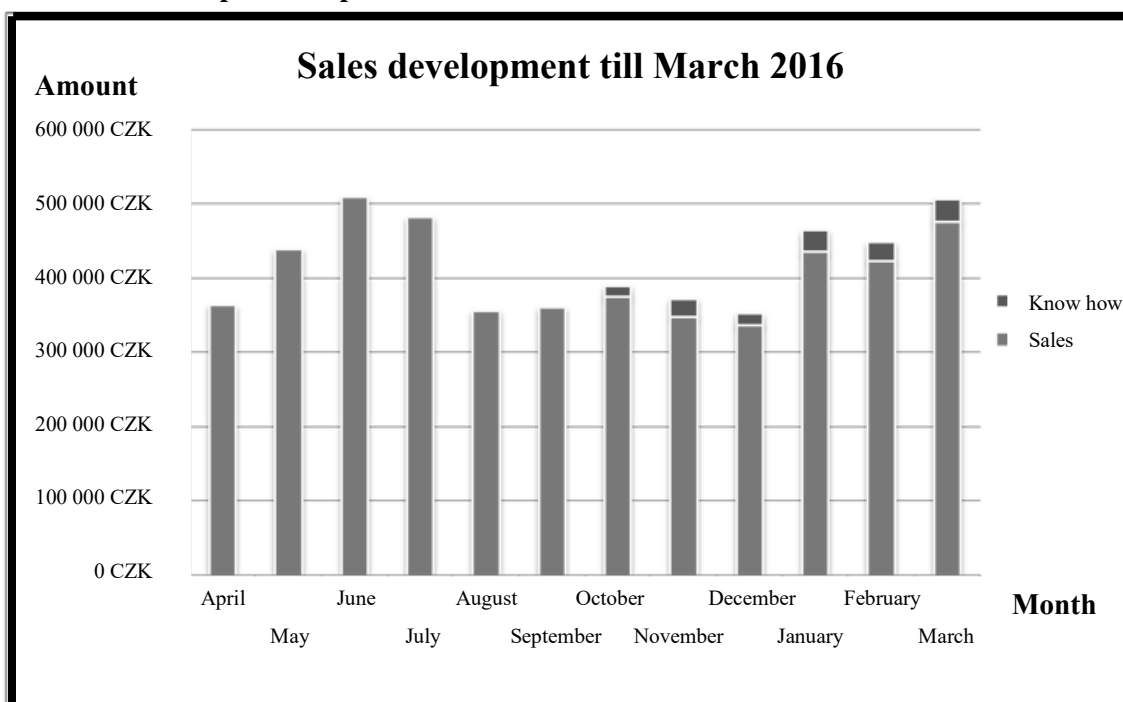
The valuation subject of intangible nature is, in this case, a know-how, which was introduced in INGEMA company (Ltd). One of the business activities of this company includes buying and selling goods. The know-how which is being valued is used in sales sphere (namely the introduction of sales via Internet auctions). This kind of sales has not been implemented in the company until recently. To increase sales it was necessary to start focusing on different readily available market environments.

The know-how itself lies firstly in the years of knowledge and experience with an assortment of the goods that is offered for sale. A thorough knowledge of the market environment in which sales are newly implemented is also used. Since the introduction of this method of sale, company's sales have really increased. Therefore, the owner of the company expressed his interest to value this know-how to get some idea about its value.

3.1. Sales analysis

Firstly, the development of corporate sales is shown for the given period.

FIG. 1: Sales in period April 2015 - March 2016



Source: paper's author

The figure represents the total revenues of the company (blue) and sales revenues obtained by introducing a new know-how (green). This data presents the base for collection of further information necessary for valuation by means of the individual methods.

To ensure the sales achieved by means of using the know-how for at least twelve consecutive months, it was necessary to use a logarithmic regression for prediction, in order to subsequently make an overall valuation of this intangible asset. This process is described in the following table.

