

Evaluating the Know-how of a Mechanical Engineering Company in the Czech Republic

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Abstract This paper on the Evaluating the Know-how of the Mechanical Engineering Company in the Czech Republic serves as a basis for the solution of scientific research objectives, as the aim of the thesis is to establish the methodology of identification of components of intangible assets, the proposal of the data structure for valuation of intangible assets of the engineering company, intangible assets, especially know-how and a proposal to transform qualitative data into quantitative. This focus on the quantitative parameters instead of the qualitative ones that are used to provide more objective data. The main content of the article is the presentation of a questionnaire for the fulfillment of the aforementioned partial goals. Questions are then evaluated on a scale of 1 to 10 to get the most relevant results. The output is then evaluated by a certain number of points from the maximum number of achievable points, which serves as a basis for the valuation model, which further serves to evaluate the know-how of a selected example of a defined business and to compare the result with the valuation by a classical method of valuing intangible assets.

Keywords: Valuating of Know-how, Valuating methods, Survey

1. INTRODUCTION

In the area of intangible assets authors primarily define the methods and models for the valuation of registered intangible assets (patent utility model etc.) In the valuation of know-how of businesses in the scientific databases and publicly available information articles that this type of intangible assets is valued only by yield method. This method is highly sensitive to the input data - license etc.

The critical research (Kyncl, 2018) maps the current state of research and knowledge in the area of business valuation, with an emphasis on the intangible assets, in particular know-how. It is structured so that analyzes the literature on business valuation, the definition and classification of intangible assets. The main part of that paper is the analysis of the literature on the valuation of know-how with the emphasis on the input data and the method used.

The valuation of the tangible assets is abundantly described and mapped in scientific databases. Different approaches and different methods are proposed for the valuation of all types of goods.

In relation of the above mentioned it can be argued that the available public databases do not address the uncharted and undocumented

data required for the valuation of know-how, detection and prediction of these data.

The process of identification and detection of data will be followed by an analysis and drafting of a model for the valuation of selected components know-how.

In the literature no solution is described that would allow the valuation of the know-how on the basis of currently available information. In regards of the method of valuation there is no general procedure for the valuation of know-how. Another drawback is certainly the fact that the current methods are sensitive to the existence of similar solutions - inputs of the Industrial Property Office. Based on the existing literature, I have not found the information on how are this kind of intangible assets valued in the absence of the input data.

Process methodology for the dissertation topic with the aim of quantifying the know-how could be summed up in the following sequence of steps: identification of intangible assets, data collection, analysis and design of the valuation model.

Both this paper and the critical research on the topic of the valuation of the know-how of an engineering company should help the author in solving the dissertation topic, since the aim of the thesis is to determine the methodology for the identification of the components of intangible assets, the design data structure for valuing intangible assets of an engineering company, a proposal for the analysis of data base for pricing intangible assets, in particular know-how and a proposal for the transformation of qualitative data into quantitative.

2. VALUATION OF KNOW-HOW

In this paper called Evaluating of Know-how of the Mechanical Engineering Company in the Czech Republic, the main goal is to create a know-how model for a particular engineering company. This is more likely to mean that firstly a scoreboard was created for the answers of the questionnaire, on the basis of which a questionnaire will be evaluated and subsequently the questionnaire will be modified and refined. It is already clear that the questionnaire will be partly different depending on the specific part of the industry that needs to be defined. The questionnaire will be addressed by management (production directors, technical directors, design engineers, technology, production, ...) of a particular group of engineering companies. On the basis of these data a model will be

created in Microsoft Excel and then will be tested on the selected company.

2.1 Definitions

The expression of know-how is of American origin and literally means "know how". Know-how generally represents production-engineering knowledge that is not usually a result of scientific or creative activity, but long-term experience with the optimal course of a particular process, technology, recipe. It includes indisputably a wide range of experience, especially from a wide range of techniques, business and business. Know-how is a tool of technical progress and an important factor in the competition. It may be more important for entrepreneurs than patents themselves.