TAB. 1: Determination of the annual net income from the use of property rights

Month	Sales	License fee	Sales tax	Procurement of goods	Profit
October	15 219 CZK	2 283 CZK	837 CZK	6 849 CZK	5 251 CZK
November	23 658 CZK	3 549 CZK	1 301 CZK	10 646 CZK	8 162 CZK
December	15 525 CZK	2 329 CZK	854 CZK	6 986 CZK	5 356 CZK
January	29 023 CZK	4 353 CZK	1 596 CZK	13 060 CZK	10 013 CZK
February	25 492 CZK	3 824 CZK	1 402 CZK	11 471 CZK	8 795 CZK
March	29 901 CZK	4 485 CZK	1 645 CZK	13 455 CZK	10 316 CZK
April	29 354 CZK	4 403 CZK	1 614 CZK	13 209 CZK	10 127 CZK
May	30 332 CZK	4 550 CZK	1 668 CZK	13 649 CZK	10 464 CZK
June	31 194 CZK	4 679 CZK	1 716 CZK	14 037 CZK	10 762 CZK
July	31 965 CZK	4 795 CZK	1 758 CZK	14 384 CZK	11 028 CZK
August	32 663 CZK	4 899 CZK	1 796 CZK	14 698 CZK	11 269 CZK
September	33 300 CZK	4 995 CZK	1 832 CZK	14 985 CZK	11 489 CZK
Total	327 626 CZK	49 144 CZK	18 019 CZK	147 432 CZK	113 031 CZK

Source: paper's author

Current revenues obtained by using know-how (October to March) are listed first in the table. The following months are coloured gray – it is constructed prediction, which helps us to obtain data for the period lasting at least 12 consecutive months. License fee amounts to 15%, sales tax 5.5%, acquisition of goods represents 45%.

3.2. Valuation according to Act no. 151/1997 Coll., On property valuation

For this method we need data from the table no. 1 - the total profit in the amount of 113 031 CZK. Capitalization rate is specified in Annex no. 22 of Decree no. 345/2015 Coll., (6). Time of use of property rights was set for three periods and the amount resulting from property law was set us unchangeable. Calculation according to formula no. 1:

$$C_v = \frac{113\,031}{\left(1 + \frac{12}{100}\right)^1} + \frac{113\,031}{\left(1 + \frac{12}{100}\right)^2} + \frac{113\,031}{\left(1 + \frac{12}{100}\right)^3}$$

$$C_v = \frac{113\,031}{1,12} + \frac{113\,031}{1,2544} + \frac{113\,031}{1,4049}$$

$$C_V = 100\,920,54 + 90\,107,62 + 80\,453,23$$

$$C_V = 271\,481,39$$

The value of property law amounts to 271 481.39 CZK.

3.3. Licensing analogy

For this yield method we further had to perform linear regression for the prediction of corporate sales revenues achieved without using the given know-how. Their total for the twelve months period amounted to 4 817 037.66 CZK. To these predicted sales we need to add aggregate sales from the know-how use (Tab. no. 1), to get a total volume of production amounting to 5 144 664.08 CZK. Like before, in this case we considered a three-year period with a fixed amount for a range of production. Calculation according to formula no. 2:

TAB. 2: Know-how valuation using licensing analogy

Period	Range of production RV	License fee 15 % RV*LP	Coef. of obsolescence 10 % KZ	Value incl. obsolescence RV*LP*KZ	Coef. of capitalization 12 % KK	Share in production 6 % PM	Annual value in CZK HV
2016	5 144 664	771 700	90%	694 530	0,8929	6%	39 491
2017	5 144 664	771 700	80%	617 360	0,7972	6%	31 342
2018	5 144 664	771 700	70%	540 190	0,7118	6%	24 486
TOTAL							95 318

Source: paper's author

The license fee is set as a percentage of 15%. Obsolescence coefficient was selected considering that even though experience and skills are continuously increasing, given sales environment is relatively easily accessible. Therefore the rate of obsolescence was set at 10% per annum. Capitalization rate of 12% was obtained from the Decree no. 345/2015 Coll., Annex no. 22 (Notice, 2016). This rate was then used in calculation:

$$KK = \frac{1}{(1 + d)^t} \quad (4)$$

Where:

KK = capitalization coefficient

d = level of capitalization

t = consecutive seasons, when the value is determined

Share in production was determined as the ratio of sales achieved by means of using the know-how to the total corporate sales.