The definition of the notion of know-how is not uniform in individual countries. The International Chamber in Paris, the International Industrial Property Commission, proposed in 1957 the following definition:

The notion of know-how refers not only to classified recipes and procedures, but also to a technique associated with a patented manufacturing process or process, a technique that is necessary to enable the patented invention to be exploited, and which allows the patent owner to use it in a broader technical scope. This term refers to the practical processes, special features and technical knowledge acquired by the manufacturer as a result of research not yet known to competitors.

Some definitions emphasize that the content of know-how is material, such as formulas, recipes, drawings, sketches, models, plans, technical documentation, technical descriptions, production guides, procedures, etc. The intangible elements include experience gained during plant visits, in controlling the transfer of knowledge of theory and practice. Know-how combines three basic components:

- Invention and innovation
- Knowledge and competence
- Experience and practice

Technology in modern concepts undoubtedly has the know-how. The necessary condition for acquiring know-how is that in the concept that prevails, the long-term operation of the technology, the acquirer of technology, which acquires the relevant know-how, acquire the technology much easier and faster, if this acquisition is possible without the necessary know-how.

Due to lack of special protection, know-how is sometimes referred to as a "non-protected" intangible asset. However, this is not accurate because it can be protected in the context of the sanction of unfair competition, either against the so-called slave imitation or for breach of business secrets.

2.2 Breakdown of know-how by business activities

Given that an enterprise is a whole, it is often difficult to say which knowledge or skills are related to the technology and which are not (Malý, 2002, page 52-53). Under corporate know-how we understand:

- Models, prototypes
- Drawings, plans, sketches
- Engineering studies, preparation of investments
- Process engineering

- Technical assistance, maintenance
- Guides, manuals, lists
- Marketing studies
- Supplier lists
- Elements and methods of communication
- Education and training
- Managerial know-how

The technical know-how is directly related to the production or product, and also includes the production and purchase of raw materials. We consider the technical know-how especially:

- Research and development process, prototype testing
- Technology of development and production, assembly, production preparation
- Order and production management methods
- Quality control methods
- Methods of production costing
- Methods of purchasing raw materials, machines and equipment
- Inventory management methods
- Methods of employee training

Marketing know-how includes the skills and experience of employees in relation to the market and the customer in all distribution, price and communication contexts. These are the following areas:

- Methods of market research
- Methods of marketing new products
- Pricing techniques
- Advertising, sales promotion, public relations
- Techniques to select and optimize distribution paths
- Techniques of organization, education and motivation

Management know-how mainly includes skills gathered by senior management departments, financial management, and human resources. It is about:

- Cost management technique
- Cash flow management technology
- Controlling technology
- Recruitment technology
- Planning and control technology

It is clear from this that the know-how concerns all business activities. Know-how concentrates on all methods and procedures that add value to the business in the widest sense of the word, from production to management. It is considered immediately the return on the invested capital to be the most valuable asset of the enterprise.

Know-how, however, is not the result of the quality of the entire business but of a particular employee or team. Such know-how is difficult to formalize and it is necessary to realize that the loss of a single element can greatly reduce the quality of the whole.

2.3 Description of the questionnaire

Based on a theoretical analysis of company know-how, a questionnaire was developed to better understand and define specific know-how cases across companies across the industry spectrum. The essence of the questionnaire is to put questions to individual corporate sectors, especially technical-production, for the purpose of evaluation and subsequent analysis, which is crucial for characterization related to the awareness of firms about their own know-how. The form of responses is conceived in the form yes / no

for the most optimal and accurate form of the result. The questionnaire is designed to be applicable to the broadest and most diverse industrial or manufacturing industries. The data obtained will allow to describe or illustrate the linkage and interconnection between individual corporate departments (sectors), which will provide a better specification along with the value of the company's know-how and will determine its distinctiveness over the same entities. The aim of the questionnaire is to set, quantify and compare know-how across corporate segments and then create an assessment benchmark for its specific valuation.

Within the predetermined objectives of the questionnaire, efforts were made to define and establish the know-how of technology and production across the enterprise. The nature of the questions allowed the application of the questionnaire to a wide range of manufacturing and industrial sectors. However, this broad application of the questionnaire brings a number of disadvantages. The result of the analysis is a purely general overview of whether the company has and if you know your know-how. Due to the extensive application of the questionnaire for different businesses operating in broad industrial sectors, it is not possible to precisely specify the know-how used by the company for individual products. If the questionnaire should have a verifiable intent on the specific use of know-how in a predefined business sector, it would be necessary to use a specific questionnaire that would focus on a particular technical / manufacturing sub-area or a specific product. Thanks to this narrowly-defined concept of the questionnaire, it would be more accurate to see what value the know-how in the field is. However, such a questionnaire would not be able to be used for the global technical-production spectrum of enterprises and for the purpose of the project. The above-described questionnaire describes the interdependence of corporate sectors, cooperation with external entities, knowledge of production processes and the use of human resources, as one of the most important know-how holders. The general characterization gained and the value of corporate know-how are key to determining the stability and value of a business on the market.

2.4 Process

The first step was to create a questionnaire covering all of the above-mentioned circuits forming the know-how of the manufacturing company. This questionnaire is very extensive and contains almost 200 questions, which are categorized into different groups and are differently rated. Individual groups were defined as follows:

- technical
- developmental
- manufacturing
- marketing
- personal

The surveyed enterprises defined a range of manufacturing companies operating in the engineering industry operating in the Czech Republic with a number of employees from 200 to 1000. A certain inaccuracy is the very fact that the know-how is being explored from a very wide view across all the defined circuits. The result is a point valuation of the business that should be tied to the valuation model. The questionnaire reflects the size of the enterprise by the number of employees and divides into two groups (200-500 and 501-1000 employees). A great deal of effort has been devoted to the greatest possible degree of objectivity, for example, examining the number of experts in the various departments, including their main job descriptions, instead of questions concerning the general quality or the level of the department. The following table, which

takes into account rather qualitative aspects, is suitable as the basis for the creation of questions, see Table 1.

Table 1: Attributes that influence the Technology Intangible Asset Value (Reilly, Schweih, 2014, page 663-664)

Item	Attribute	Influence on Value	
		Positive	Negative
1	Age - absolute	Newly created, state-of-the-art technology	Long-established, dated technology
2	Age - relative	Newer than competing technology	Older than competing technology
3	Use - consistency	Technology proven or used consistently on products and services	Technology unproven or used inconsistently on products and services
4	Use - specificity	Technology can be used on a broad range of products and services	Technology can be used only on a narrow range of products and services
5	Use - industry	Technology can be used in a wide range of industries	Technology can be used only in a narrow range of industries
6	Potential for expansion	Unrestricted ability to use technology on new or different products and services	Restricted ability to use technology on new or different products and services
7	Potential for exploitation	Unrestricted ability to license technology into new industries and uses	Restricted ability to license technology into new industries and uses
8	Proven use	Technology has proven application	Technology does not have proven application
9	Proven exploitation	Technology has been commercially licensed	Technology has not been commercially licensed
10	Profitability - absolute	Profit margins or investment returns on related products and services are higher than industry average	Profit margins or investment returns on related products and services are lower than industry average
11	Profitability - relative	Profit margins or investment returns on related products and services are higher than competing technologies	Profit margins or investment returns on related products and services are lower than competing technologies
12	Expense of continued development	Low cost to maintain the technology as state-of-the-art	High cost to maintain the technology as state-of-the-art
13	Expense of commercialization	Low cost of bringing technology to commercial exploitation	High cost of bringing technology to commercial exploitation
14	Means of commercialization	Numerous means available to commercialize technology	Few means available to commercialize technology
15	Market share - absolute	Products and services using technology have high market share	Products and services using technology have low market share
16	Market share - relative	Products and services using technology have higher market share than competing names	Products and services using technology have lower market share than competing names
17	Market potential - absolute	Products and services using technology are in an expanding market	Products and services using technology are in a contracting market
18	Market potential - relative	Market for products and services using technology are expanding faster than competing technologies	Market for products and services using technology are expanding slower than competing technologies
19	Competition	Little or no competition for technology	Considerable established competition for technology
20	Perceived demand	Perceived currently unfulfilled need for the technology	Little or no perceived need for the technology