The total amount for three seasons then makes 95 318 CZK, which is a completely different result than we got from the first method used. Furthermore, according to the business owner it is a more real value.

3.4. Net present value

The last selected yield method considers again only the resulting profit achieved from property law. Again we have the three consecutive periods. The cash flow value was obtained from Tab. no. 1 as the total profit. Same as in the two previous cases, we consider it unchangeable. The only difference here is a discount indicator – its value can be drawn from the CNB website (2016). However, the value of 0.05% is very low, therefore we calculate with the rate of 5%, using formula no. 3:

$$NPV = \frac{113\,031}{(1 + 0,05)^1} + \frac{113\,031}{(1 + 0,05)^2} + \frac{113\,031}{(1 + 0,05)^3}$$

$$NPV = \frac{113\,031}{1,05} + \frac{113\,031}{1,1025} + \frac{113\,031}{1,1576}$$

$$NPV = 107\,648,57 + 102\,522,45 + 97\,640,43$$

$$NPV = 307\,811,45$$

As a result we now get the amount of 307 811.45 CZK. It is given mainly by the fact that here we have set a different discount rate. Individual amounts for the periods are thus higher than in the first method used, which is basically identical.

4. Discussion

Using three yield methods for the valuation of intangible assets, different results has been achieved. The largest difference was found between licensing analogy method and net present value method.

The first method, based on the Act no. 151/1997 Coll., On Property Valuation, is a bit simple, which also means that it is quite inaccurate. This results from the fixed capitalization rate, which is given by Decree no. 345/2015 Coll., Annex no. 22 and related to the Act on property valuation. This method does not take into account the nature of intangible assets, which, based on its characteristics, may evolve differently over time.

Second method of license analogy contains multiple variables, which are at the same time based on internally generated corporate data. Therefore a larger distortion of reality cannot occur - which results in more reliable end result.

Net present value method is again simpler and therefore less accurate than the method of licensing analogy. However, there is no fixed discount rate - it may be adjusted by the company at its discretion. In this case it was set at 5%

According to the values obtained from the individual methods it can be stated that more accurate results are achieved by license analogy method. It is more complex in its requirements on the input data, but because of this, the result is more accurate. The other two methods can be described as simple, but less accurate, with lower predictive value.

Based on these findings, license analogy method may be clearly recommended for the valuation of intangible assets,

Conclusion

The first part includes description of the intangible asset nature and the related issues that govern its valuation. Different methods which may be used for determination of the intangible asset value are also presented.

Second part contains the characteristics of intangible asset which is being valued, as well as a closer explanation of procedure for valuation of intangible assets and individual valuation methods. They were subsequently used for processing of specific corporate data. Calculations used to determine the value of intangible assets conclude this section.

The last section includes an overall evaluation of the obtained results and describes problems of particular methods. Subsequently, based on the obtained results, recommendations are made - licensing analogy method seems to work best.

Resources:

Česká národní banka: Jak se vyvíjela diskontní sazba [online]. (2016). Praha: Česká národní banka, [cit. 2016-06-10]. Available: https://www.cnb.cz/cs/faq/jak_se_vyvijela_diskontni_sazba_cnb.html

Kurzycz: Nehmotný v úplném znění zákonů [online]. (2012). Praha [cit. 2016-02-08]. Available: <http://zakony.kurzy.cz/fulltext.asp>

MALÝ, Josef. (2002). Obchod nehmotnými statky: patenty, vynálezy, know-how, ochranné známky. 1. ed. Praha: C.H. Beck. ISBN 80-7179-320-5.

MALÝ, Josef. (2007). Oceňování průmyslového vlastnictví: nové přístupy. 1. ed. Praha: C.H. Beck. ISBN 978-80-7179-464-6.

MAŘÍK, Miloš. (2011). Metody oceňování podniku: proces ocenění - základní metody a postupy. 3. adapted and extended edition Praha: Ekopress. ISBN 978-80-86929-67-5.

Vyhláška č. 345/2015 Sb., k provedení zákona o oceňování majetku (oceňovací vyhláška). (2016).

Wikipedie: Statek [online]. (2014). [cit. 2016-06-10]. Available: <https://cs.wikipedia.org/wiki/Statek>

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