This focus on quantitative parameters instead of qualitative ones used in, for example, financial analysis for various point assessments provides more objective data. These questions are then evaluated on a scale of 1 - 10, for example, according to the number of employees working in the department. Enumeration of all questions would be very lengthy, so here is a sample of selected questions for those most in the questionnaire:

- Do you have a research / development section?

- Do you collaborate on developing products (technologies) with other organizations (companies, universities ...)?
- In what amount do you have development projects a year?
- Do you have a marketing department?
- Are you doing your own market analysis?
- Is marketing part of the sales department?
- How many people doing marketing studies work only in the marketing department?
- Is the knowledge of your production process unique (ie there is no competitor in the Czech Republic with the same production methodology)?
- Is the production process continuously checked at all levels?
- Are you managing a particular quality management system?
- Do you invest in training for employees in the form of training and foreign seminars?
- Are employees working across departments on projects?
- Are you accessing each new product individually (ie. do you not already come up with current methods and procedures)?
- Do you have production documentation, including designs, drawings, plans and diagrams that allow manufacturers to produce and assemble the finished product; could the production process documents contain raw material specifications and quality control criteria and procedures?
- Do you have process engineering documents, including flow diagrams, drawings, and diagrams that would enable industry operators to initiate the flow of information, materials, fluids, electricity, or any other substance that is constantly moving?
- Do you have engineering manuals and procedures, including all written information that documents how the machine, device, product or process works; engineering manuals and procedures can be designed for operational purposes, quality control purposes, or for repair and maintenance purposes?
- Do you have engineering documentation of tools, including designs and specifications for manufacturing tools, mills, preparations and preparations? This category of intangible assets may also include sample products or production prototypes.

The result is then a certain number of points from the maximum number of achievable points that serve as a basis for the valuation model that is linked to important publicly available financial data (sales, investment in science and research, number of employees, number of employees in individual departments); and as a result, it is able to provide relevant indicative estimates of individual know-how components that are not recorded at the Intellectual Property Office.

This model also will serve to evaluate the know-how of a selected example of the above-defined enterprise and to compare the result with the valuation by a classical method of valuation of intangible assets - in this case the cost approach; the replacement cost new less depreciation (RCNLD) and the income approach.

3. CONCLUSION

The notion of know-how applies not only to classified recipes and procedures but also to techniques associated with a patented manufacturing process or process which is a technique necessary to make the patented invention usable and which allows the patent owner to use it in a wider technical scope.

The questionnaire should have a verifiable intent on the specific use of know-how in a predefined business sector; a specific

questionnaire would have to focus on a particular technical / manufacturing sub-area or specific product.

As a result, there is a certain number of points out of the maximum number of achievable points that serve as a basis for the valuation model, which is associated with important publicly available financial data (sales, investment in science and research, number of employees, number of employees in individual departments); and as a result, is able to provide relevant guideline estimates of the individual know-how elements that are not recorded in the Intellectual Property Office. This model will also serve to evaluate the know-how of the selected example of the above-defined enterprise and to compare the result with the valuation using the classic method of valuation of intangible assets.

This contribution as well as critical research on the valuation of know-how of the engineering company should help the author to solve scientific research tasks in this field, as the aim of the thesis is to establish the methodology of identification of intangible assets components, design of data structure for valuation of intangible assets of engineering company, data bases for determining the price of intangible assets, in particular know-how and a proposal for the transformation of qualitative data into quantitative.

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